INFLUENCE OF TEACHER-RELATED FACTORS ON INTEGRATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN TEACHING IN PUBLIC SECONDARY SCHOOLS IN NAIVASHA SUB-COUNTY, NAKURU COUNTY, KENYA

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DECLARATION AND APPROVAL

Declaration

I certify that this thesis is entirely unique and hasn't previously been submitted for a degree from another university or for any other accolade.

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This research thesis was submitted with our approval and the student completed the assignment while being supervised by us.

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DEDICATION

This research is dedicated to my wife, Anne Njiiri, and our three children, Lucy, Peter, and Collins, for their moral and spiritual support.

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ABSTRACT

One of the challenges in the twenty-first century is the inclusion of technology into educational methods. Providing computers and connecting to the Internet is far easier than properly incorporating ICT into the educational process. The study sought to determine how ICT integration in teaching was influenced by teachers' ICT literacy, perceptions on ICT integration in teaching, and teaching experiences in public secondary schools in Naivasha Sub-County, Nakuru County, Kenya. The study focused on the Technological Pedagogical Content Knowledge (TPACK) Model for Technology Integration in Teaching and Technology Acceptance Model (TAM). The study used a descriptive survey research approach. A total of 607 instructors from 39 public secondary schools participated in the survey. A stratified sample, purposeful sampling, and simple random sampling were used to select the study's 242 teachers. A questionnaire distributed to teachers was used to collect data. Pilot testing was conducted in the nearby Kinangop Sub County to assess the reliability and validity of research tools. The test-retest technique was used to examine the reliability of the research instruments, and the coefficient was found to be 0.807. Content and construct validity were validated by pilot testing and inspection by university supervisors. To examine the data, both descriptive and inferential statistics were applied. Multiple regression analysis was utilized to assess the three hypotheses that were developed, and descriptive statistics such as frequencies, means, and standard deviations were employed. For interpretation, qualitative data was grouped into major areas. The influence of the participants' spoken comments was preserved, nonetheless, by using certain qualitative data verbatim. According to the survey results, instructors had a normal distribution of teaching experience, teachers' perception and a moderate degree of ICT literacy. They also had a good view on ICT integration. The study's three independent variables explained 31.7% of the variation in ICT integration in the classroom ($R2 = 0.317$). Teachers' perception ($\beta = 0.277$, $t(225) = 3.901$, $p < 0.05$), ICT literacy ($\beta = 0.430$, $t(225) = 8.305$, $p < 0.05$) and Teaching experience ($\beta = 0.281$, $t(225) = 3.932$, $p < 0.05$) were all significant predictors of ICT integration. The findings are expected to have a major impact on how the government assesses the National ICT Policy on Education and Digital Learning Programme, which was ostensibly developed to integrate information and communication technology (ICT) into secondary education in Kenya. The research recommends that in order to provide teachers with the ICT skills and knowledge they need, the Ministry of Education and Teachers Service Commission hold regular professional development seminars and workshops. ICT integration into teacher education programs should be a priority for Teacher Training Colleges (TTCs) and Universities. At the same time, KICD should create and maintain a standard curriculum for planned ICT practical courses that includes a single sit-in test to ensure that graduates are professionally competent at the end of the program.

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LIST OF ABBREVIATIONS AND ACRONYMS

BoM	Board of Management
CFT	Competency Framework for Teachers
GITR	Global Information Technology Report
GoK	Government of Kenya
ICT	Information Communication Technology
KCSE	Kenya Certificate of Secondary Education
KESSP	Kenya Education Sector Support Programme
KICD	Kenya Institute of Curriculum Development
KNEC	Kenya National Examinations Council
MoE	Ministry of Education
NACOSTI	National Council for Science, Technology, and Innovation
PA	Parent Association
PTTP	Pre-service teacher integration programs
SPSS	Statistical Package for Social Sciences
TTC	Teacher Training Colleges
UNESCO	United Nations Educational, Scientific and Cultural Organization

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter highlights the research on the integration of information and communication technology in teaching in Naivasha Sub-County public secondary schools. Background information, problem statement, objectives, rationale, research hypothesis, the study scope, constraints and delimitations, assumptions, and important word definitions are also included.

1.1 Background to the Study

The progress of information and communication technology (ICT) is crucial in today's society and is a global trend (Mohammed & Abdulghani, 2017). ICT usage includes activities like sending emails, watching TV, and using Cloud Tools such as WhatsApp, Facebook, and Google Classroom. According to Ghavifekr, Rezek, Ghani, Meixi, and Tengyue (2019), ICT is a broad term that covers software, computer networks, satellite communications, and related systems that allow users to create, analyze, access, and utilize information, data, and knowledge in various ways.

Today, information and communication technology is used in many ways in society. Integrating information and communication technology into education at schools can greatly influence the future of students. To produce well-informed high school graduates, school administrators, teachers, and students need to be knowledgeable in information and communication technology to adapt to the evolving teaching and learning methods required for 21st-century education (Chai, Tan, Deng, & Koh, 2017, and Gokstin & Kurt, 2017).

Information and communication technology integration has enhanced teaching and learning processes, according to Malero, Ismail, and Manyilizu (2015). ICT engages learners, fosters

teamwork, and gives access to a range of information among Tanzanian high school pupils. As education evolves, technological innovation has led to the inclusion of ICT in secondary schools. ICT integration in education has far exceeded any human anticipation, and so ICT is no longer a novel concept. ICT policy, financing, professional development, ICT infrastructures, skills, and knowledge are all factors influencing ICT integration in Indonesian Pre-service Teacher Integration Programs (PTTPs), according to Goktas Yildirim and Yildirim (2017). Some assessments suggest that countries in Europe, Asia, and North America are also at the forefront of adopting ICT to modernize their economies. The incorporation of ICT into the classroom is seen as a critical pillar in Singapore's education system; consequently, the usage of ICTs by school administrators, instructors, and students serves as the basis of Singapore's education system (Lee, Kim, and Lee 2015). An extensive study on ICT and education has proved the relevance of learning about ICT and how it can be utilized successfully to strengthen the new technology in teaching and learning (Bai, Wang, and Chai, 2019; Hoyles, 2018; Rana, Greenwood, Fox-Turnbull, and Wise, 2018; Rana et al., 2019).

Several studies have also demonstrated that educational technology can improve teaching and learning processes, but when put into reality, they encounter several problems. The obstacles faced by rich and developing countries differ (Bai et al., 2019; Hoyles, 2018; Rana et al. 2018; Rana et al. 2019). The Malaysian government has started integrating ICT into elementary and secondary school curricula as part of one of its most recent programs (2013-2025), acknowledging the importance of ICT in education. A framework for school digitization was started in Peru when the government approved the purchase of over 600,000 laptop computers for use by students in the nation's rural elementary schools. However, the program faces challenges that go beyond teacher computer ability and include physical issues like energy and

modern buildings (Warschauer & Matuchniak, 2010). Many nations have adopted digital literacy programs to boost students' participation abilities as new technology has emerged throughout the world. Sweden and Singapore are the most digitalized and innovative nations in terms of ICT use in education, according to the Global Information Technology Report (GITR) (Ghavifekr et al 2019).

One of the African nations with a thorough information and communication technology (ICT) policy is Ghana, which aims to advance educational technology. The strategic plan for Ghana's education services must include ICT integration. For instance, Ghana created the "One Laptop per Child Policy" as an intervention strategy (Enu, Nkum, Diabor, & Korsah; 2018). The UNESCO ICT Competency Framework for Teachers (CFT) acknowledges the significance of integrating ICT into education to empower students in the twenty-first century (Sutter & Kihara, 2019).The capacity of instructors to build socially active classrooms and stimulate cooperative participation in learning is important to the effectiveness of ICT integration in the learning environment.

The Kenyan government is prioritizing the use of ICT in education at primary and secondary schools. They are collaborating with international organizations such as UNESCO to achieve this goal. The 2006 review of ICT strategy was motivated by the need to match the policy with Kenya's new constitutional dispensation and Vision 2030. To help the country achieve its 2030 objective, the government will develop a network of world-class technical training schools. As a consequence, every Kenyan citizen will have computer literacy and will be able to participate in the digital economy. As a consequence, the government will integrate ICT subjects into the curriculum at all levels of education, as well as build and implement a national e-education system to support schools (Ministry of ICT; 2019).

Kenya's government established a laptop initiative for 1.2 million elementary school children in 2013, (Wanzala &Nyamai, 2018). The aim of the initiative was to incorporate ICT into school-based teaching and learning. Wanzala and Nyamai (2018) revealed, however, that due to the high cost of laptops, the policy moved from laptops to tablets during the roll-out of the one laptop per kid initiative in 2016. Approximately 19000 of the 23951 public elementary schools have received tablets by July 2018. (Wanzala & Nyamai; 2018, Abuya, 2019).

While some public schools are receiving ICT-related resources through digital literacy initiatives, only a few of them are actually using ICT tools to enhance teaching and learning, as found in research conducted by the Kenya Institute of Curriculum Development (KICD). The reluctance of teachers to incorporate ICT into their teaching methods may be due to their lack of necessary skills. Despite the integration of ICT in education, teachers in developing countries are hesitant to utilize technology in the classroom (Adebayo & Fagbohun, 2013; Kafyulilo, Fisser, Pieteus & Voogt, 2015; Sulemana, Anyanful & Abudulai, 2018; Sutter & Kihara, 2019).

Computers are commonly employed in educational institutions for teaching administration and basic ICT skills rather than as tools for delivering instruction (Anyanful & Abdulai, 2018). According to Kafyulilo et al. (2015), instructors' resistance to integrating technology into their lesson plans is due to their limited ICT knowledge and experience. The government has made significant investments in ICT-related teaching and learning materials, yet student performance in KCSE exams has consistently been poor, especially in sciences (KNEC reports, 2018). It is advantageous to understand how effectively these resources are used and managed for the benefit of the student as a consequence. Coleman, Gibson, Cotton, Howell-Moroney, and Stringer (2016) contend that effective use of ICT in the classroom changes the

learning environment away from the instructor and toward the student. They underline that transitioning from teaching to learning fosters a more participatory and engaging learning environment for both teachers and students, converting the teacher's function from information transmitter to facilitator, knowledge navigator, and co-learner.

Why bother incorporating ICT into teaching? ICT integration in education has numerous benefits. It enables students to explore and use technology effectively in their future employment and assists students in developing critical digital literacy skills. It also opens up new avenues for collaboration, creativity, and critical thinking in the classroom. Teachers may make their classrooms more exciting and dynamic by incorporating interactive digital tools, multimedia resources, and gamified learning platforms. This not only draws students' attention but also stimulates their desire to participate actively in the learning process.

Students now have access to a world of information because of ICT integration. They can obtain knowledge, conduct research, and explore various views by using online databases, e-books, scientific journals, and instructional websites. This rapid access to a multitude of resources enriches and fosters individual learning. Because each kid is unique, why should their educational experiences be one-size-fits-all? Integration of ICT enables personalized and differentiated training. Teachers can personalize lessons to particular student needs using adaptive learning platforms, providing extra help or demanding extensions. This focused strategy maximizes learning outcomes while allowing students to grow at their own pace.

Unfortunately, not all schools are equipped with modern technology and high-speed internet. In many circumstances, a lack of infrastructure or resources might stymie efficient ICT integration. To offer equitable possibilities for every student, schools and policymakers must address these difficulties by providing adequate technology, software, and internet

connectivity. Many educators may be unfamiliar with the most recent tools and technology, or they may lack the skills required to properly integrate them into their teaching practices. Continuous professional development programs are essential for providing teachers with the knowledge and confidence to use ICT in the classroom.

It's indisputable that technology has integrated itself into our lives in the digital age we live in. It's crucial to establish a balance, though, increased screen time, sedentary habits, and potential technological dependence can result from overusing ICT. Teachers must be aware of this and make sure that ICT integration is utilized purposefully, sparingly, and to support other instructional practices and foster a positive learning environment.

Despite progress, Kenyan schools' ICT infrastructure continues to encounter issues. Many schools lack dependable electricity, internet access, and enough ICT equipment. However, efforts are being made to improve school infrastructure, such as the installation of computer labs and the creation of internet connectivity in some areas. The Kenyan government understands the importance of ICT integration in education and has put regulations and programs in place to encourage its use. The Kenya Institute of Curriculum Development (KICD) has established an ICT-integrated curriculum, and the Ministry of Education has launched programs such as the Digital Literacy Program, which aims to provide elementary school pupils with access to digital devices and materials.

Using ICT in the classroom has various advantages; Students can access multimedia resources and participate in virtual simulations, making learning more interactive and engaging. ICT tools also allow for personalised learning, allowing students to learn at their own pace and experiment with various learning methods. Furthermore, ICT integration fosters critical thinking, problem-solving, and digital literacy abilities, which are all necessary in the twenty-

first century. The integration of ICT in Kenyan classrooms is not without difficulties. Access to ICT infrastructure and dependable internet connectivity continues to be a serious challenge. Furthermore, there is a scarcity of teachers who have received ICT integration training, and some educators may be resistive or hesitant to try new teaching methods. In addition, the expense of acquiring and maintaining ICT equipment might be prohibitively expensive for many schools.

Integrating ICT into lesson preparation and curriculum design ensures that technology is used to improve learning outcomes on purpose. Teachers can discover opportunities to integrate ICT tools and resources that are relevant to learning objectives, allowing students to apply their knowledge and participate in meaningful activities. Access to high-quality digital information and tools is critical for successful ICT integration. Schools should spend money on curriculum-aligned educational tools, online platforms, and digital material. In addition, partnerships with local communities and stakeholders can improve resource access and enhance sustainability. ICT integration in the classroom offers huge potential to transform education in Kenya. Addressing infrastructure difficulties, providing enough professional development, and ensuring access to high-quality resources are all necessary steps toward realizing the benefits of ICT integration in Kenyan classrooms. So, with a dash of Kenyan flair, the government could leverage technology's potential to influence the future of education.

1.2 Statement of the Problem

The use of ICT in secondary school instruction is rather low, despite the efforts made by the Kenyan government to raise the value of education (Mwunda, 2014). The fundamental obstacles to effectively implementing a new information system in education, according to Ajzen (2005), are a lack of user acceptability and pessimistic views regarding ICT integration

in the classroom. It is becoming more and more important to integrate information and communication technology (ICT) into education in today's quickly changing digital environment. The successful integration of ICT in educational contexts is hampered by a number of issues, though. Insufficient infrastructure and resources are among the main issues. Many educational institutions lack the computers and internet connection needed to properly incorporate ICT into their curricula.

This restricts the options for students to improve their learning through technology and makes it more difficult for teachers to use it in the classroom. In addition, instructors do not receive the necessary training or assistance to use ICT in the classroom efficiently. Many instructors struggle to stay up to date with the newest tools and software because they feel overwhelmed by the speed at which technology is advancing. Teachers might not be able to properly utilize ICT to improve their teaching methods if they do not have the necessary training and assistance. In the end, this has an impact on students' educational experiences and makes it more difficult for them to acquire the digital skills required to succeed in the workforce of the twenty-first century. Teachers also face difficulties due to the absence of regulations and guidelines regarding the efficient use of ICT in the classroom. In the absence of well-defined guidelines and strategies, teachers could find it difficult to harmonize their pedagogical approaches with the objectives of ICT integration.

Lack of a unified framework for ICT integration might cause uneven implementation in educational institutions and reduce technology's overall ability to enhance teaching and learning. The development of comprehensive policies and provision of requisite resources and support for the successful integration of ICT in teaching necessitate collaboration among policymakers, educators, and stakeholders in order to address these challenges and optimize

the potential of ICT in education. Nevertheless, very little is known about the relevant elements that teachers have influence over the incorporation of ICT in the classroom. To determine how these factors influence the incorporation of ICT into teaching, more study is required as it is unclear if secondary school teachers in Naivasha Sub-County possess the necessary pedagogical skills.

1.3 The Purpose of the Research

The goal of this research was to look into the teacher-related factors that influence the integration of ICT in teaching in public secondary schools in Kenya's Naivasha Sub-County and Nakuru County.

1.4 Research Objectives

The following objectives served as the study's direction:

a) To determine the influence of teachers' ICT literacy on ICT integration in teaching in Naivasha Sub-County public secondary schools.
b) To examine the influence of teachers' perceptions on ICT integration in teaching in Naivasha Sub-County public secondary schools.
c) To investigate the influence of teaching experience on ICT integration in public secondary schools in Naivasha Sub-County.

1.5 Hypothesis of the Study

The ensuing hypothesis served as the study's guidance.

HO_1: The use of ICT in teaching in public secondary schools in Naivasha Sub-County is not statistically significantly influenced by teachers' ICT literacy.

HO_2: In public secondary schools in Naivasha Sub-County, teachers' perceptions have no statistically significant influence on how ICT is integrated into teaching.

HO_3: There isn't a significant statistical relationship between teaching experience and ICT integration in secondary public schools in Naivasha Sub-County.

1.6 The Study's Significance

In the digital era, the integration of information and communication technology (ICT) in the classroom has become increasingly important. ICT technologies provide students with access to various materials and interactive learning activities, enhancing their critical thinking and problem-solving abilities. Teachers can adapt their teaching strategies to meet the needs of their students by incorporating multimedia components like videos, pictures, and interactive models. ICT also allows teachers to provide immediate feedback, track progress, and adjust training to target specific learning gaps, enhancing students' academic performance.

ICT integration encourages creativity and inventiveness in students, allowing them to explore new ideas, find solutions to real-world issues, and improve communication and cooperation skills through project-based learning and collaborative projects. Digital platforms and online resources provide students with the opportunity to perform research, access current information, and enhance digital literacy skills.

ICT integration in the classroom is crucial for improving education and setting students up for success in the future. Teachers can develop tailored learning experiences that meet the different needs of their students, fostering creative, critical-thinking, and digital literacy abilities necessary for success in the modern world. Educational institutions must use ICT to stay current and provide students with the necessary skills and information to thrive in the digital age.

1.7 The Study's Justification

ICT in education may be a relevant and useful manner of giving learners the skills and information needed to perform in the twenty-first century. Against this backdrop, the Government of Kenya (GoK) has defined the relevance and role of ICT in education in numerous policy documents. The study's conclusions may be valuable to a variety of stakeholders in education. First, the findings may help teachers reconsider whether they are well prepared to use ICT in the classroom, and if not, what type of skill enhancement might be appropriate for them. Second, the findings might help schools design policies that promote the use of ICT in the classroom. Finally, the findings can direct both in-service and pre-service providers on areas to focus on in future training to ensure instructors have the necessary skills to incorporate ICT into classroom instruction.

1.8 Scope of the Study

The research concentrated on factors related to teachers that influence the integration of information and communication technology in teaching. It was specifically conducted in public secondary schools in Naivasha Sub-County, Nakuru County, Kenya.

1.9 Limitations of the Study

The researcher anticipated challenges with respondents since some may conceal personal information. The researcher avoided this by assuring the respondents that the information gathered would be utilized just for the study and that their identities would be kept confidential.

1.10 Delimitations of the Study

The research focused on three teacher-related factors (teacher literacy, teacher perception, and teaching experience) that influence ICT integration in teaching in Naivasha Sub-County.

Teachers were considered as research participants because they play a critical role in the execution of the National ICT policy for education.

1.11 Study's Assumptions

The following assumptions guided the research:

i. That the sampled respondents cooperated and offered adequate responses to the survey questions.

ii. The participants shared candid and truthful information regarding the factors that influence the integration of information and communication technology in teaching at public secondary schools in Naivasha Sub-County, Nakuru County.

iii. That all teachers, regardless of gender or age, were considered capable of incorporating ICT into their instruction.

1.12 Operational Definition of Key Terms

Teachers' Related Factors: Refers to Teacher literacy, Perception, and Teaching experience on the Integration of ICT in School.

ICT integration: Refers to the practice of introducing, reinforcing, enhancing, and extending ICT integration abilities in secondary schools in Naivasha Sub-County.

ICT Literacy: Refers to the ability to effectively integrate technology in teaching, being proficient in using basic ICT tools such as Word processing, PowerPoint and Spreadsheet, troubleshooting minor ICT issues, adapting and adopting ICT tools and assessing the effectiveness of ICT integration.

Information Communication Technology (ICT): Refers to Computer Applications packages used in the integration of ICT in teaching like Microsoft PowerPoint, Word, Spreadsheets, Education software, internet and learning management systems.

Public Secondary school: Refers to government-sponsored Secondary Schools offering form one to form four curricula in Naivasha Sub-County.

Teaching Experience: Pertains to the abilities, know-how, and skills that a teacher has acquired over the course of a protracted career in the teaching field in accordance with the training received in teacher training programs.

Teachers' Perception: Refers to the opinion, feelings and attitude of the teacher towards ICT integration in teaching.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter will give detailed information about the use of ICT in secondary schools based on a review of the literature. The parts will be classified as follows: Teaching experience and ICT integration in the classroom, teachers' perceptions on ICT integration in the classroom, teachers' ICT literacy concerning ICT integration in the classroom, an empirical literature review, research gaps, a theoretical framework, and a conceptual framework, an empirical literature review, a theoretical framework, a conceptual framework and finally research gaps.

2.1 Empirical Studies Review

Information and communication technology (ICT) use in education has been accompanied by an increase in studies on how technology influences students' motivation, performance, and engagement (Christopoulos et al., 2018). Numerous initiatives (Mayer, 2019; Zhu & Urhahne, 2018) stress the importance of helping school administrators and instructors organize accessible online instructional materials. Second-order barriers, like teachers' views, confidence, attitudes, and talents, may also be important in determining effective technology integration in schools, even though first-order obstacles like funding, equipment, technical help, and training are crucial (Inan & Lowther, 2010). Nevertheless, very little study, particularly on the second category of obstacles, has been done (Ghavifekr et al., 2016; Scherer et al., 2019), and even less research has been done recently (Francom, 2020).

2.1.1 ICT integration in education in Kenya

ICT has been quickly implemented into educational curricula in Kenya and other Sub-Saharan African nations (Mariga et al., 2017; Muinde & Mbataru, 2019). The Kenyan National

Education Sector Plan 2013-2018 prioritizes ICT integration notwithstanding the lack of empirical data on the influence of ICT on learning progress in Kenya (Piper et al., 2015). This strategy was implemented by the Republic of Kenya (2006) in its 2006 National ICT Policy to boost the availability of reliable, economical, as well as efficient technology services throughout the economy as a whole. Tablets were distributed to every first-grade student in public primary schools nationwide to support the use of ICT in education and help achieve Kenya's development goals outlined in Vision 2030 (Langat, 2015; Mariga et al., 2017; Muinde & Mbataru, 2019).To provide every student in the nation with the skills and top-notch digital literacy competencies they will need to thrive in the twenty-first century, curriculum changes are currently being undertaken (Maluei, 2019).

ICT integration in education has shown to be a game changer in terms of student engagement and motivation. The utilization of interactive technologies, multimedia resources, and online platforms increases the likelihood that students will actively participate in their learning process. Films, simulations, and educational games can be incorporated into lessons to make them more interesting and approachable, catching students' attention and whetting their hunger for knowledge. ICT tools can help students develop their capacity for critical thought and problem-solving. Through internet research, data analysis, and group projects, students can apply their knowledge, examine material, and come up with solutions to problems that they encounter in the real world.

These activities foster higher-order thinking skills, allowing children to become self-directed learners and problem solvers. ICT integration provides students with a multitude of educational possibilities and tools, independent of their geography or socioeconomic background. Students can use the internet and digital platforms to obtain educational resources, e-books, research

articles, and instructive films. This access to a wide reservoir of information broadens their learning beyond the confines of textbooks, allowing them to investigate a variety of topics and interact with a global community of learners.

Teachers require appropriate training and professional development opportunities to get the full benefits of ICT integration. Training programs should focus on introducing teachers to relevant software, tools, and platforms, as well as leading them through the process of effectively implementing ICT into lesson planning. Ongoing support and sharing of best practices can assist instructors in developing the skills and confidence required to navigate the digital realm. According to Ghavifekr, S. & Rosdy, W.A.W. (2015), teachers can also help to foster a positive ICT culture in their classrooms. Teachers motivate students and colleagues to embrace technology as a valued learning tool by modelling its use in their teaching techniques. Collaboration among teachers, including the exchange of resources and experiences, can generate an environment of innovation and continual improvement in ICT integration efforts.

To encourage and sustain effective ICT integration, clear regulations and guidelines are essential. Policies that coincide with national educational goals and facilitate the incorporation of ICT into the curriculum should be implemented by education authorities. These regulations should cover topics like internet safety, data privacy, and equitable access to technology. It is critical to have access to dependable and inexpensive ICT infrastructure. Schools require a strong internet connection, a sufficient number of devices such as PCs or tablets, and maintenance assistance. To guarantee that students from all backgrounds have equal access to ICT resources, efforts should also be undertaken to close the digital divide. The opportunities for integrating ICT into education are expanding along with technology. Artificial intelligence, augmented reality, virtual reality, and block-chain technology all have the potential to

completely change the way we learn. Exploring these developments and modifying them for the Kenyan setting can lead to creative and engaging teaching opportunities.

Collaboration between the government, educational institutions, and private sector groups is essential to stepping up ICT integration activities. To assure accessibility to inexpensive and pertinent educational resources, this collaboration may concentrate on making infrastructural investments, offering aid to programs for teacher preparation, and forming alliances with IT firms. ICT integration activities can also be continuously monitored and evaluated to assist pinpoint problem areas and inform upcoming plans for successful implementation. The use of ICT in the classroom has enormous potential to change the face of education in Kenya. Educators may improve student engagement, develop critical thinking abilities, and give students access to a wide range of educational resources by utilizing the power of technology. Despite some difficulties, such as limited infrastructure and the requirement for ongoing professional development, ICT integration has more advantages than disadvantages. It is essential to give teacher training programs, enabling policies, and infrastructure top priority as Kenya goes forward. By doing this, we can make sure that ICT integration becomes a crucial component of the educational system, enabling students to thrive in the digital world and get ready for a technologically driven future.

2.1.2 ICT Integration in Teaching and Teachers' ICT Literacy

Sulemana et al.'s definition of ICT literacy in a knowledge-driven society is the ability to use networks, communication tools, and digital technology to integrate, manage, generate, and analyse data. According to Tekya and Asare (2016), ICT literacy refers to the aptitudes, know-how, and skills required to acquire, hold onto, modify, retrieve, and transfer information in a variety of forms in order to fulfill educational, individual, and professional goals. According

to Kuskaya and Kocak (2010), educators use information and communication technologies (ICT) to generate, transmit, share, store, and exchange information utilizing a range of media, including the internet, satellite systems, television, radio, telephone, and videos. The ability to manage information utilizing largely digital technology towards a certain objective is referred to as ICT literacy.

ICT has had an immense influence on education in several nations. According to Sulemana et al. (2018), ICT has the potential to change the classroom when handled intelligently by qualified educators. The use of information and communication technology (ICT) improves teaching by increasing student motivation. For example, using ICT in the classroom may make it easier to express complex concepts and idioms. Teachers have a critical role in incorporating ICT into teaching and learning since they are at the heart of the educational system (Tekya & Asare, 2016).

According to Bhattacharjee and Deb (2016), teachers must be able to rethink how they set up their learning environments in order to successfully integrate ICT into their classroom instruction. An absence of technological understanding as a result limits a teacher's creativity and confidence in using technology in the classroom. Furthermore, according to Kamaruddin, Abdulla, Idris, and Nawi (2017), instructors must be adept at using technology and have control over it in order for them to incorporate it into lesson plans and comprehend how important it is for teaching and learning.

Innwoo and Moluayonge (2017) investigated how teachers used ICT in secondary schools in Cameroon. Data from 320 teachers were gathered for the study. According to the report, Cameroon's secondary schools only sometimes employ ICT for teaching and learning because of a lack of ICT infrastructure. In addition, the survey found that teachers had poor training

and confidence, had little access to materials that were accessible, and obtained insufficient ICT support while integrating ICT in their classes.

Researchers in Kenyan public secondary schools examined the influence of teacher literacy on the use of information and communication technologies in educational settings. It was found that the majority of respondents only had literacy-level ICT training and lacked the aptitude or confidence to use ICT for teaching and learning. According to studies (Michael et al., 2016), teachers think ICT enhances learning. Twelve secondary schools in Nairobi County utilized a descriptive survey method to examine the benefits and drawbacks of adopting ICT in teaching and learning. The study's findings indicate that teachers have a variety of difficult tasks ahead of them, including developing their technical expertise and self-training in ICT use in the classroom (Amuko, 2015).

Teachers must stay current with new innovations in the digital sector, which is constantly evolving. Adopting new innovations, such as virtual reality and artificial intelligence, has the potential to change how we educate. By encouraging teachers to research and experiment with cutting-edge technology, we can foster an innovation culture and make sure that teacher ICT literacy remains pertinent and adaptable to future educational demands. Accepting the fantastic possibilities that new technology brings to the classroom. It is clear how teachers' ICT literacy affects classroom ICT integration. As technology continues to advance and assume a more significant role in education, teachers must acquire new skills and enhance their existing ones in ICT.

ICT integration in the classroom may be made successful by recognizing the importance of teacher ICT literacy, addressing the influencing variables, implementing effective improvement strategies, and encouraging cooperation and professional development. We can

help teachers effectively incorporate ICT into our teaching methods, enhancing student learning outcomes and putting them in position for the future digital environment, by providing them with the tools and knowledge they require.

2.1.3 Teachers' Perception and ICT Integration in Teaching

One aspect that affects how ICT is used in the classroom is the teacher's perception. Cultivating a positive outlook is crucial when integrating ICT into the classroom. Muslem, Yusuf, and Juliana (2018) investigated the attitudes towards and barriers to ICT use among Indonesian English teachers. Twenty six teachers were selected for the study's questionnaire and interviewed using a purposeful sampling method. The study's findings revealed that the participating teachers had a positive view regarding the incorporation of information and communication technologies in classroom instruction and learning. Teachers say that information and communication technologies makes it easier and faster for them to obtain knowledge, which enhances their lectures and helps them educate. Furthermore, they believe that information and communication technologies promotes student involvement in class.

According to studies on how perception influences the integration of ICT in education (Wambiri & Ndani, 2016), indicated how instructors view the usage of technology influences their adoption and subsequent implementation in their activities. They argue that if the government doesn't initially take into account teachers' opinions and views, its investment in technology might not have the desired effects. In their 2016 study of teachers' attitudes, perceptions, self-efficacy, computer ability, and age, Wambiri and Ndani discovered that younger teachers had a very positive perspective of technology. According to Buliva (2018), who performed a study on the views of teachers on the use of ICT at educational institutions in Vihiga County, Western Kenya, might have been attributed by the young teachers.

The study examined if there were statistically significant differences between male and female teachers using a suitable sample of county teachers and the gender variable. An independent samples t-test revealed no statistically significant differences in the average ratings of male and female teachers. According to the poll, there was no statistically significant gender difference in County teacher opinions on computer use. According to Muinde and Mbataru (2019), who examined the implementation of the laptop project in public elementary schools, 68.5% of the sampled teachers had a favourable opinion of using computers in their teaching and learning.

However, they did reveal that 39% of teachers said that the time allotted for technology integration was insufficient and that the majority of their sessions were spent assembling the devices. Teachers are more likely to decide against adopting ICTs if they believe it will take more time and effort to make them work in their classrooms (Omwenga et al., 2004).

Heinrich et al. (2020) noticed the perception of time and ICT integration in a study on the potential and needs of effective tablet integration in rural Kenya. A mixed-method study that included classroom observation, teacher interviews, student questionnaires, and focus groups discovered that teachers frequently left out students who were thought to be slow learners while integrating technology. Some of the teachers reportedly said due to the short amount of time in a session, they were unable to assist students who were having academic problems. In order to equip teachers with the pedagogical abilities to accommodate all learners, including those with impairments, in a technology-integrated session, the research advises greater professional development for them.

In Kenya, a few research projects on teachers' perceptions on ICT use in the course of education processes have been conducted. The relationship between principals' impressions of

computer applications and their usage of computers to do particular duties in Kiambu County was examined by Njathi, Ngaruiya, and Maithya (2018). Two hundred and five randomly chosen principals were surveyed using a semi-structured questionnaire to collect their data. According to the report, only 23.5% of principals said they used computers every day. Despite the government and other organizations' efforts to promote computer use in school administration, only a small percentage of respondents actually use computers for administrative tasks. Additionally, 94 per cent among participants admitted to either occasionally or never using computers for administrative purposes. The most common uses reported were for data storage and retrieval, as well as creating student reports. The majority of teachers were reluctant to use ICT. The principals' assessments of computer applications and computer use were correlated relatively significantly (r (204) = 0.423, p 0.001), according to the Pearson coefficient analysis.

The perception and preparedness of teachers to adopt and use technology in their classrooms are influenced by how they perceive the integration of ICT. Positive first impressions can facilitate integration and enhance students' educational opportunities, while negative first impressions with unfavourable opinions could hinder the use of ICT and limit its advantages. Teachers' perceptions of ICT integration may be influenced by a variety of circumstances. Individual characteristics, attitudes towards technology, technological proficiency, access to resources and support, administrative support, and the availability of opportunity for training and career growth are some of these factors.

Teachers can utilise a variety of strategies to enhance how they view and apply ICT in the classroom. Participating in professional development programmes for ICT integration, encouraging a welcoming and cooperative school climate, providing resources and technical

support, and sharing best practises and ICT integration success stories are a few examples. Effective ICT integration in education is hampered by a lack of technological infrastructure and resources, resistance to change and technological apprehension, time constraints and competing demands, as well as insufficient training and support. The removal of obstacles and the promotion of successful ICT integration in the classroom can both be aided by recognizing and dealing with these problems.

2.1.4 Teaching Experience and ICT integration in Teaching

According to Chemwei, Njagi, and Koech (2014), the teacher's background significantly affects students' acceptance of and use of technology in everyday classroom activities. The effectiveness of ICT integration into curriculum delivery depends on the teacher's prior classroom instruction. Deen-Swarray, Gillwald, and Morrell (2012) found that senior teachers with a lot of classroom experience show lower self-efficacy when it comes to gaining access to and utilising ICT resources. The adoption and usage of ICT in teaching and learning may be significantly influenced by a teacher's career. Less experienced teachers are more likely to use ICT in their classrooms (Mulwa & Kimosop, 2015). Nash and Moroz (1997) found that teachers who were more computer literate were more confident in their capacity to use computers effectively, according to Dix (2007).

According to Chemwei et al. (2014), in their study of integrating information and communication technologies in instruction at Kenyan teacher training institutes, it was found to be generally unsuccessful due to a lack of technological skills. Instead, a teacher who understands both pedagogy and the subject matter should be used.

This suggests that identifying highly qualified teachers from less experienced ones was the responsibility of government organisations or staffing businesses. According to Chemwei et al. (2014), teachers in the teaching profession between the ages of 41 and 50 have trouble using computers. This indicates that newer teachers are enthusiastic, knowledgeable, and driven to integrate ICT into their teaching. According to Dix (2007), less experienced teachers had a less favorable perception of using ICT in teaching, whereas more experienced teachers had a more positive outlook. Mulwa and Kimosop (2015) observed that a teacher's level of expertise in the subject influenced their utilization of ICT in their daily educational practices.

Compared to teachers with more years of experience but no interest in or aptitude for technology, teachers with 1 to 5 years of teaching experience are far more prepared to embrace and use ICT in the classroom. According to Lentilalu's (2015) research, the majority of public secondary school teachers have been in their jobs for less than 10 years. The results of the study showed that less experienced instructors had higher levels of self-efficacy and were more ready to use computers for professional as well as personal purposes.

According to Onwuagboke, Singh, and Ngozika (2014), the amount of time a teacher spends in the classroom and the use of ICT in the classroom are directly associated. This suggests that the more experienced a teacher is, the easier it is to incorporate technology into the teaching and learning processes. Rahimi and Yadollahi's (2011) study, which found no relationship between teachers' years of teaching experience and ICT integration, was mentioned by Onwuagboke et al. (2014). Various ways can help experienced teachers improve their ICT integration skills. Participating in technology integration-focused professional development opportunities, such as mentorship programs, collaborating with peers, attending conferences,

and exploring new instructional approaches, can help experienced teachers further develop their ICT skills and effectively integrate technology into their teaching practices.

Experienced teachers can benefit from ICT integration in a variety of ways, including increased student engagement, improved learning outcomes, improved creativity and critical thinking abilities, effective classroom management, and access to a large array of digital resources. Experienced teachers may use ICT to create dynamic and interactive learning experiences, resulting in a more engaging and successful learning atmosphere.

Effective ICT integration requires pedagogical expertise as well as teaching experience. Experienced teachers are well-versed in pedagogical ideas and teaching practices. They can link technology use with learning objectives, choose appropriate tools, and create meaningful activities that increase student engagement and achievement. Furthermore, their experience enables them to foresee and address any technological integration issues or pitfalls. Teachers may guarantee that technology support rather than inhibit the learning process by drawing on their pedagogical knowledge and experience. Teaching experience can also be combined with organizational support for ICT integration. Experienced teachers may provide educational institutions with useful insights and input on the implementation and integration of technology. They can help to set policies and guidelines, make technological recommendations, and push for resources and training opportunities. Their combined knowledge enables them to recognize the needs of both teachers and students and work with administrators to establish a welcoming atmosphere for ICT integration. Organizational support, along with teaching experience, can greatly improve the performance of ICT efforts in schools.

Experienced teachers may encounter difficulties in integrating ICT, such as opposition to change, lack of access to technology, limited training opportunities, and difficulty changing

teaching approaches to accommodate technology. Overcoming these problems necessitates educational institution assistance, professional development opportunities, and a commitment to lifelong learning. Teaching experience can have a big influence on ICT integration in the classroom. Experienced teachers frequently have a broader understanding of pedagogical practices, have gained confidence in using technology, and have a broader range of ICT abilities. These components all lead to more effective ICT tool and resource integration in the classroom. The purpose of this study was to investigate whether teachers' experiences affects how they use technology in public secondary schools in the Naivasha Sub County.

2. 2 Theoretical Framework

This research was based on two theories: one about how teachers can use technology in their lessons, and another about how they feel about using technology. The first theory was from a study by Mishra and Koehler in 2008, and the second was from a study by Fred Davis in 1989.

2.2.1 Technological Pedagogical Content Knowledge (TPACK) Model

According to Mishra and Koehler (2008), TPACK is a framework for understanding the knowledge that teachers require to successfully integrate technology into their teaching, including computer skills and subject expertise. Teachers who display strong ICT practices, according to proponents, are imaginative and adaptive, and they devise techniques to manage the TPACK framework's constraints, affordances, and interconnections. Three elements are necessary for successful education, according to Mishra and Koehler (2006): technology, pedagogy, and content, as well as the interaction between and among them known as TPACK. They continue by stating that TPACK is broken into seven sections. All three types of

knowledge are required: Knowledge of technology (TK), pedagogical knowledge (PK), and content knowledge (CK).

The combination of three components leads to the development of pedagogical content knowledge (PCK), technical content knowledge (TCK), technological pedagogical knowledge (TPK), and technological pedagogical content knowledge (TPCK). According to Thompson and Mishra (2007-2008), TPACK (Technological Pedagogical and Content Knowledge) is made up of seven components. Building on this, Koehler and Mishra (2008) included context in their methodology, highlighting the significant influence of context on technology use in the classroom. Koh, Chai, and Tay (2014) argue that while context is often overlooked in TPACK research, this oversight actually allows the framework to be applied in various situations.

When Free Primary Education (FPE) was implemented in Kenya, the government decided to end the one laptop per child initiative for computer labs. This was owing to the challenges of supplying computers or tablets to a large number of learners (Abuya, 2019). The TPACK framework, which examines the links between the three zones (Technological Knowledge, Pedagogical Knowledge, and Content Knowledge) and acknowledges the significance of instructors in this complex context, is depicted in Figure 2.1.

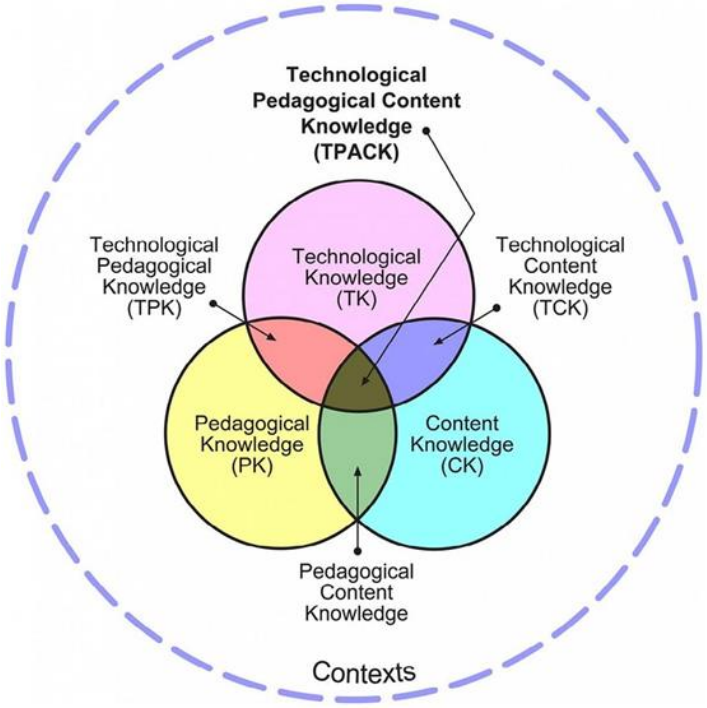


Figure 2.1 TPACK Framework by Koehler and Mishra (2008)

The TPACK framework suggests using technology resources like software, hardware, and applications to help students better understand the subject. Within the TPACK framework, connections are made between three types of knowledge - content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK). TPK defines the relationship and interaction between technological tools and particular pedagogical practices, TCK describes the relationship and interaction between pedagogical practices and particular learning objectives, and PCK describes the relationship and interaction between pedagogical practices and particular learning objectives. Since it provides a helpful framework for thinking about how instructors could integrate ICT into the classroom, the TPACK framework will be useful in this study. A teacher's knowledge of ICT, the subject matter, and pedagogy can also be assessed using TPACK. This has consequences for all levels of competency's professional development and teacher training programs. TPACK also helps teachers get over their

inclination to see technology as unconnected to teaching and learning. Consequently, a key component of teacher professional development should include educating teachers on how to utilize a certain program or piece of technology as well as how to incorporate it into their lesson plans. As a consequence, teachers will develop their ICT self-efficacy and have their attitudes regarding technology in the classroom molded. Lack of knowledge of TPACK, in the opinion of Mishra and Koehler (2008), separates technology from content and pedagogy. As a result, there are some reservations about incorporating technology into the classroom. First, technology advances so quickly that teachers and students are unable to keep up and develop irrational technophobia. The second issue is that the majority of software is built for business rather than education. As a result, rather of learning about the subject, students learn how to use the application.

When technology is separated from content and teaching methods, a problem arises in the classroom due to its situational nature. Even if a teacher adjusts a program to meet the needs of specific students, an educational video remains the same each time it is watched. The study also looked at teachers' attitudes towards using technology in the classroom and the accessibility of facilities, while keeping in mind that most teachers may have learned the requisite methodology and content from other sources, experience and professional development. The TPACK framework hypothesis also had an influences on how teachers incorporated technology into their lesson plans and subject matter.

2.2.2 Technology Acceptance Model (TAM)

In the realm of information technology, Fred Davis' 1989 Technology Acceptance Model (TAM) is a well-known theoretical framework that aims to comprehend and forecast users' acceptance and adoption of new technologies. Since then, TAM has been extensively utilized

to examine how people behave when using technology in both practical and scholarly contexts. According to the paradigm, users' perceptions towards utilising a specific technology are mostly determined by its perceived usefulness and simplicity of use, which in turn affects how they actually use it.

Perceived usefulness is the degree to which users think a technology will improve their performance or productivity, whereas perceived ease of use is the ease with which users believe a technology may be employed. TAM claims that these two elements have a direct effect on users' perceptions towards technology, which in turn affects their intention to use it and, eventually, how they actually use it. Put differently, people are more likely to see technology favourably and use it as shown in Figure 2.2 if they believe it to be practical and easy to use.

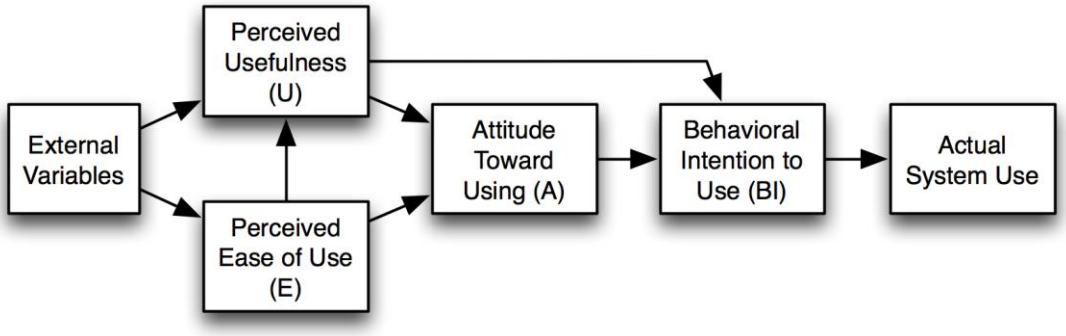


Figure 2.2 TAM Framework (Davis, 2003; Rogers, 2003)

Researchers have discovered that the model is a useful tool for comprehending and forecasting user behaviour towards technology since it is reliable and generalizable across various technologies and user demographics. Researchers as well as professionals can learn why

people accept or reject new technologies and how to create more efficient and user-friendly systems by utilising TAM.

TAM's usability and simplicity are among its main advantages. The model is simple to comprehend and use in both research and practice because it only includes a small number of essential variables. Furthermore, a great deal of research in a wide range of fields has confirmed TAM, demonstrating its reliability and validity. Because of this, it has become a widely acknowledged and frequently applied model in the information technology sector.

A useful theoretical framework for comprehending and forecasting users' acceptance and uptake of new technologies is the Technology Acceptance Model. TAM sheds light on the variables influencing user perceptions towards technology and their intention to utilise it by emphasizing perceived usefulness and ease of use. Its applicability to professionals and scholars in the field of information technology is due to its simplicity and generalizability, and its significance is demonstrated by its continuous relevance in the fast changing technological world of today.

2.3 Conceptual Framework

A conceptual framework is an arrangement of related elements and factors that help solve problems in practical situations. It's the final lens through which you will examine the logical solution to a problem (Imenda, 2014). The study's theoretical framework demonstrates how elements connected to teachers' related factors influences the incorporation of information and communication technologies in the classroom. This framework also discusses how these variables impact the use of information and communication technology in the classroom.

In various studies, different factors that influence the integration of information and communication technology in the classroom have been identified. Contrarily, the three aspects that this study will concentrate on are ICT literacy, teacher perceptions, and experience, and how they influence the incorporation of ICT in the teaching environment.

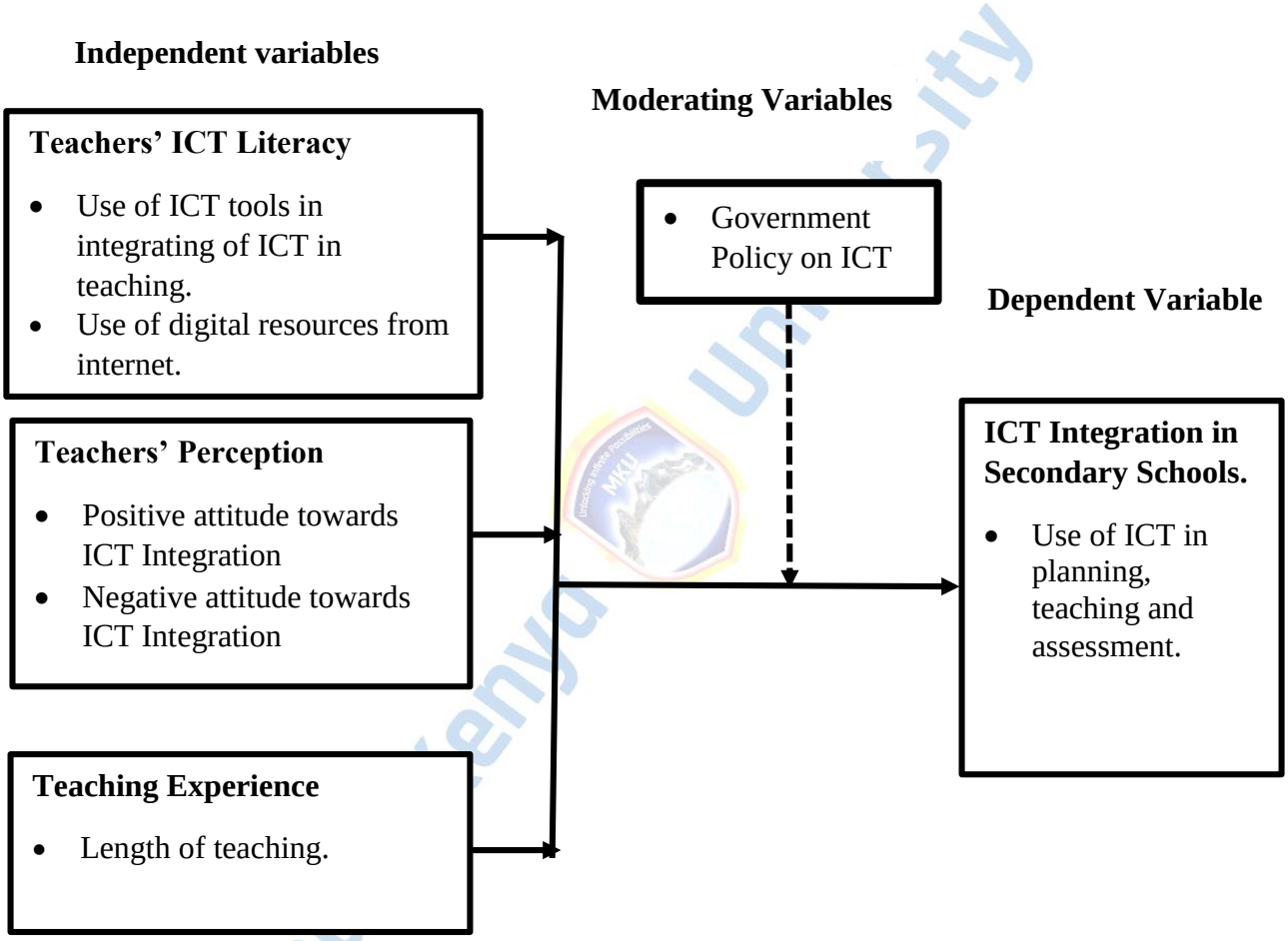


Figure 2.3 Integration in teaching

(Source: Research Gate)

In this study, the factors are being investigated in influencing integration of information and communication technology in teaching in public secondary schools in Naivasha Sub County are as shown in Figure 2.2.This implies that we can forecast how the ICT literacy, perception, and teaching experience of the instructors would influence the ICT integration in the

classroom. The theoretical frameworks of the study TPACK and TAM influenced the conceptual framework. Complete ICT integration in education is possible when technology knowledge is effectively integrated with content and pedagogical knowledge and the current settings are taken into account.

2.4 Recap of Literature review

According to several research, information and communication technology (ICT) has a vital role in improving educational quality. The integration of ICT in education is a popular issue all around the world. In affluent nations, ICT has been utilized more efficiently in education; nevertheless, in developing countries, such as the majority of African countries, ICT must be addressed. Numerous researchers have looked at and found factors related to teachers that influences how ICT is integrated into the classroom. The study under consideration demonstrates that ICT integration in the classroom is influenced by teachers' ICT literacy levels, perceptions of ICT integration in the classroom, and teaching experience. It would be possible to integrate ICT into teaching if these conditions were met. According to the reviewed literature, studies on ICT integration were conducted outside Naivasha Sub-County. The main barriers to ICT usage in classroom teaching in most developing countries were educating teachers with suitable ICT knowledge and abilities, as well as providing adequate ICT resources. There is a dearth of recorded forms of literature on ICT literacy and ICT integration in secondary schools, teachers' perceptions, and ICT integration in the Naivasha Sub-County. Furthermore, little is known about teaching experience and how it influences ICT integration in the classroom. The study explored into how integrating information and communication technology may close these gaps in lesson delivery in public secondary schools in the Naivasha Sub County.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This section's main goal is to discuss the research design, study site, targeted population, sampling tactics for selecting the sample, research instruments to be used, data gathering methods, and data analysis procedures.

3.1 Research Methodology

There are three basic categories of research methods: qualitative, quantitative, and mixed. In this study, the mixed methodology included components of qualitative and quantitative methodologies and focused on research design analysis by merging, linking, or inserting data to improve comprehension of the research hypothesis and objectives (Creswell, 2014). Measurement, classification, analysis, comparison, and interpretation of data are all critical steps in creating foundational knowledge and solving major problems. The study also looked into additional factors that might affect how ICT is used in the classroom. Teaching experience, opinions about ICT integration in the classroom, and ICT literacy are some of the variables. The study was conducted using a questionnaire with items rated on a 5-point Likert scale and structured questions that responders were required to answer. Data preparation was completed before analysis was done. The dataset had missing data and outliers which were removed before analysis was done. Following that, the data was evaluated using the statistical program SPSS version 26.

3.2 Research Design

The research design, according to Andrew B. Kirumbi (2018), is a collection of methodologies and processes utilized in gathering and assessing measurements of the variables indicated in the study topic. The study used a descriptive survey approach to evaluate teacher-related factors influencing ICT integration in the teaching in Naivasha Sub-County, Nakuru County. A combined approach comprising both quantitative and qualitative methodologies was used to collect the data. Since the objective of the study was to ascertain the truth, the descriptive research design was deemed appropriate. So, in order to gather data, questionnaires were employed.

3.3 Location of the Study

The research site's relevance was to establish where the actual location and data was collected (Kombo & Tromp, 2006). The study took place in Naivasha Sub County, Nakuru County. Naivasha Sub-County coordinates are 0.7172° S; 36.4310° E. Nakuru County has eleven sub-counties. This are: Naivasha, Gilgil, Nakuru Town East, Nakuru Town West, Nakuru North, Rongai, Njoro, Molo, Subukia, Kuresoi North and Kuresoi South. Naivasha neighbouring sub-county are Gilgil, Kinangop in Nyandarua County, Lari in Kiambu County, Kajiado North in Kajiado County and Narok North in Narok County. According to the 2018 Nakuru County Schools Census Report, despite receiving gifts of ICT resources from different collaborating agencies and NGOs, most schools in Naivasha Sub County and Nakuru County in general have been reluctant to integrate ICT into teaching (MOE, 2018). The Teacher Service Commission (TSC) introduced the ICT teacher of the year award (ITOYA) in 2018, and despite having monetary rewards at each level from school to national, teachers do not participate in the competition. Only four of Nakuru County's 11 sub-counties took part in the 2018 and 2019

competitions. The location of the study was chosen through purposive sampling. As a result, Naivasha was determined to be appropriate for the study.

3.4 Target Population

There are two types of schools in Naivasha Sub-County: public and private. All public secondary schools were targeted in this study since they are government-supported and hence have identical ICT facilities. It was envisaged that instructors in schools would have enough time to use ICT facilities to incorporate their teaching into the classroom. Appendix III indicates the number of public secondary schools and the number of teachers per school. Table 3.1 indicates the number of Teachers in the Naivasha Sub-County.

Table 3.1: **Number of Teachers in Naivasha Sub-County.**

S.No	Population	Male	Female	Total
1	Teachers	333	274	**607**
	Total	333	274	**607**

(Source: TSC Sub County Director- Naivasha, 2022)

The number of teachers in Naivasha Sub-County is shown in Table 3.1 by gender.

3.5 Sampling Techniques and Procedure

The teaching staff samples were chosen via stratified sampling, purposive sampling, and random sampling from the school where the respondents were chosen, from each of the four zones in the Naivasha Sub-county. As a result, the teaching staff were grouped into four strata: Central, Maraigushu, Longonot, and Maiella, with the sample size distributed among them

using the Neyman allocation algorithm. Since the population size is known then, the sample size was established using the Yamane formula. At confidence level of 95%, the margin of error (e) will be 5% (e= 0.05). The Yamane formula is given by $n = \frac{N}{1 + Ne^2}$

Where n= sample size, N= Population size and e= Margin of error.

Yamane (2000) proposes that a population of 607 teachers' yields a sample of 242, which was proportionately allocated to sampled schools and percentages computed. Among the 242 sampled teachers are school principals and classroom teachers.

$$n = \frac{607}{1+607(0.05)^2}$$

$$n = 242$$

Table 3.2: **Sample Matrix**

Target population	**Population size**	**Percentage (%)**	**Sample**	**Sampling Technique**
Teachers in Public School	607	100	242	Stratified, Purposive and Simple random sampling
Total	**607**	**100**	**242**	

(Source: TSC Sub County Director- Naivasha, 2022)

Table 3.2 shows the number of teachers who participated in the research from the total population.

3.6 Sample Size

In the event of a fixed sample size, the method's purpose was to increase survey precision. Using Neyman allocation, the ideal sample size for stratum h is:

$$n_h = \left(\frac{N_h}{N} \right) n$$

Where: -

n_h is the sample size for stratum h, n is the total sample size, N_h is the population size for stratum h, and N is the total population.

As a result, the sample size distribution in the stratum was as follows:

Table 3.3: **Sample Size Distribution in the Stratum.**

Zone	Number of Secondary Schools	Total number of Teachers	Sampled number of Teachers	% of the respondent in each stratum
Central	8	210	82	**40.59**
Maraigushu	13	173	63	**39.38**
Longonot	8	128	48	**37.50**
Maiella	10	125	49	**39.20**
Total	**39**	**607**	**242**	**39.87**

(Source: TSC Sub County Director- Naivasha, 2022)

The distribution of teachers among various strata is seen in Table 3.3, based on the number of teachers and schools in each zone. A larger portion of the respondents came from the zone

with the highest number of teachers and schools. Along with the overall proportions of the respondents' sample size, it also shows the percentages distribution in each stratum.

3.7 Data Collection Instruments

A teacher questionnaire was employed in the present investigation. To fulfill the study's objectives, the questionnaire was constructed with the intention that the responder will answer all of the questions. The teachers' questionnaire, the primary research tool, was broken down into the following five sections: background information, teachers' literacy on ICT integration, teachers' perceptions on ICT integration, teachers' teaching experience, and ICT integration in teaching. The items were graded on a 5-Likert scale. The questionnaire also included structured questions that responders were required to answer. The teachers' questionnaire was also divided into alphabetized sections, usually A through E, with serialized items covering the many subjects based on the study's objectives.

3.8 Piloting of the Instrument

Pilot testing was carried out to assess the validity and reliability of the research tools. According to Connelly (2008), 10% of the sampled population was used for piloting. A total of 24 teachers participated in the piloting. As a result, two public secondary schools in Kinangop Sub-County were chosen that were not part of the research geographical region. Kinangop Sub-county was chosen for the pilot because it neighbours Naivasha Sub-County and therefore teachers in the two Sub-Counties share many things in common. It's possible that the same factors influencing ICT integration in Naivasha Sub-County are also influencing ICT integration in Kinangop Sub-County.

3.8.1 Validity of Research Instruments

Before distributing the questionnaires to the sampled population, their face and content validity were assessed. Creswell (2014) strongly advises using qualified experts for determining an instrument's validity. A panel of five professionals with expertise in instructional technology at Mount Kenya University reviewed, the research instruments and determined if the information collected would test the research null hypothesis. Additionally, the researcher consulted with other researchers to improve the content. The researcher then adjusted the tools to improve their validity. It also assisted the researcher in enhancing the items' clarity and ambiguity, the suitability of the instrument's instructions, the appropriateness of the participants' difficulty level, and the correction of any grammatical errors.

3.8.2 Reliability of Research Instruments

According to Johnson and Christensen (2012), dependability is the extent to which a research instrument produces reliable outcomes or information across trials. The dependability of this research instrument was investigated by pilot testing at two randomly selected public secondary schools in the Kinangop sub-county. The schools weren't part of the research. Any flaws were discovered throughout the test-retest procedure and corrected before to the major investigation. At three-week intervals, the researcher administered the same questionnaire to the same sample of teachers at the two piloted schools. The researcher subsequently computed the reliability coefficient for the surveys and determined their dependability by comparing it with one on a predetermined scale. According to table 3.4 below, the correlation coefficient was found to be 0.807. Cohen, Manion, and Morrison (2012) consider a dependability value of 0.7 or greater to be appropriate for a social science research instrument.

Table 3. 4 Reliability Statistics

Cronbach's Alpha	N of Items
0.807	38

3.9 Data Collection Procedures

A mixed-method descriptive survey strategy was used in the study. Data were gathered by distributing a questionnaire to teachers. A letter of introduction from Mount Kenya University was given to the researcher. The researcher was granted research authorization by National Council for Science, Technology, and Innovation (NACOSTI). Naivasha Sub County Education Office approved the researcher's request to collect data from the sample schools. The researcher first met and engaged with the school principals of the sampled schools in order to build a connection with them and decrease the Hawthorne effect during the actual data gathering. The Hawthorne effect, according to Mugenda & Mugenda (2003), is a circumstance where individuals are motivated to respond and perform well during the data collection.

3.10 Data Analysis and Presentation.

The questionnaire data were coded prior to being entered into the Statistical Package for Social Sciences (SPSS) version 26 software for analysis. First, editing was carried out to identify faults and omissions. The collected data on the study's objectives was evaluated using both descriptive and inferential methodologies. To determine the link between the dependent and independent variables, the regression formula was utilized, ($Y= \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \varepsilon$, where Y = Teachers' ICT integration in teaching, X_1 = Teachers' ICT literacy, X_2 = Teachers' perception, X_3 = Teachers' teaching experience, and ε is the error term used).

3.11 Ethical Considerations

Research ethics, according to Mugenda (2011), is concerned with how ethical standards are applied during the studies planning, data processing, distribution, and use of the results. This implies that, as a prerequisite for a study project to be completed successfully, the research would address logistical, ethical, and interpersonal issues (Orodho, 2009). The researcher made sure that all pertinent ethical issues were taken into account.

3.11.1 Confidentiality and Privacy

The confidentiality of the research participants was protected in the present investigation. This was performed by ensuring that the guidelines for study participants are followed. Respondents were assured that all information will be kept totally confidential. The respondent was informed that their personal information won't be disclosed to a third party. Furthermore, their information will be kept anonymous and utilized purely for research reasons.

3.11.2 Anonymity

The researcher promised the respondent that no information about him or her would be revealed that would identify them. The respondents or the institution did not divulge any personal information in writing either.

3.11.3 Informed Consent and Voluntary Participation

The researcher received permission from the school administration to ensure that the respondents gave informed consent and participated voluntarily in the study. The introductory letter, which will describe the nature, purpose, and significance of the study along with the procedures used to collect the data, was distributed to each respondent so that they might actively engage in it. To conduct the suggested study and gather data from secondary schools.

Researcher obtained approval from the National Commission for Science, Technology, and Innovation (NACOSTI), the University, and the Ministry of Education.

3.11.4 Plagiarism

The act of claiming someone else's words or ideas as one's own is known as plagiarism. It involves utilizing someone else's creation without acknowledging the author. In this study, all concepts, methods, findings, or words that were contributed by other authors were appropriately acknowledged.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.0 Introduction

The section below provides an overview of the data collected for this study. It includes the response rate, analysis of demographic information, and feedback from teachers regarding the study's objectives. The primary purpose of this study is to investigate the factors influencing the integration of ICT in public secondary schools in Naivasha Sub County, Nakuru. The purpose of this study is to determine the elements that influence the integration of ICT in secondary public education in this area. It also tries to explore how teachers' ICT literacy influences their use of technology in the classroom, as well as how their perceptions influence information and communication technology use. The study additionally delves on how teaching experience influences Integration of information and communication technology in public secondary schools in Naivasha Sub County. The data was acquired using a questionnaire distributed to teachers.

4.1 Response Rate

In order to gather the necessary information, the study distributed 242 questionnaires to respondents in each of the four zones of the sampled schools in Naivasha Sub-County. The response rate was 93.38% since 226 of the 242 questionnaires were completed and returned. The remaining 13 questionnaires were either left unanswered or were only partially addressed. Throughout data cleaning, 3 questionnaires were discovered to be outliers, and they were eliminated during data analysis. This constituted 6.62% of the population in the sample. This high response rate was made possible through persistent follow-up with responders. A response rate of 50% is regarded as satisfactory, a rate of 60% as good, and anything beyond

70% as very good, according to Mugenda & Mugenda (2008). The study's response rate, which was 93.38%, was excellent and sufficient for the study's needs and permitted generalization of the data collected.

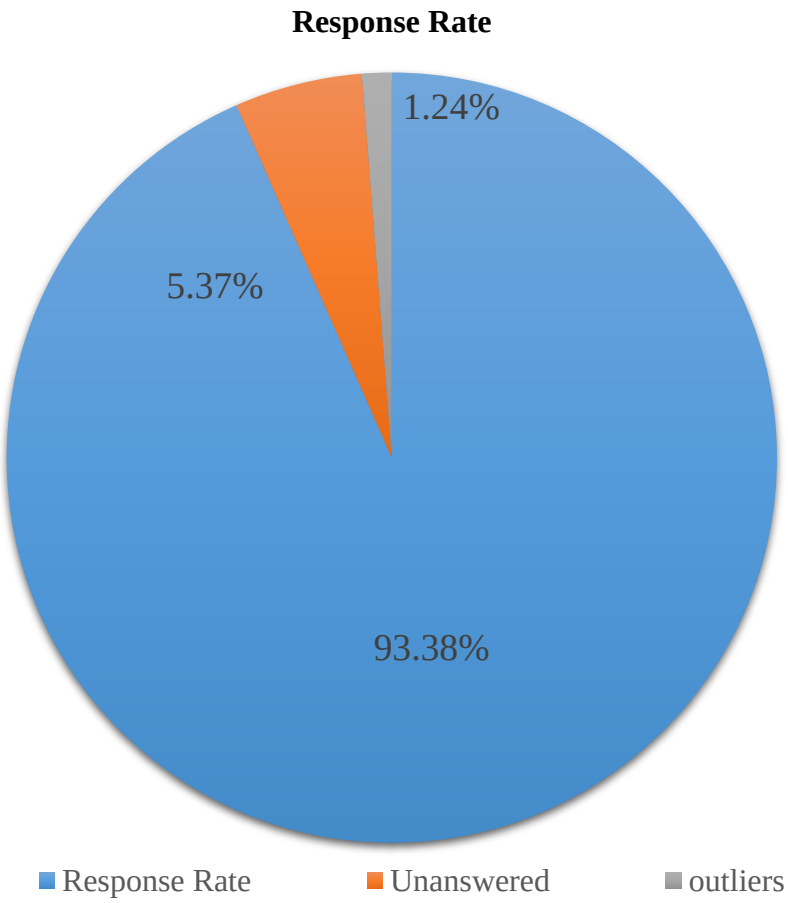


Figure 4.1 Response Rate

Source: Teachers' Questionnaire

Figure 4.1 shows the response rate. The response rate was 93.38%, with 226 completed and returned questionnaires out of 242 received, 13 unanswered, and 3 outliers removed from the analysis.

4.2 Research Presentation, Interpretation and Discussions

4.2.0 Demographic Characteristics of Respondents

To help explain the study's findings, the researcher collected additional information from the participants. This included their age, gender, highest level of education, subjects they teach, years of teaching experience and teaching workload.

4.2.1 Gender of Respondents

The researcher was particularly interested in the gender distribution of the replies. The outcome is depicted in Figure 4.2.

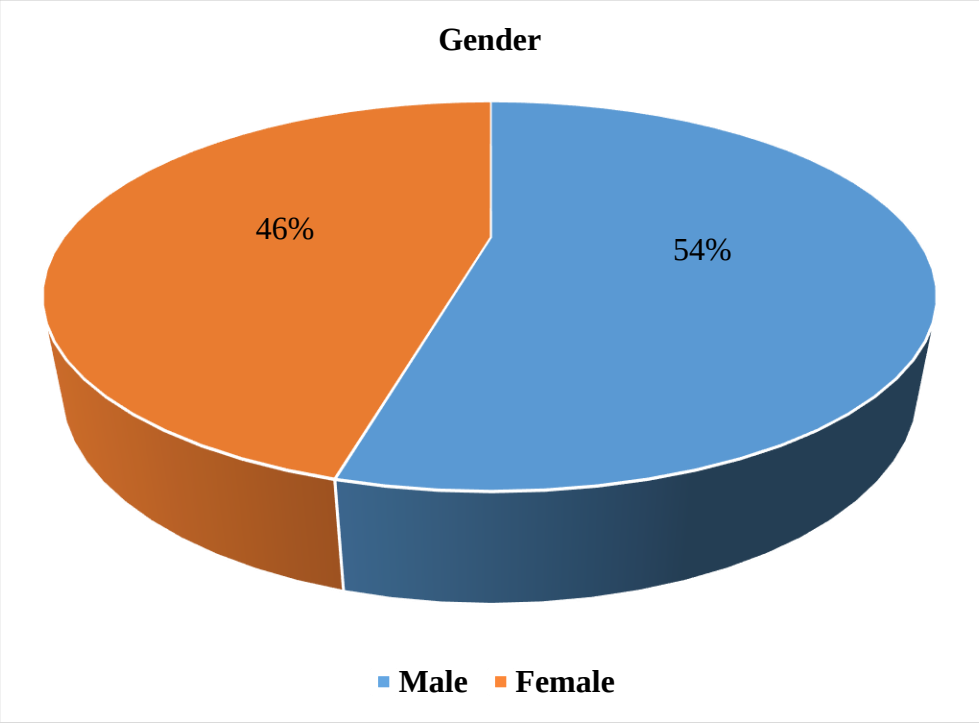


Figure 4.2 **Gender representation**

Source: Teachers' Questionnaire

As shown in Figure 4.2, there is a gender imbalance among teachers in Naivasha Sub County public secondary schools, with male respondents outnumbering female respondents (54.4% to 45.6%).

Gender disparities in teachers can have a substantial influence on the incorporation of Information and Communication Technology (ICT) in the classroom. According to research, females are more motivated and skilled in utilizing technology for educational reasons, although males may be more confident and competent in this field. Gender norms, social expectations, and personal experiences all influence instructors' views toward ICT integration. Female instructors who are skilled at utilizing technological tools can serve as good role models for their students, especially females, encouraging them to pursue STEM-related occupations and closing the gender gap in these domains. In addition, male teachers who embrace ICT integration may challenge gender stereotypes and demonstrate that technology is accessible to all students, regardless of gender. This highlights the significance of encouraging gender-diverse teaching personnel who offer varied views and skill sets that build fair and inclusive learning environments enhanced by ICT integration.

4.2.2 Age Bracket of Respondents

The purpose of this research was to identify the age distribution of the respondents. The outcomes are depicted in Figure 4.3.

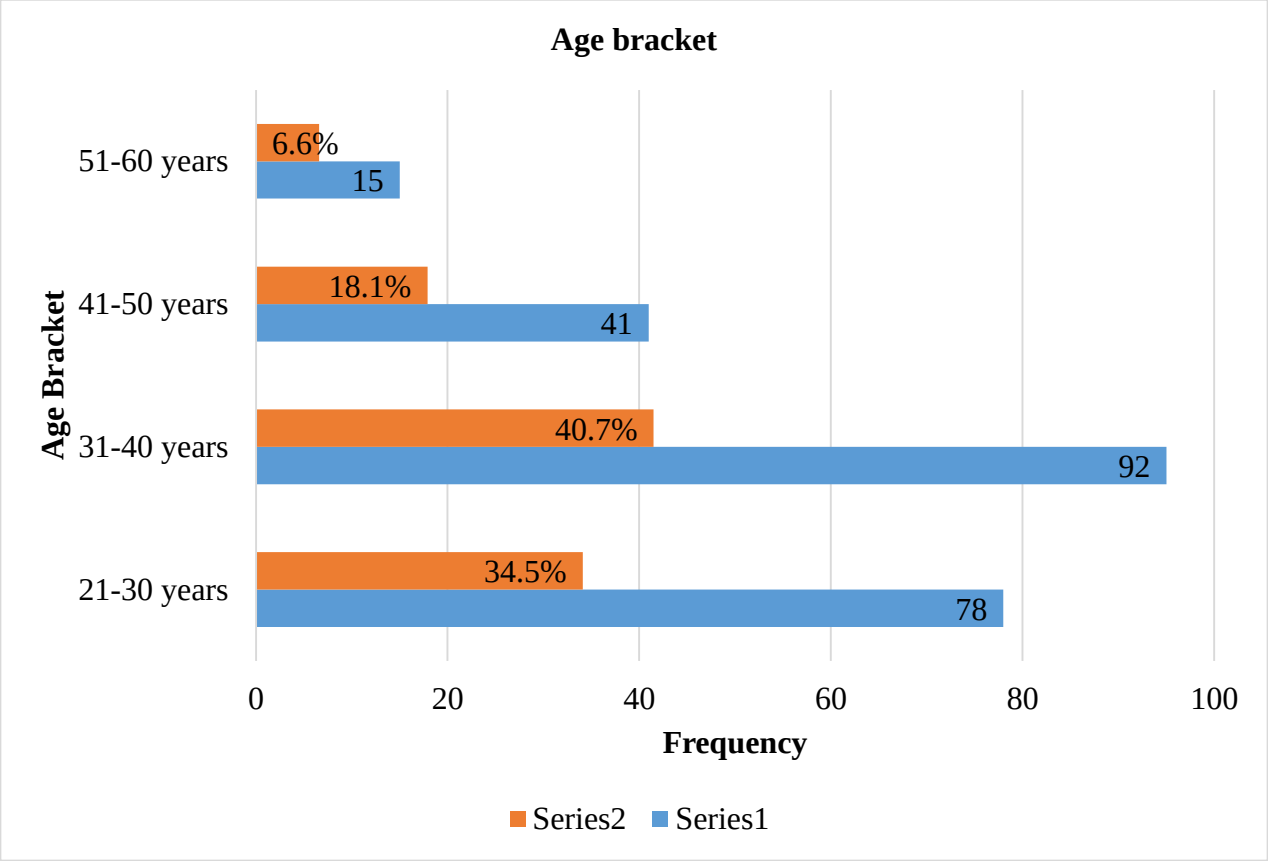


Figure 4.3: **Age brackets of the respondent**

Source: Teachers' Questionnaire

According to the data in Table 4.3, a majority of teachers (40.7%) were between the ages of 31 years and 40 years, while 34.5% of them were 30 years of age or younger. Only 6.6% of the sampled teachers were over 50 years, compared to 18.1% of teachers who were between 41years and 50 years. The majority of secondary school teachers in Naivasha Sub-County are under 40 years old, as can be shown.

The age of teachers has a significant influence on their usage of information and communication technology (ICT) in the classroom. According to Ghavifekr, S. & Rosdy, W.A.W. (2015) younger teachers, who grew up with technology and are more likely to be digital natives, are more comfortable and competent in implementing ICT technologies into their classes, such as whiteboards with animations, online learning platforms, and educational applications. They have the technical abilities as well as the pedagogical expertise required to successfully use these tools to increase student engagement and improve learning results. Older instructors, on the other hand, may struggle to adapt to quickly emerging technology owing to a lack of exposure or familiarity with them. This is not an absolute rule, however, because many seasoned teachers value lifelong learning and actively seek chances for professional development to improve their ICT abilities. These passionate teachers recognize the importance of ICT integration in educating students for the digital world they will join after school. As a result, it is critical for schools and education systems to give ongoing support and training to both new and seasoned teachers, ensuring that all teachers can successfully utilize ICT tools into their teaching methods.

4.2.3 Distribution of the Respondents by their Highest Level of Education

One of the most significant factors that might affect someone's opinions, viewpoint, and capacity to understand any particular social issue is education. An individual's level of education is likely to have some influence on how they respond. As a result, information on the participants' highest level of education or professional certification was sought. Table 4.1 displays the responses they gave.

Table 4.1: Highest Academic Qualification

Highest Academic Qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma	13	5.7	5.7	5.7
	Bachelor	199	88.2	88.2	93.9
	Masters	14	6.1	6.1	100.0
	PhD	0	0.0	0.0	100.0
	Total	226	100.0	100.0	

Source: Teachers' Questionnaire

All of the teachers in the sample, as shown in Table 4.1, had some professional training, though the levels of that training differed. 88.2% of teachers had a Bachelor's degree, the highest level of professional training, while 6.1% had a master's, 5.7% of teachers hold teaching diploma. Professionally qualified teachers need to be adapt at both methodology and content. Therefore, all of the educators in the sampled group were able to use ICT to enhance pedagogy and content for the advantage of the student. This is also congruent with how we consider the knowledge teachers require, such as computer literacy and subject matter, as part of the TPACK technique.

Information and communication technology (ICT) integration in teaching is undoubtedly influenced by the highest level of education. Educators with greater credentials have a more in-depth grasp and expertise of ICT technologies and their potential to improve the learning process. Their intensive training prepares them to successfully incorporate technology into their pedagogical techniques, ensuring that students have interesting and dynamic learning experiences. Additionally, teachers at higher educational levels frequently have additional

professional development options, allowing them to keep current on the newest breakthroughs in ICT integration. This enables teachers to use new teaching tactics that smoothly integrate electronic resources into the curriculum, encouraging higher-order thinking abilities, teamwork, and digital literacy among students. As a result, teachers with the highest levels of education are often more suited to strategically harness the full potential of ICT in their teaching methods for enhanced student results.

4.2.4 Respondents' Teaching Subject/s

The disciplines taught during the secondary school education cycle in Kenya were classified into nine divisions. Participants in this survey were teaching on the following subjects:

- Languages (English & Kiswahili) in Group 1
- Group 2: Languages and Humanities (CRE, Geography, History, and English/Kiswahili)
- Math and Science (Mathematics & Biology, Physics, and Chemistry) Group 3
- Group 4: Mathematics & Technical (Agriculture, Business Education, Computer Studies, and Mathematics & Home Science).
- Group 5: Mathematics & Humanities (Mathematics & Geography, Mathematics & History, Government, and Mathematics & CRE)
- Group 6: Science/Technical (Agriculture, Business Education, Computer Studies, Biology, Physics, Chemistry, and Home Science)
- Humanities (CRE, Geography, History, and Government) make up Group 7.
- Group 8: Humanities & Technical (Home Science, Business Education, Agriculture, Computer Studies).
- Group 9: Sciences (Biology, Physics & Chemistry)

Participants were requested to specify the subject(s) they teach, and the information gathered was used to generate frequencies and percentages.

Table 4.2: Teaching Subject(s)

Groups	Frequency	Percentage
Languages	46	20.5
Languages/ Arts	39	17
Mathematics/ Science	46	20.5
Mathematics/ Technical	19	8.3
Mathematics/ Arts	3	1.3
Science/ Technical	23	10
Arts	16	7
Arts/ Technical	8	3.5
Science	26	11.8
Total	**226**	**100**

Source: Teachers' Questionnaire

Information and communication technology (ICT) integration in educational settings is heavily influenced by the subjects that are taught. The amount to which ICT technologies are used throughout the teaching and learning processes can be determined by the subject chosen. Mathematics and Science subjects, for example, are good options for incorporating ICT resources since they need hands-on interaction with technology. Subjects like as literature or history, on the other hand, may not demand considerable use of ICT but might benefit from

its integration through multimedia presentations, research sources, and collaborative tools. Teachers, regardless of subject matter, play a critical role in fostering ICT integration by successfully incorporating technology into their education. Teachers should be prepared with the digital skills and knowledge required to effortlessly adjust instructional techniques utilizing applicable technology tools. Ultimately, ensuring that all topics incorporate ICT creates an immersive learning environment that prepares students for the workforce of the twenty-first century and improves their entire educational experience.

4.2.5 Respondents' Teaching Load

The number of lessons the respondent had each week was something the researcher was interested in knowing. The outcome is shown in Figure 4.4

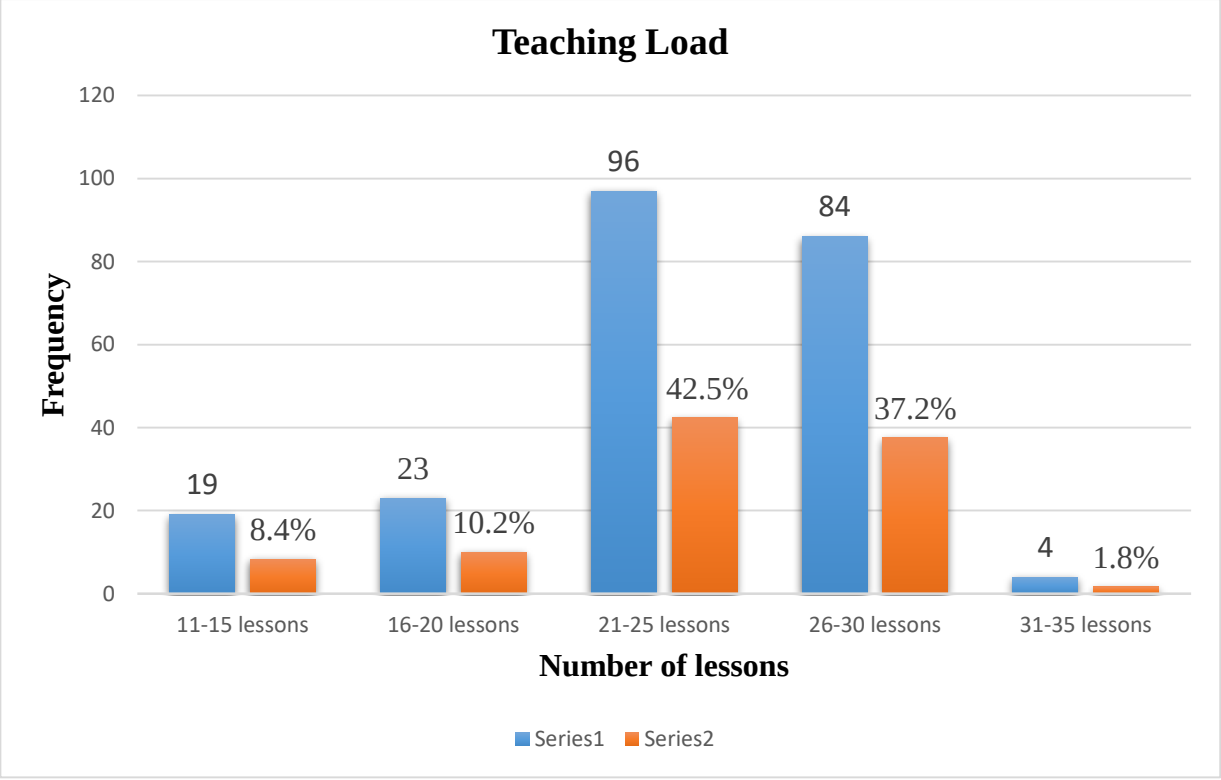


Figure 4.4 **Teaching Load**

Source: Teachers' Questionnaire

The majority of the respondents (42.5%) teach between 21 and 25 lessons each week, as seen in figure 4.4 above. 37.2% of those surveyed said they had 26 to 30 classes per week. The percentages for those who manage between 11 and 20 and between 31 and 35 lessons each week are 10.2% and 1.8%, respectively. Consequently, it may be noted that the respondent's overall workload is manageable therefore it cannot prevent the use of ICT in the classroom.

The teaching load has a significant influence on ICT integration in the classroom. Teachers' capacity to successfully integrate ICT resources into their lessons decreases when they are overworked. Planning, creating, and implementing technology-based activities that correspond with learning objectives takes time and effort. Nevertheless, if teachers are overburdened with administrative duties or have a large number of lessons to manage, they may not have the time or enthusiasm to devote in researching and exploiting ICT resources. Other than that, a heavy teaching load may result in less professional development chances for teachers to improve their technological abilities and pedagogical understanding of effectively utilizing ICT and consequently, decreasing teachers' workloads and providing proper assistance is critical in creating a climate favorable to successful ICT integration, which can eventually lead to greater student engagement and accomplishment in the digital era.

4.2.6 Respondents' Teaching Experience

Table 4.3 displays the respondents' teaching experience at the time of the research.

Table 4.3: **Teaching Experience**

Teaching Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-10 years	161	71.2	71.2	71.2
	11-20 years	37	16.4	16.4	87.6
	21-30 years	26	11.5	11.5	99.1
	31-40 years	2	0.9	0.9	100.0
	Total	226	100.0	100.0	

Source: Teachers' Questionnaire

According to the data, the majority (71.2%) of the 226 instructors who took part in the study via questionnaire had been teaching for 10 years or less. Only 12.4% of survey respondents had more than 20 years of teaching experience. 87.6% of the respondents had no more than 20 years of teaching experience.

ICT integration in the classroom is heavily influenced by teaching experience. Teachers with extensive teaching experience are more likely to successfully integrate ICT tools and techniques into their teaching practices in order to improve student learning. Over the years, these seasoned teachers have developed an in-depth understanding of teaching tactics, curriculum design, and student requirements. As a consequence, they may discover relevant ICT resources that support learning objectives and curricular objectives. Also, their

knowledge with diverse teaching approaches enables them to easily incorporate technology into class plans without jeopardizing educational objectives. Years of teaching experience also allows experienced teachers to negotiate technological hurdles smoothly, fix problems quickly, and offer necessary assistance to students throughout ICT integration activities. Less experienced teachers, on the other hand, may struggle to integrate ICT owing to limited exposure to alternative pedagogical techniques and insufficient training or professional development opportunities related to technology integration in education. As a result, teaching expertise is critical in allowing effective ICT integration because it supports adaptive instruction while leveraging the potential of digital technologies for optimal learning outcomes.

4.3 Teachers' ICT Literacy and ICT Integration in Teaching

The purpose of this study was to explore how teachers' understanding of information and communication technology influences the incorporation of information and communication technology in teaching at public secondary schools in Naivasha Sub County. Integration in secondary public school instruction. The ICT literacy of teachers was assessed by having them respond to questions from Morales' (2013) ICT literacy survey. A variety of issues were frequently measured by the study, including: Basic hardware and software operations, such as computer use, internet navigation, and word processing software use. Capacity to locate, assess, and organize information efficiently, utilizing internet resources like social media, email, and other digital channels for communication and teamwork. Understanding the moral and legal ramifications of utilizing digital technology, such as concerns about security, privacy, and intellectual property. A Likert scale was used for the self-rating questionnaire items, and

responses ranged from strongly disagree, disagree, neither disagree or agree, agree and strongly agree.

At level one (Strongly Disagree), the person lacks understanding of technology. At level two (Disagree), the person has a basic grasp of technology but still needs help to complete tasks. At level 3 (Neither Disagree nor Agree), individual can employ technology to fulfill the project, albeit with some difficulty. In comparison, at level 4 (Agree and Strongly Agree), the individual has mastered the technology and can easily execute the assignment while also instructing others. Table 4.4 displays the replies of the teachers who participated in the research, together with their frequency distribution, percentages, mean, and standard deviations (SD). The keys used were: 1- Strongly Disagree, 2- Disagree, 3- Neither Agree nor Disagree, 4- Agree, 5- Strongly Agree.

Table 4.4: Teachers' ICT Literacy and ICT Integration

	Statement	N	1	2	3	4	5	Mean	Std. Dev
1	I am proficient in using basic ICT tools such as Word processing, PowerPoint and Spreadsheet.	226	28	58	91	37	12	2.77	1.038
		%	12.4	25.7	40.3	16.4	5.3		
2	I am confident in troubleshooting minor ICT issues that arise during teaching.	226	59	75	51	23	18	2.41	1.205
		%	26.1	33.2	22.6	10.2	8.0		

3	I possess advanced skills in using educational software and digital learning platforms.	226	25	42	59	52	48	3.25	1.286
		%	11.1	18.6	26.1	23.0	21.2		
4	My ICT skills enable me to effectively integrate technology into various subject areas.	226	38	36	54	58	40	3.12	1.338
		%	16.8	15.9	23.9	25.7	17.7		
5	I regularly seek out new ICT tools and strategies to enhance my teaching.	226	94	62	40	14	16	2.10	1.214
		%	41.6	27.4	17.7	6.2	7.1		
6	I can adapt ICT tools to meet the diverse learning needs of my students.	226	44	64	68	25	25	2.66	1.227
		%	19.5	28.3	30.1	11.1	11.1		
7	I am aware of current trends and developments in educational technology.	226	39	60	25	26	36	2.82	1.298
		%	17.3	26.5	28.8	11.5	15.9		
8	I am able to assess the effectiveness of ICT integration in improving student learning outcomes.	226	34	56	52	45	39	3.00	1.322
		%	15.0	24.8	23.0	19.9	17.3		
9	I actively collaborate with colleagues to share ICT integration best practices.	226	63	65	60	17	21	2.42	1.231
		%	27.9	28.8	26.5	7.5	9.3		

10	I believe that enhancing my ICT literacy positively impacts student engagement and achievement.	226 %	18 8.0	44 19.5	75 33.2	52 23.0	37 16.4	3.20	1.167
	Mean		19.50 %	24.87 %	27.22 %	15.45 %	12.96 %	2.78	1.233

Source: Teachers' Questionnaire

The ability to "adopt, adapt, and use digital devices, applications, and services" is the definition of information and communication technology (ICT) literacy according to JISC (2014).

This refers to a learner's capacity to handle the technological prerequisites of becoming an online learner. Table 4 contains further information about teachers' comprehension of ICT integration in the classroom. As per the information gathered from the participants, 21.7% expressed agreement or strong agreement that they had the ability to use fundamental ICT tools including Word Processing, PowerPoint, and Spreadsheet. Forty-three percent said they were neither in agreement nor disagreement. There were 25.7% of respondents who disagreed and 12.4% who strongly disagreed.

The majority of respondents expressed lack of confidence in their ability to solve small ICT difficulties that may develop during teaching. Eight percent of the respondents who took part in the study overall strongly agreed that they had confidence in their ability to solve small ICT difficulties. A little over 10.2% of respondents agreed with the assertion, 22.6% were undecided, and 33.2% and 26.1% strongly disagreed, suggesting that they could need help troubleshooting small ICT difficulties that come up when teaching.

Teachers utilize digital platforms and instructional tools less often, although on occasion, to conduct online classes. The study found that 21.2% of participating teachers strongly believed that they have advanced skills in using digital platforms and educational software in their teaching. Twenty-three percent agreed, while 26.1% were unsure. The percentages of respondents who disagreed and strongly disagreed were 18.6% and 11.1%, respectively. A wide range of software is produced with education in mind. The term encompasses all educational solutions, including learning management systems and reference software. It is nevertheless accurate, nonetheless, that the goal of educational software solutions is to raise the productivity and efficacy of particular instructional facets.

The researcher sought to determine whether teachers employed technological skills to help them meet class objectives in order to successfully incorporate ICT into a variety of subject areas. The majority of respondents agreed or strongly agreed that their knowledge of ICT allow them to successfully integrate ICT into their teaching. In addition to 17.7% strongly agreeing, at least 25.7% of respondents agreed. Twenty-three percent did not agree or disagree. Merely 15.9% and 16.8% of respondents, respectively, disagreed or strongly disagreed.

Rapid technological advancement frequently results in fresh tools with improved functionality, usability, and educational objectives. Maintaining current means that your teaching strategies will always be applicable and efficient. Students of today are accustomed to utilizing technology on a daily basis; they are digital natives. Using both fresh and well-known resources in your lessons helps motivate and interest students more. Innovative elements that can support real-time feedback, personalization of learning experiences, and differentiation of education are frequently included in new ICT products. Learning may become more accessible and engaging with these improvements. Of all respondents, 41.6% strongly disagreed and

27.4% disagreed with the assertion that they often look for new ICT tools and techniques to improve teaching. A total of 17.7% expressed no opinion. The percentages of respondents who agreed and strongly agreed with the statement were 6.2% and 7.1%, respectively. They assist students in gaining the digital literacy skills necessary for their future education and employment by using modern technology into their teaching strategies. All students, even those with special education requirements, can benefit from the capabilities that new technologies frequently offer, which can accommodate varying learning styles and demands. Additionally, learning new ICT techniques and tools makes one more motivated and self-assured in their teaching practice, which advances their own professional development.

Students in a regular classroom differ in their aptitude and background knowledge. Differentiating education by assigning more difficult assignments to advanced students and providing extra help for those who might be having difficulties is made possible by adapting ICT technologies. All students can interact with the information in a way that best fits their learning style according to the adaptability of ICT tools, which can offer different representations of the topic. Students with special educational needs, such as those with physical impairments, learning problems, or language hurdles, may be present in diverse classrooms.

By customizing ICT resources, we can guarantee that these children can engage with the curriculum and all of its activities. ICT tools may be adapted to increase accessibility. For example, they can include font size adjustments, subtitles for movies, and screen readers for students who are blind or visually impaired. This guarantees that all students, despite any physical or cognitive limitations, have access to instructional resources. Because students come from a variety of cultural backgrounds, learning materials may be made more relevant

and considerate of these variations by modifying ICT tools. In addition to improving student involvement, this may make the classroom more welcoming to all students.

According to survey data, 19.5% and 28.3% of participants, strongly disagreed and disagreed respectively, with the assertion that they adapt ICT tools to accommodate students' varied learning requirements. Thirty percent were neutral, while 22.2% agreed or strongly agreed with the statement. Adapting ICT technologies enables one to personalize learning experiences to the specific needs of each learner. This individualized approach allows students to study at their own speed, focus on areas for improvement, and explore interests that drive them. Similarly, adapting ICT technologies helps to level the playing field, giving all students, regardless of starting place, similar possibilities to achieve. It helps to close gaps that may arise owing to socioeconomic level, language competence, or other factors. When students believe their specific needs are being satisfied, they are more likely to participate actively in class and take charge of what they learn.

For whether teachers were aware of current trends and advancements in educational technology, 15.9% strongly agreed. There were 11.5% who agreed, 26.5% who disagreed, and 17.3% who strongly disagreed. Twenty-eight point eight percent of the respondents did not agree or disagree. New advances in educational technology frequently incorporate tools and resources that improve accessibility for students with varying requirements. Staying current enables you to incorporate technologies that encourage inclusion, ensuring that all students have equal access to learning opportunities. Staying up to date on educational technology advances helps you advance professionally. It enables you to keep current on best practices, broaden your skill set, and establish yourself as a thought leader in your sector. As technology advances, so do the skills and information that students require. By incorporating current trends

into teaching methods, they may help students prepare for future careers and challenges in a rapidly changing world.

Schools and teachers must achieve particular learning objectives and requirements. Assessing the effectiveness of ICT integration ensures that these tools are linked with educational goals and help to achieve desired learning results. To ensure effective ICT integration, teachers must be able to assess instructional materials from the cloud. Of all the participants in the survey, 17.3% strongly agreed and 19.9% agreed that they can analyze materials for the effectiveness of ICT integration in increasing students' learning outcomes. Those who did not agree or disagree accounted for 23%, while those who disagreed or strongly disagreed comprised 24.8% and 15%, respectively. The major purpose of incorporating ICT into education is to improve learning. By measuring its success, you may establish whether the tools and tactics you're utilizing are genuinely improving student comprehension, retention, and application of information.

Assessment gives tangible information on how ICT technologies influence student learning. This data may help teacher decide which technology to keep, change, or replace, resulting in better informed and successful teaching methods. Not every ICT tool or strategy is effective for every topic, grade level, or student group. Assessing effectiveness enables one to evaluate which techniques are successful and which require improvement, allowing you to customize your ICT integration to better match the requirements of your students. Assessment assists in identifying any hurdles or impediments to effective ICT integration, such as technical concerns, a lack of student involvement, or difficulty with usage. Addressing these issues is critical to improving the use of technology in the classroom. The findings of effectiveness

evaluations can help you plan your professional development, emphasizing areas where more training or new skills are required to better integrate ICT into your teaching.

Sharing best practices enables teachers to learn from one another's experiences. Individuals may enhance their ICT integration methods by studying what works best in various circumstances. When colleagues interact and share best practices, it contributes to a more uniform approach to ICT integration throughout an organization. This uniformity guarantees that all students or team members receive comparable levels of technology-enhanced education or services. Collaboration encourages creativity. Colleagues can generate fresh ideas and methods by discussing and trying with various ICT tools and techniques that they would not have thought of on their own. According to the survey, 27.9% of respondents strongly disagreed and 28.8% disagreed with the assertion that they actively collaborated with their colleagues to exchange best practices for ICT integration. The percentage of those who were neutral was 26.5%, while only 7.5% agreed and 9.3% strongly agreed with the statement respectively.

There might be challenges to ICT integration, ranging from pedagogical barriers to technological problems. Colleagues may tackle these issues together in collaborative contexts, providing a range of viewpoints and solutions. Actively collaborating with others is one way to continue your professional development. By keeping people informed about the newest ICT tools and trends, it helps people maintain their abilities in a quickly changing technical environment. Colleagues may prevent redundant work by exchanging best practices, which speeds up the integration process. If someone has previously created a useful resource or tactic, for instance, others can utilize it and modify it instead of having to start from scratch. Working

together gives people inspiration and moral support. ICT integration might be challenging but it can be made easier and less intimidating by teaming up with colleagues. Colleagues who collaborate to integrate ICT are better able to match their practices to the institution's overall aims and objectives, ensuring that the technology is used efficiently to achieve these objectives.

ICT literacy provides students with the necessary abilities for efficiently navigating and utilizing technology. When students believe they can utilize digital technologies effectively, they are more likely to interact with instructional content and actively participate in learning activities. In today's digital age, technology is profoundly embedded in daily life. Believing in the benefits of ICT literacy prepares students for the demands of the modern world, making learning more relevant and meaningful to them. ICT technologies have the potential to alter traditional learning by making it more interactive, dynamic, and customized. When teachers believe in the power of ICT literacy, they are more likely to properly incorporate these technologies, resulting in higher levels of student engagement and, ultimately, better academic achievements. ICT literacy provides access to a diverse set of learning tools, including online libraries, educational videos, simulations, and more. This access can help students comprehend more and develop a stronger interest in the subject. According to the survey, 16.4% strongly agreed and 23.0% agreed that enhancing ICT literacy has a beneficial influence on students' involvement and achievement. A minor proportion of 8.0% strongly disagreed, whereas 19.5% disagreed while 33.2% of respondents did not disagree or agree.

Critical thinking abilities are developed because ICT tools frequently demand students to examine, evaluate, and produce material. Believing in the benefits of ICT literacy promotes the use of these resources, which results in more engaged and deliberate learning activities.

When they can utilize technology in ways that are relevant to their daily lives, students are frequently more motivated. Believing in the benefits of ICT literacy motivates teachers to create more interesting classes, which can boost student engagement and improve academic achievement.

This study supports earlier findings about the status of teachers who lacked ICT literacy (Harendita, 2013; Kusumo et al., 2012). It has been observed that today teachers are more literate and eager to include more ICT activities in their lesson plans. The majority of instructors are familiar with a variety of ICT resources and teaching strategies that can be applied in the classroom. They can access the internet to gather information, use ICT tools to improve their instruction, and give their students access to digital resources and ICT materials that are related to the subjects they are teaching.

Teachers' expertise undoubtedly influences their self-efficacy in higher education ICT deployment. Teachers must increase their digital literacy abilities and stay current on technology advances or risk falling behind. Parker (2010) points out the ideal twenty-first-century teaching framework, what knowledge is, what literacy is, and how learning should be. Some teachers' roles will likely be transformed by technology in the future; as a result, instructors must be ICT literate and prepared to educate in the digital era of technology.

4.4 Teachers' Perceptions of ICT Teaching Integration

The study's second purpose was to investigate teachers' perceptions on ICT integration in classrooms in Naivasha Sub-County public secondary schools. Table 4.5 demonstrates how teachers' perspectives on factors influencing teacher perceptions were scored using a Likert scale ranging from strongly agree to strongly disagree. The keys used were: 1- Strongly Disagree, 2- Disagree, 3- Neither Agree nor Disagree, 4- Agree, 5- Strongly Agree.

Table 4.5*:* Teachers' Perception on ICT Integration

	Statement	N	1	2	3	4	5	Mean	Std. Deviation
1	ICT tools enhance the effectiveness of my teaching.	226	1	13	27	102	83	4.24	0.763
		%	0.4	5.8	11.9	45.1	36.7		
2	I feel confident using ICT in my teaching practices.	226	5	7	16	89	109	4.35	0.826
		%	2.2	3.1	7.1	39.4	48.2		
3	ICT helps me differentiate instruction to meet diverse student needs.	226	6	5	27	95	93	4.29	0.813
		%	2.6	2.2	11.8	41.5	41.9		
4	It is important to encourage students to conduct online research on the subjects they are studying.	226	4	8	24	92	98	4.31	0.801
		%	1.8	3.5	10.6	40.7	43.4		
5	ICT use in the classroom has a positive influence on students' capacity for higher-order thinking.	226	7	7	13	96	103	4.31	0.879
		%	3.1	3.1	5.8	42.5	45.6		
6	ICT facilitates communication of students and their teachers.	226	7	13	36	98	72	4.12	0.907
		%	3.1	5.8	15.9	43.4	31.9		

7	For students to be ready to live and work in the twenty-first century, ICT integration in the classroom is essential.	226	1	11	12	78	124	4.44	0.771
		%	0.4	4.9	5.3	34.5	54.9		
8	A lot of material may be covered in a short amount of time when ICT is integrated into the class.	226	5	7	15	83	116	4.39	0.831
		%	2.2	3.1	7.0	36.2	51.5		
9	I believe ICT is essential for preparing students for future careers.	226	6	12	49	104	55	4.05	0.847
		%	2.7	5.3	21.7	46.0	24.3		
10	When teaching with ICT integration, students pay more attention.	226	3	6	11	92	114	4.41	0.750
		%	1.3	2.7	4.9	40.7	50.4		
	Mean		1.98 %	3.95 %	10.20 %	41.00 %	42.88 %	4.29	0.819

Source: Teachers' Questionnaire

Table 4.5 indicates that 45.1% of teachers agreed and 36.7% strongly agreed that ICT tools enhance the effectiveness of teaching. However, 11.9% of respondents were neutral, 5.8% disagreed, and 0.4% strongly disagreed with the assertion. The majority of teachers (48.2%) strongly agreed, and 39.4% agreed, they feel confident using ICT in their teaching practices; however, 7.1% of respondents were neutral to the statement and 5.3% either disagreed or strongly disagreed with the statement. The majority of teachers (83.2%) either strongly agreed

or agreed that ICT helps them differentiate instruction to meet diverse student needs. According to the data collected 11.9% remained neutral while 4.9% of the respondents either disagreed or strongly disagreed.

A large percentage of teachers, or 43.4%, highly agreed with the statement that “It is important to encourage students to conduct online research on the subjects they are studying," followed by 40.7% of those who agreed, 10.6% of those who were neutral, and only 5.3% of those who either strongly opposed or disagreed.

For the statement “ICT use in the classroom has a positive influence on students' capacity for higher-order thinking." 45.6% of instructors strongly agreed and 42.5% agreed with the statement while just 6.2% disagreed or strongly disagreed. However, 5.8% of teachers were undecided.

The majority of teachers 43.4% agreed, and 31.9% strongly agreed, that ICT facilitates communication of students and their teachers, while 15.9% were undecided. Those who either disagreed or strongly disagreed accounted for 5.8% and 3.1% respectively. For students to be ready to live and work in the twenty-first century, ICT integration in the classroom is essential, 54.9% of teachers strongly agreed, 34.5% agreed, undecided were 5.3% and strongly disagreed were 4.9% respectively. According to the study, 51.3% of teachers strongly agreed, and 36.7% agreed that when ICT is used in teaching, a lot of content is covered in a short period of time. 6.6% of the teachers chose a neutral response and 5.3% disagreed or strongly disagreed.

Moreover, when ICT integration is implemented in the classroom, 46.0% participants agreed and 24.3% strongly agreed that they believe ICT is essential for preparing students for future careers. On the other hand, 8.0% disagreed or strongly disagreed, while 21.7% were unsure.

The study also revealed that 40.7% of respondents agreed and 50.4% strongly agreed that students are more attentive when ICT integration is utilized in teaching. Only 4.0% of respondents disagreed or strongly disagreed, with 4.9% remaining neutral. Most teachers either agreed or agreed strongly with the statements. This demonstrates that the vast majority of instructors felt favorably about using ICT in the classroom.

According to the findings of previous research (Ndibalema, 2014), instructors agree that ICT may be utilized as a pedagogical tool to improve their teaching when enough resources and infrastructure are available. Additionally, a positive perception among teachers about the use of ICT when teaching has been identified as a key component in motivating teachers to do so (Player-Koro, 2012). Teachers who participated in the study had a positive mindset toward the use of ICT in the teaching process. The findings of this study were consistent with those of previous research. Semerci and Aydn (2018) conducted a study on 353 teachers working in various schools in Ankara, Turkey, to determine their views toward using ICT in the classroom. They used a descriptive research approach and questionnaire. Teachers exhibited a high degree of positive perception and low degree of worry toward the use of ICT in education.

Hong (2016) conducted a study on teachers' perceptions on ICT integration using open-ended, semi-structured interviews with 23 instructors from various locations in Colorado, the United States. According to the poll, instructors who took part in it had a favourable opinion of ICT as a teaching instrument. In spite of their class or gender, pre-service biology instructors showed good attitudes towards the use of ICT in biology instruction, according to a 2012 study (Yapici and Hevedanli).

Although having a positive perception of ICT is one of the variables that contribute to its integration in education, it is not sufficient to integrate ICT into teaching on its own.

Adegbenro, Gumbo, and Olakanmi (2017) found that teachers had a favorable opinion of integrating ICT into their lessons. Teachers were eager to learn more about using ICT into the classroom. However, because they lacked the expertise and pedagogical abilities to use ICT effectively, teachers encountered challenges integrating it into their daily activities in the classroom.

4.5 Teachers' Experience and Integration ICT in Teaching

The third and final objective of the study was to examine at how teaching experience influences the integration of ICT in public secondary schools in Naivasha Sub County. Respondents with 10 years or less of teaching experience accounted for 70.7% of all respondents. Table 4.3 shows that persons with 11- 20 years of teaching experience come in second (17.0%). According to the findings, the majority of respondents are new to the teaching profession. To answer the offered questions, respondents were asked to score themselves on characteristics that define whether teacher experience influences ICT integration, as stated in Table 4.6, using a rating system based on Likert scales ranging from strongly agree to strongly disagree. The keys used were: 1- Strongly Disagree, 2- Disagree, 3- Neither Agree nor Disagree, 4- Agree, 5- Strongly Agree.

Table 4.6*:* Teachers' Experience and ICT Integration

	Statement	N	1	2	3	4	5	Mean	Std. Dev
1	My years of teaching experience have prepared me to effectively integrate ICT into my lessons.	226	6	29	59	90	42	3.85	0.962
		%	2.7	12.8	26.1	39.8	18.6		
2	I find that my teaching experience helps me anticipate how ICT tools can enhance student learning.	226	18	51	59	63	35	3.47	1.219
		%	8.0	22.6	26.1	27.9	15.5		
3	I am open to adopting new ICT tools and strategies despite my teaching experience.	226	5	12	21	86	102	4.28	0.888
		%	2.2	5.3	9.3	38.1	45.1		
4	My teaching experience enables me to integrate ICT seamlessly across different subject areas.	226	13	32	72	84	25	3.67	1.028
		%	5.8	14.2	31.9	37.2	11.1		

5	I believe that experienced teachers are better able to troubleshoot ICT issues during teaching.	226	7	21	48	91	59	4.00	0.950
		%	3.1	9.3	21.2	40.3	26.1		
6	I rely on my teaching experience to adapt ICT tools to meet the diverse needs of my students.	226	17	21	45	76	67	3.87	1.170
		%	7.5	9.3	19.9	33.6	29.6		
7	I use my teaching experience to evaluate the effectiveness of ICT integration on student engagement and learning outcomes.	226	48	72	40	41	25	2.85	1.393
		%	21.2	31.9	17.7	18.1	11.1		
8	I actively mentor less experienced colleagues in integrating ICT into	226	26	48	41	73	38	3.42	1.301
		%	11.5	21.4	18.1	32.3	16.8		

	their teaching practices.								
9	I perceive that my teaching experience positively influences student outcomes when ICT is integrated effectively.	226 %	10 4.4	30 13.3	11 4.9	78 34.5	97 42.9	3.98	1.189
10	I continuously reflect on how my teaching experience influences my approach to ICT integration.	226 %	11 4.9	25 11.1	59 26.1	82 36.3	49 21.7	3.59	1.093
	Mean		7.13 %	15.12 %	20.13 %	33.81 %	23.81 %	3.70	1.119

Source: Teachers' Questionnaire

According to the responses, 39.8% of those sampled agreed that “Years of teaching experience have prepared them to effectively integrate ICT into their lessons." The number of respondents who were impartial about the remark were 26.1%, 18.6% strongly agreed, 15.5% of respondents either strongly disagreed or disagreed. “Teaching experience helps them predict how ICT technologies might improve student learning”. Of the respondents who participated 27.9% agreed with the statement, 26.1% were neutral, 15.5% strongly agreed, 8.0% strongly disagreed whilst 22.6% disagreed. Majority of the respondents were open to adopting new ICT

tools and strategies despite their teaching experience, according to the study 45.1% strongly agreed and 38.1% agreed with this statement, respectively. Seven point five percent either disagreed or strongly disagreed, while 9.3% remained undecided. According to survey, 48.3% of participants either agreed or strongly agreed with the statement that teaching experience enables them to integrate ICT seamlessly across different subject areas. With 14.2% disagreeing, 5.8% strongly disagreeing and 31.9% neutral.

In the opinion of the respondents, 40.3% believe that experienced teachers are better able to troubleshoot ICT issues during teaching. Among the respondents, 26.1% strongly agreed with the statement, 21.2% were neutral, and 9.3% and 3.1% disagreed and strongly disagreed, respectively. The majority of respondents said that they rely on their teaching experience to adapt ICT tools to meet the diverse needs of their students. Those in favor were 33.6%, 29.6% strongly in favor, 19.9% neutral, and 16.8% either disagreed or disagreed severely. According to the study 31.9% of respondents disagreed with the assertion that "they use their teaching experience to evaluate the effectiveness of ICT integration on student engagement and learning outcomes," with 21.2% strongly disagreed with, 17.7% were neutral, and 29.2% agreed or strongly agreed with the statement. According to the data obtained, 31.9% of respondents agreed that they were actively mentoring less experienced colleagues to integrate ICT into their teaching methods. In response to the statement, 18.1% were unsure, 16.8% strongly agreed, 21.2% disagreed, and 11.5% strongly disagreed.

Among those who took part, 34.5% said they agreed with the statement that, "they believed that when ICT is integrated effectively, their teaching experience positively influences student outcomes." Of the total number of respondents 4.9% said they were impartial, and 42.9% said they strongly agreed, 13.3% disagreed and 4.4% strongly disagreed. The results showed that

36.3% of the sample agreed with the statement that "they continuously reflect on how their teaching experience influences their approach to ICT integration." Sixteen percent of respondents strongly disagreed or disagreed with the statement, while 27.7% strongly agreed. Of the total number of respondents, 26.1% were undecided.

Teaching experience is important in developing teacher confidence in ICT integration. Over the years, experienced teachers have had the opportunity to investigate and experiment with numerous digital tools and techniques. They have seen how technology has improved student learning and their own teaching approaches. This cumulative expertise gives teachers confidence in their capacity to effectively use technology, troubleshoot technical issues, and adapt to new digital platforms. As a result, experienced teachers are more likely to accept ICT integration and look for new ways to improve their instruction. The development of an ICT skill set is inextricably tied to teaching experience. Teachers improve proficiency in using technological tools and applications as they gain experience. They have had the chance and time to learn from their own experiences, attend professional development programs, collaborate with others, and investigate online resources. During this process, experienced teachers build a reserve of technological abilities and tactics that allow them to easily integrate ICT into their teaching. Their understanding goes beyond technical knowledge; they grasp the pedagogical implications of technology use and how to successfully use it to support learning objectives.

In today's digital world, using information and communication technology (ICT) into subjects for instruction has become critical. As a teacher who is committed to providing high-quality education, you must understand the influence of technology on students' learning experiences. Teachers can improve their teaching techniques and provide real-world relevance to the

curriculum by using ICT resources such as interactive whiteboards, multimedia presentations, and instructional software. Furthermore, using online resources and platforms extends participation beyond the typical classroom context, encouraging the development of cooperation, critical thinking, and problem-solving abilities. It is also critical for teachers to keep up with technology changes by attending professional development courses or participating in continuous learning initiatives. Teachers may build dynamic learning environments that equip students to flourish in a digitally-oriented world while also promoting their excitement for lifelong learning by effectively integrating ICT into teaching courses.

4.6 Level of ICT Integration in Teaching

The research investigation focused on how much teachers incorporated ICT into their teaching methods. The variable was determined by looking at how quickly teachers integrated ICT into different areas of instruction. Table 4.7 shows the percentage of teacher responses with different levels of agreement, along with the average and standard deviation. The keys used were: 1- Strongly Disagree, 2- Disagree, 3- Neither Agree nor Disagree, 4- Agree, 5- Strongly Agree.

Table 4.7: **ICT Integration in Teaching**

	Statement	N	1	2	3	4	5	Mean	Std. Dev
1	I use ICT tools regularly in my teaching.	226	13	74	77	47	54	2.90	1.013
		%	5.8	32.7	34.1	20.8	23.9		
2	Teachers in my school are adequately trained to integrate ICT into their lessons.	226	8	20	77	47	15	3.48	1.008
		%	3.5	8.8	34.1	20.8	6.6		
3	ICT is seamlessly integrated into the curriculum across all subjects in my school.	226	6	12	41	103	64	3.92	0.955
		%	2.7	5.3	18.1	45.6	28.3		
4	In my school, students have access to up-to-date ICT resources.	226	4	19	95	65	43	3.55	0.952
		%	1.8	8.4	42.0	28.8	19.0		
5	In my school assessment methods includes ICT-based tasks.	226	62	64	57	23	20	2.45	1.240
		%	27.4	28.3	25.2	10.2	8.8		
6	ICT enhances student engagement and motivation in learning.	226	49	70	56	23	28	2.61	1.275
		%	21.7	31.0	24.8	10.2	12.4		

7	There is sufficient technical support available for ICT use in my school.	226 %	12 5.3	36 15.9	89 39.4	52 23.9	37 16.4	3.03	1.409
8	ICT improves collaboration and communication among students and teachers.	226 %	49 21.7	34 15.0	43 19.0	61 27.0	37 16.4	3.29	1.085
9	In my school the presence of ICT serves as a catalyst for students' interaction among themselves.	226 %	18 8.0	51 22.6	80 35.4	54 23.9	23 10.2	3.06	1.092
10	The availability of ICT provides more opportunities for students to work independently.	226 %	11 4.9	25 11.1	59 26.1	82 36.3	49 21.7	3.59	1.093
	Mean		10.28 %	17.91 %	29.82 %	24.75 %	17.24 %	3.19	1.112

Source: Teachers' Questionnaire

The regular use of ICT in the classroom helps students acquire digital literacy skills, which are essential in today's digital world. Familiarity with technology equips them for future educational and professional chances. Technology is becoming increasingly important in

today's job. By incorporating ICT into lessons, you will be assisting students in developing the skills they will require to succeed in a technologically advanced world. Of the survey participants, 5.8% strongly disagreed, 32.7% disagreed with the assertion that they utilize ICT tools in their teaching on a regular basis, 34.1% were unsure, with 20.8% agreeing and 6.6% strongly agreeing. ICT use encourages a culture of lifelong learning since it helps students become used to looking for and using new resources on their own.

Highly trained teachers with ICT skills may design more dynamic and captivating classes that boost student learning and yield better results. In order to achieve curricular goals, they can more effectively use technology into their pedagogy. Teachers get more comfortable with ICT through training. It is more probable for a self-assured teacher to try out novel technologies, come up with creative lesson plans, and deal with any technological difficulties that come up in class. “Teachers in their school are adequately trained to integrate ICT into their lessons” is a statement that only 18.8% of the teachers strongly agreed, 27% agreed, 8.8% disagreed and 3.5% strongly disagreed respectively with the majority of respondents (42.0%) remaining uncertain.. A well-trained teacher may reduce interruptions and create a good learning environment by solving small technical problems and keeping the classes moving along smoothly.

Seamless ICT integration guarantees that all students, regardless of the subject or teacher, have equal access to the benefits of technology in learning. This is especially significant for disabled students, who might benefit from assistive technologies. ICT technologies may help learners in many subject areas by providing a variety of materials and strategies for researching knowledge. The majority of participants agreed or strongly agreed with the statement that ICT is seamlessly incorporated into the curriculum across every subject in their school, accounting

for 45.6% of total responses; strongly agreed 28.3%, undecided 18.1%, disagreed 5.3% and strongly disagreed 2.7%.

Up-to-date ICT resources guarantee that students have access to the most recent information, research, and instructional content, which is critical for learning and remaining current on advancements in many sectors. In today's digital world, being aware of technology is essential. Access to modern ICT resources enables students to learn the skills required to navigate and successfully use digital technologies, preparing them for the future workforce. Ensuring that every student have access to current ICT resources helps to close the digital gap. It fosters educational fairness by giving all students, regardless of socioeconomic status, with the necessary tools for success. According to the study, 19% of respondents strongly agreed and 28.8% agreed with the assertion that their school provides students with up-to-date ICT resources respectively. There were 42% who were uncertain and 10.2% who either disagreed or strongly disagreed. Up-to-date ICT resources improve communication among learners, teachers, and parents. They also improve administrative operations, allowing schools to better manage records, timetables, and other critical activities.

Evaluating students' capacity to utilize ICT effectively is critical to assuring their readiness for future academic and professional situations. ICT enables a wide range of assessment methods, including simulations, interactive quizzes, and multimedia projects, which can give a more thorough evaluation of a student's comprehension and skills. ICT-based examinations might be more interesting for students than traditional techniques. Interactive and multimedia aspects can make examinations more engaging and less stressful. ICT can automate grading for specific types of tests, saving teachers time and guaranteeing uniformity in evaluation. ICT-based evaluations may be administered online, allowing students to complete them remotely,

which was especially useful during the COVID-19 epidemic or in distant learning contexts. The majority of respondents (28.3%) disagreed with the assertion that their school's evaluation techniques used ICT-based assignments. Those who strongly disagreed made up 27.4%, while 25.2% were unsure. Only 19.9% of respondents indicated they agreed or strongly agreed with the statement. The research revealed that the vast majority of teachers do not use online assessment platforms such as Google Classroom, Quizlet, Kahoot, and others.

Many technological tools give rapid feedback on tasks and quizzes, allowing students to swiftly determine whether they did it correctly or incorrect. This rapid answer might help students stay motivated by providing a clear feeling of progress. Digital platforms frequently allow students to watch their progress over time, which may be encouraging as they see their abilities grow and their goals completed. ICT expands learning beyond the classroom, allowing students to complete their studies at home. This adaptability can boost motivation since students can study in places where they are most comfortable. Most respondents (31%) disagreed with the assertion that ICT improves student engagement and motivation in studying. With 21.7% strongly disagreeing and 24.5% undecided. The percentages of those who agreed and strongly agreed were 10.2% and 12.4% respectively. ICT improves student engagement and motivation by making learning more interactive, personalised, collaborative, and innovative. By incorporating ICT into education, schools may create a more engaging and interesting learning environment that suits students' different needs and interests.

The survey found that 23% of participants believed that there is adequate technical assistance available for ICT use at their educational institution. Of the respondents, 16.4% strongly agreed with the statement, 39.4% were unsure, 15.9% disagreed and 5.3 strongly disagreed respectively. For ICT to be used in schools effectively, there must be enough technical

assistance. It makes sure that ICT resources run well, helps students and teachers, safeguards investments, upholds security, and encourages creativity. ICT in education cannot reach its full potential without sufficient technical assistance, which might result in interruptions, underuse of resources, and security threats.

The results showed that while 17.3% of participants strongly agreed, 27% agreed that ICT enhances student and teacher collaboration and communication, 15% disagreed, 21.7% strongly disagreed and 19% of the participants expressed indecision. With the use of ICT, forums and other online spaces may be created so that teachers and learners can interact, exchange ideas, and work together on assignments. These forums promote constant communication and information exchange. Students can work together on group projects, share materials, and instruct one another via the use of ICT technologies. Students may collaborate, share ideas, and learn from one another through online discussion panels, group chats, and collaborative papers, which promotes a feeling of community and collaboration.

According to the study, the majority of respondents (35.4%) said they were neither in agreement nor disagreement with the assertion that ICT in school encourages student engagement. In agreement and in strong agreement with the statement were 23.9% and 10.2%. With 8.0% strongly disagreed and those who disagreed making about 22.6% of the total. Students may collaborate on projects, exchange materials, and have discussions about ideas using platforms such as Google Classroom, Microsoft Teams, and other Learning Management Systems (LMS). This promotes a collaborative learning environment. Students can communicate with one another through peer-to-peer conversations, queries, and comments by using online forums and chat groups. Students may organize study groups, exchange information, and work together outside of the classroom by using applications like WhatsApp,

Telegram, or even specialized educational apps. These platforms may be utilized for educational reasons, giving students the chance to interact with others who have similar academic interests, exchange content, and have discussions on various subjects.

ICT solutions, such as personalized learning platforms, enable students to study autonomously and at a speed that best meets their requirements by modifying the level of activities based on their progress. With the use of self-assessment tools provided by ICT, students may examine their comprehension of a subject on examinations and quizzes without the help of a teacher. Students may study at their own speed by accessing instructions, lessons, and subjects on a variety of disciplines via platforms such as YouTube, Coursera, and Khan Academy. The survey found that 21.7% strongly agreed and 36.3% agreed that having access to ICT gives students greater opportunity to work independently. Of those surveyed, 26.1% were undecided, whilst 11.1% disagreed and 4.9% strongly disagreed respectively. With the tools and resources necessary to study, do independent research, and evaluate their progress, ICT gives students the power to take charge of their education. Students who have this autonomy are better able to think critically, solve problems, and manage their time. It also encourages self-directed learning.

4.7 Hypothesis Testing

To ascertain the importance and scope of each predictor's (independent variable) influence on the degree of ICT integration in education, the study employed multiple regression analysis. The study also looked at the extent of ICT integration among teachers, as well as the relationship between the three factors. To do this, researcher regressed the median response values for each independent variable against each respondent's typical level of ICT integration. The regression model that depicts the potential relationship is shown below.

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$,

Where:

Y = Teachers' ICT integration in teaching,

X_1 = Teachers' ICT literacy,

X_2 = Teachers' perception,

X_3 = Teachers' teaching experience, and

ε = the error term

Tables 4.8, 4.9, and 4.10 provide a summary of the multiple regression analysis.

Table 4.8: Multiple Regression Model Summary

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	0.520	0.317	0.261	0.54493

Predictors: (Constant), Teachers' ICT Literacy, Teachers' Perception, Teaching Experience.

Dependent: Level of ICT Integration in Teaching

Table 4.8 shows that the observed and predicted values of the dependent variable are correlated (R = 0.520). There was a correlation between expected and actual degrees of ICT integration in schooling. The R squared value in Table 4.7 indicates that the extent of ICT integration may vary by 31.7% depending on the instructors' ICT literacy level, perception of ICT

integration, and teaching experience. Table 4.9 shows the significance of the multiple regression model used in the study.

Table 4.9: Multiple Regression Model Significance (ANOVA)

Model	Sum of Squares	df*	Mean Square	F	Sig.
1 Regression	16.292	**3**	8.146	**27.428**	**0.000**
Residual	66.231	**222**	0.297		
Total	**82.523**	**225**			

df*- degrees of freedom

According to Table 4.9, the F-ratio in the ANOVA table is 27.428, with a p-value of 0.000. Because p was less than 0.05, it was concluded that the whole regression model satisfactorily fit the data. In other words, the entire model accurately predicted the outcome variable. The independent factors strongly predicted ICT usage in teaching ($F(3, 222) = 27.428$, $p < 0.05$). Table 4.10 shows the coefficients of the multiple regression model.

Table 4.10: **Summary of Coefficients of Multiple Regression Models**.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		Beta	Std. Error	Beta		
1	(Constant)	1.368	0.325		4.214	0.000
	ICT Literacy	0.430	0.052	0.069	8.305	0.000
	Teachers Perception	0.277	0.071	0.069	3.901	0.028
	Teachers Experience	0.281	0.075	0.068	3.932	0.029

Dependent Variable: Level of ICT Integration in Teaching

The beta weights of the three independent variables' contributions to the dependent variable are shown in Table 4.10. The estimated multiple regression equation is as follows: where the error term is set to zero and unstandardized coefficient values are added.

$Y = 1.368 + 0.430\ X_1 + 0.277\ X_2 + 0.281 X_3$

When all other predictors' effects are held constant, the values indicate each predictor's distinct contribution to the model, as seen above. When all other parameters remain constant, the integration of ICT in education rises by 0.430 units (β= 0.430) for each unit increase in teachers' ICT literacy. ICT integration increases by 0.277 units (β = 0.277) when teachers' perception improves by one unit, and ICT integration increases by 0.281 units (β = 0.281)

when teachers' teaching experience improves by one unit. The three null hypotheses of the research were examined using the t statistic (Table 4.10) to see if a p-value is substantially different from zero (H0: = 0). The hypotheses were tested at 95% confidence.

HO_1: The use of ICT in teaching in public secondary schools in Naivasha Sub-County is not statistically significantly influenced by teachers' ICT literacy.

The unstandardized beta value for teachers' ICT literacy is higher than zero, as shown in Table 4.10, ($\beta = 0.430$, $t(225) = 8.305$, $p < 0.05$). The first null hypothesis was thus disapproved. The study discovered that the use of ICT in teaching at public secondary schools in Naivasha Sub-County was greatly influenced by the ICT literacy of the teachers. This means that teachers who were knowledgeable about ICT were more likely to integrate it into their lesson plans.

HO_2: In public secondary schools in Naivasha Sub-County, teachers' perceptions have no statistically significant influence on how ICT is integrated into instruction.

Unstandardized beta value for teachers' perceptions of ICT integration in instruction was substantially higher than zero, as shown in Table 4.10 ($\beta = 0.277$, $t(225) = 3.901$, $p < 0.05$). As a result, the second null hypothesis was disapproved. The research found that teachers' perceptions had an influence on the integration of ICT into secondary schools in Naivasha Sub-County. It was observed that teachers who had a positive perception of ICT integration were more inclined to incorporate technology into their lesson planning.

HO_3: There is no statistically significant relationship between teaching experience and ICT integration in public secondary schools in Naivasha Sub-County.

Unstandardized beta value for teachers' experience integrating ICT into education was also considerably higher than zero, as shown in Table 4.10 ($\beta = 0.281$, $t(225) = 3.932$, $p < 0.05$). Then third and the final null hypothesis was also rejected. It was found that the instructors' prior teaching experience had a bearing on how ICT was integrated into secondary school instruction in Naivasha Sub-County. This proved that a teacher's experience level has influence on how they use ICT into their lessons.

4.8 Discussion of the Results

The aim of this study was to examine the influence of the three teacher related factors on the integration of ICT in secondary school education. The factors investigated included teachers' perceptions of integrating ICT, their level of ICT literacy, and their teaching experience. The main focus was to determine the extent to which teachers incorporated ICT into their lessons.

4.8.1 Influence of Teachers' ICT Literacy on ICT Integration in Teaching

The study's first objective was to investigate how teachers' ICT literacy influences the incorporation of ICT in teaching at public secondary schools in Naivasha Sub County. According to section 4.4, the majority of teachers ($M = 2.766$, $SD = 1.038$) are proficient in using ICT tools such as word processing, PowerPoint and Spreadsheet to prepare lessons. Furthermore, about half of teachers who participated in the survey ($M = 2.407$, $SD = 1.205$) are confident in troubleshooting minor ICT issues that arise during teaching. Basic computer applications and capabilities can help teachers become more creative and confident in their use of ICT. The findings of this study supported the hypothesis put out by Kamaruddin et al. (2017) that teachers' aptitude for using ICTs in the classroom and their perception of the variety of ICTs as a vital teaching tool depend on their familiarity with and proficiency with them. The study's findings also reveal that teachers in an Indonesian vocational high school lacked

considerable ICT skills and self-confidence according to Nurhabibah et al (2018). Majority of teachers do possess advanced skills in using educational software and digital learning platforms for online education (M= 3.248, SD= 1.286).

According to the study, teachers rated themselves above average for effectively integrating technology into their various teaching subject areas. Due to ICT skills they have acquired (M = 3.115, SD = 1.338); about 13.3% of teachers regularly seek out new ICT tools and strategies to enhance their teaching (M = 2.097, SD = 1.214). Those who adapt ICT tools to meet the diverse learning needs of their students are slightly above average (M= 2.659, SD= 1.227). The majority of teachers (56.2%) are aware of the current trends and development in educational technology (M= 2.823, SD= 1.298). Majority of the teachers who participated in the study are able to assess the effectiveness of ICT integration in improving students learning outcomes (M=2.996, SD=1.322). ICT technologies' influence on students' learning may be seen in real time thanks to assessment. The choices on which technologies to replace, adapt, and keep in use can be guided by this data, resulting in more efficient and knowledgeable teaching methods.

On average teachers actively collaborate with their colleagues in sharing ICT integration for the best practices (M= 2.416, SD=1.231). By actively exchanging best practices for ICT integration, a network of practice may be strengthened, made more inventive, and more cohesive, which will eventually benefit all parties. Most teachers believe that enhancing their ICT literacy positively influences students' engagement and achievement (M= 3.204, SD= 1.167). Believing in the benefits of improving ICT literacy is essential because it motivates the integration of technology in ways that improve learning outcomes and make it more interesting and effective for students in the twenty-first century. This idea is in favor of a progressive

approach to education that puts an emphasis on students' performance in the classroom. These findings supported those of Alazam et al. (2012), who discovered that the majority of Malaysian vocational and technical instructors used ICT in the classroom in a moderate manner and had intermediate ICT abilities. There was also a direct correlation between teacher ICT competency and ICT integration in the classroom. Teachers' poor ICT skills were attributed to lack of ICT infrastructure and insufficient ICT integration in the classroom. The researcher's synthesis of prior studies, as well as the current study's findings, demonstrated that instructors require regular ongoing professional development in order to create self-efficacy and easily incorporate ICT into the classes they teach.

Even though the average level of ICT literacy among teachers in Naivasha Sub County public secondary schools was moderate (M = 2.773, SD = 0.715), it had a significant influence on how ICT was integrated into teaching. This supports Mbithe's (2016) conclusion that there is a positive relationship between teacher ICT literacy and ICT integration. The results also align with Rastogi and Malhotra's (2013) study, which found that educators with higher ICT literacy levels saw technology as more beneficial and used it with more confidence and less anxiety. The teachers' opinions on the particular ICT abilities that are most crucial for successful ICT integration in the classroom are illustrated in the following excerpt from the questionnaire's open-ended section:

> "Proficiency with learning management systems (LMS), multimedia production, and data analysis are the specific ICT skills that I believe are most important for effective ICT integration in teaching. It is essential to have a solid understanding of how to use LMS systems like Zoom or Canvas in order to arrange assignments, tests, and course materials in a simple manner. Furthermore, the ability to produce captivating multimedia content with programs like Canva or Adobe Creative Suite may significantly improve students' understanding and memory of the material." (Teacher 6).

Another teacher had the following opinion:

> "Being proficient with data analysis software, such as Google Sheets or Excel, enables teachers to monitor student progress, pinpoint areas for growth, and adjust their lesson plans appropriately. By mastering these techniques, educators can make the most of technology in the classroom and help students have more individualized and engaged learning experiences." (Teacher 25).

When teachers are proficient in technology, it opens up a whole new universe of educational opportunities. They can incorporate interactive multimedia, as well as internet tools and resources to create compelling digital classes. ICT literacy among teachers improves educational practices by allowing for a more diverse and dynamic approach to instruction. It assists instructors in catering to various learning styles, promoting critical thinking, and encouraging creativity in the classroom. Classrooms become interesting and participatory when teachers are well-versed in ICT. The use of technology in the classroom stimulates active engagement, keeps students engaged, and piques their curiosity. As students become more committed to their learning journey, their achievement improves. ICT literacy in teachers is critical in developing an academic atmosphere that develops excitement and a quest for information.

The following were the answers to the open-ended questions on the types of training programs available to improve ICT literacy within their school and the frequency of the training programs offered.

> "My school offers a number of training programs for both students and staff to improve ICT literacy. Workshops and courses cover fundamental computer skills, software applications, internet safety, coding, and digital citizenship. Our school conducts ICT training programs on a regular basis to guarantee that teachers have the essential skills and knowledge to properly integrate technology into their teaching methods. These activities are normally held at least once every term, with additional workshops and seminars available throughout the academic year." (Teacher 16).

An additional statement from another teacher.

> "To improve ICT literacy and instructional techniques for incorporating technology into teaching practices, my school offers professional development opportunities to teachers. Topics including data privacy, mobile learning, online learning platforms, and instructional technology tools are often included in these courses. Usually, these events happen once a year." (Teacher 8).

Teachers must embrace technology, but this is impossible without the proper tools and resources. Regrettably, not all schools or teachers have equal access to technology. Budget constraints, outdated infrastructure, and poor resource distribution can all stymie the development of teacher ICT literacy. Addressing this issue requires pushing for fair access to technology and providing schools with the resources they require to empower teachers. Adequate training and continuous assistance are required for teachers to become ICT literate. Many teachers, however, have few opportunities for professional development in this area. They may lack the requisite expertise to effectively integrate technology into their classroom instruction, or they may struggle to keep up with rapid technological changes.

To overcome this hurdle, educational institutions and policymakers must engage in comprehensive training programs as well as ongoing assistance to ensure teachers' ICT skills remain current. Some teachers may be resistant to incorporating technology into their education because they are afraid of the unknown, skeptical of its usefulness, or simply prefer traditional techniques. Overcoming this reluctance necessitates a mental shift as well as a supportive environment that promotes experimentation and risk-taking. Teachers may be assisted in overcoming their fear of technology and embrace its potential by emphasizing the benefits of ICT integration and showcasing successful examples.

Collaboration among teachers is one strategy to improve teacher ICT literacy. Creating networks for teachers to share ideas, discuss issues, and share best practices can be quite beneficial. Collaboration networks enable teachers to benefit from one another's experiences, obtain fresh insights, and create a supportive community. We can foster a culture of continual learning and improvement in ICT literacy by encouraging collaboration. It is critical to provide continual professional development opportunities for teachers in order for them to keep up with the ever-changing world of technology. Workshops, conferences, online courses, and mentorship programs are all examples of this. Giving teachers the opportunity to improve their ICT abilities and stay current on emerging trends allows them to confidently integrate technology into their teaching. Continuous professional development is critical for increasing teacher ICT literacy and allowing educators to adapt to changing educational settings.

Integrating ICT into teacher education programs is one strategy to improve teachers' ICT literacy. Future educators can develop the requisite ICT skills from the outset by including technology-focused coursework and practical training. Preparing teachers from the start to be digitally literate ensures that they enter the profession with the knowledge and expertise needed to effectively integrate technology into their teaching. The world of technology is always changing, and teachers must keep up with new developments. Embracing these breakthroughs, from virtual reality to artificial intelligence, has the potential to transform the way we teach and learn.

Building an innovation culture and ensure that teacher ICT literacy remains relevant and adaptive to future educational demands by encouraging teachers to investigate and experiment with emerging technologies. Taking advantage of the exciting opportunities that modern

technology provides to the classroom. In summary, the influence of teachers' ICT literacy on ICT integration in the classroom is clear. Teachers need to continuously enhance their ICT skills as technology becomes more important in education. Creating a supportive environment that recognizes the significance of teacher ICT literacy, addresses influencing factors, uses effective strategies for improvement, and encourages collaboration and professional growth is crucial for successful ICT integration in the classroom. By equipping teachers with necessary skills and resources, they can effectively incorporate ICT into their teaching methods, leading to better student learning outcomes and preparing them for the digital future.

4.8.2 Influence of Teachers' Perception on ICT Integration in Teaching

The study's second goal was to examine how teachers' perceptions influences the adoption of ICT in public secondary schools in Naivasha Sub County. In section 4.5, 81.8% of teachers agreed that ICT tools enhance the effectiveness of my teaching. Providing them with good ICT facilities may encourage them to use it in their teaching, while 6.2% disagreed (M = 4.239, SD = 0.783). This shows that while most teachers believe that positive perception is crucial, a significant minority have different views. The results support Butucha's (2012) conclusion that while many instructors believe ICT can enhance classroom learning, an equal number are hesitant to acknowledge its benefits. Similar sentiments were shared by Gakenga et al. (2015) and Ndibalema (2014), who noted that some teachers still do not see the advantages of using ICT in learning, despite efforts to promote its integration in teaching.

Majority of teachers feel confident while using ICT in their teaching, that is over 87.0% of educators (M = 4.354, SD = 0.826). Better classroom management is made possible by confident ICT usage, since it enables effective use of tools for communication, organization, and assessment. This makes sure that instead of being an obstacle, technology improves

learning. This aligns with Nzwili (2017) findings that teachers view ICT as a crucial tool for improving student performance, collaboration, learning outcomes, and experiences. According to the study, 83.4% (M= 4.292, SD= 0.813) of teachers agreed that incorporating ICT into the educational process helps in differentiating instruction to meet diverse students' needs, while 4.8% disagreed. However, many teachers felt that adding ICT to teaching was unnecessary.

The majority (84.1%) agreed that it is important to encourage students to conduct online research on the subjects they study (M = 4.310, SD = 0.801). Yet, 10.6% of teachers were not for the idea of students conducting online research while unsupervised. Almasi et al. (2017) found that most secondary school students use the internet for social media, music, movies, rather than educational purposes, leading to late submissions, truancy, poor academic performance, and wasted time. Cyberbullying, predators, and reputation damage on platforms like Facebook are major internet risks for young people, according to Christopher and Maria-Gorretti (2012).

The majority of teachers (M= 4.305, SD= 0.879) felt that using ICT in the classroom improves students' higher-order thinking skills. According to the majority of teachers (87.7%) (M= 4.115, SD= 0.907), when ICT is integrated into the classroom, it facilitates communication among students and teachers. For students to be ready to live and work in the twenty-first century, ICT integration is important. The majority of respondent agreed (M= 4.443, SD= 0.771) with the statement. A significant amount of content can be covered in a short period of time (M=4.385, SD= 0.831) when ICT is integration into the class. They also agreed that abstract concepts might be taught using ICT, putting authority over class administration in their hands. ICT integration allows students to pay attention during instruction by eliminating boredom (M=4.407, SD=0.750).

Teachers in public secondary schools in Naivasha Sub County generally believe, integration of ICT in the classroom is essential for preparing students for future careers (M= 4.053, SD = 0.847). The study showed that teachers' perceptions of ICT integration significantly influenced teaching (β= 0.077, t (225) = 1.086, $p < 0.05$). The research indicated that teachers were more likely to incorporate technology into their teaching if they believed it was beneficial. Papaionnou and Charalambous (2011) found that primary school administrators in Cyprus also had a positive view of ICT, which aligns with the current study's results. Similarly, Mwila (2018) discovered that teachers' perception towards ICT usage in the classroom had an influence on its implementation.

Teachers still require more specialized in-service training and incentives to effectively implement ICT in their teaching practices. Despite having a positive attitude towards ICT, many teachers lack the necessary skills to incorporate it into their lessons. Factors such as technological aptitude, previous exposure to ICT, and beliefs about its impact on student learning can influence how teachers perceive the use of technology in the classroom. Additionally, external factors like access to resources and support from the school can also play a role in shaping teachers' perceptions of ICT. Even while some schools having ICT resources available, some instructors identified a number of obstacles that prevent them from making full use of the facilities. A number of teachers mentioned that the majority of the resources remain inaccessible after being purchased. A teacher wrote this:

> "One of the schools that is said to have a good ICT infrastructure is mine yet, the reality is that not much is being done to integrate ICT into teaching and learning. The computer lab is rarely open, and some of the equipment, including PCs, are in poor condition and are only collecting dust and cobwebs. Another issue is our irregular and unreliable internet connection and a big file may be downloaded for a long period of time making it not usable." (Teacher 21).

In a similar spirit, a teacher highlighted the difficulties they have as a result of not having the fundamental knowledge needed to use specific ICT tools. Consequently:

> "Numerous corporate gifts of ICT infrastructure have benefited our school, and our digital resources center is currently fully occupied. But most of us are afraid of technology and are unable to make even the most basic connection to electricity that are necessary for the device to work. I so spend a great deal of time trying to find someone to help me set up, say, the projector, connect it to the computer, and begin presenting. Therefore, in order to cover as much as possible, I prefer to use my old notes and the teaching technique. In addition, the majority of our computers have stopped working as a result of inconsistent maintenance." (Teacher 16).

In a comparable way, the majority of teachers observed that low confidence, incompetence to use certain ICT resources, and inadequate maintenance contribute to teachers' delayed acceptance of ICT technology. The severity of the issue is demonstrated by the remarks made below by several teachers.

> "In my school, the majority of teachers are female, including myself, and we are less confidence in our technical abilities or ability to properly use ICT tools in class. This lack of confidence may be the result of insufficient exposure or training in digital technology. We also worry about making errors or failing to use technology properly in front of students. However, male teachers incorporate ICT into their teaching." (Teacher 53).

> "I'm currently using ICT into my subject with amazing success. My students have absorbed valuable knowledge from well-chosen online videos with great excitement, and I am hopeful that this will improve their academic achievement. However, using PowerPoint presentations, motion pictures for teaching, and other ICT-related matters necessitates some advance planning. So I see most of my colleagues' unwillingness to incorporate technology into their classes as procrastination and a negative perception. Some lament about how long it takes to prepare and present, and because our educational system is examination-oriented, ICT integration wasn't an immediate concern." (Teacher 32).

The opinions of teachers made it apparent that even in schools with sufficient access to ICT resources, there was a lack of equivalent ICT integration in the classroom. Many factors contributed to this, most of which had to do with the leadership of the school and the teachers.

It was also noteworthy that many schools lacked essential ICT resources, depriving teachers and students of the opportunity to integrate ICT into their classroom lessons.

The perceptions of teachers toward ICT integration are heavily influenced by factors such as their confidence in utilizing technology and their desire to experiment with new tools. Teachers that have a positive attitude toward technology are more inclined to include it and explore its potential in their classroom activities. Teachers' perceptions of ICT integration are shaped by the quality of support provided by schools and administrators. Teachers are more likely to consider ICT as a helpful instrument for improving their teaching methods when schools provide access to training programs, technical support, and a supportive environment. Teachers' perceptions are also influenced by the availability and accessibility of ICT resources. The inability to integrate ICT into their teaching may be hampered by a lack of access to appropriate technology and resources. On the other hand, having easy access to current technology and appropriate digital resources might affect teachers' perceptions and encourage their use in the classroom.

Teaching methods and instructional techniques are directly influenced by teachers' perceptions of ICT integration. They are more likely to include digital tools, multimedia resources, and interactive activities in their classes if they believe that technology may improve student learning. In contrast, negative perceptions may lead to limited or cautious usage of technology in the learning environment. The opinion of teachers toward ICT integration has a substantial influence on student engagement and learning outcomes. When teachers are enthusiastic about using technology, it can inspire student interest and motivation, resulting in increased engagement and higher learning results. If teachers believe that ICT integration is ineffective, it may reduce student involvement and limit learning opportunities. Understanding teachers'

perceptions on ICT integration is critical for successfully integrating technology into instructional methods. Teacher traits, school support, and resource availability are all factors that influence teachers' perceptions. We can ensure that ICT integration utilizes its potential to improve teaching and learning experiences in the modern classroom by addressing these concerns and developing favorable attitudes toward technology.

Professional development and training programs focusing on ICT integration in the classroom can help teachers. These programs should include hands-on experience with a variety of technology tools and platforms, as well as instruction on how to effectively incorporate them into lesson plans. Building teachers' confidence and competency with technology will increase their likelihood of viewing ICT as a worthwhile teaching tool. Schools should foster an environment that fosters and supports teachers' use of ICT in the classroom. This can be accomplished by creating a collaborative environment in which teachers can share their experiences and best practices. Teachers will feel more comfortable taking chances and experimenting with new digital tools in their classrooms if they form a supportive network. Teachers who want to integrate ICT into their teaching practices must have access to materials and technical support. Schools should invest in cutting-edge technology infrastructure and equip teachers with the tools they need, such as software licenses or subscriptions to educational platforms. Furthermore, technical support personnel should be readily available to assist teachers with any problems that may arise during technology adoption.

One of the major challenges to effective ICT integration is a lack of suitable technological infrastructure and resources in schools, which may lead to unfavorable perceptions among instructors about the use of ICT in their classrooms. Teachers' capacity to effectively exploit technology in their classroom can be hampered by limited access to computers, internet

connectivity, or obsolete software. To provide equitable access for all students and teachers, schools and policymakers should prioritize investments in technology infrastructure. Resistance to change and distrust of technology can also stymie the use of ICT in the classroom. Some teachers may be afraid to try new tools or methods for fear of lacking the essential abilities or disrupting their existing teaching routines. Schools should address these concerns by offering ongoing assistance and training, as well as promoting an innovative culture. Teachers may experience time constraints and conflicting demands, making it challenging to integrate ICT into their classroom instruction. Finding time to research and use technology might be tough in an already overcrowded curriculum. Schools should prioritize ICT integration by designating dedicated time in the timetable or incorporating it into current topics, giving instructors the time and flexibility to experiment with ICT.

As technology evolves and becomes more integrated into our lives, its role in education will only grow greater. Teachers' perceptions and usage of digital tools are important to ICT's effective integration into education. Schools may empower teachers to embrace and use ICT to improve student learning experiences by establishing activities that improve teachers' perceptions, address challenges, and share best practices. The future of education is in the hands of forward-thinking teachers who see the promise of technology and use it to create dynamic and interesting classrooms.

Finally, teachers' perceptions and use of ICT in the classroom play an important role in defining the future of education. We can create an atmosphere that supports and encourages the use of technology during instruction by recognizing the worth of ICT integration and addressing the variables that influences teachers' perceptions. Teachers may confidently embrace ICT and harness its potential to improve teaching practices and student learning

outcomes with successful techniques such as professional development, collaborative assistance, and suitable resources. As we traverse the ever-changing educational landscape, it is critical to prioritize and invest in the successful integration of ICT, ensuring that our students have the digital skills and competences required for future success.

4.8.3 Influence of Teaching Experience on ICT Integration in Teaching

In today's digital culture, integrating information and communication technologies (ICT) into teaching has become an essential component of modern education. Understanding the influence of teaching experience on ICT integration has attracted substantial attention as educators try to improve student learning outcomes and engage learners in meaningful ways. This study investigates the relationship between teaching experience and ICT integration in the classroom, as well as the tactics used by experienced teachers to include ICT tools and resources into their instructional practices. This study intends to shed light on how teaching experience can support effective ICT integration and inspire educators to embrace technology as a transformative instrument in the teaching process by studying best practices.

When it comes to integrating ICT in the classroom, teaching expertise is a tremendous tool. While technology advances at a quick pace, experienced teachers can effectively manage these changes and adapt them to their teaching approaches. They have watched the progress of educational technology and are aware of its possibilities as well as its limitations. Furthermore, experienced teachers have created a repertory of educational strategies and procedures that can be supplemented and enhanced by digital resources. Their ideas and knowledge may contribute significantly to the successful use of ICT in education.

According to a study's findings, most of public secondary school teachers (71.2%) had been in the field for ten or less years. Based on this study, many of the respondents were only recently absorbed into the teaching profession, whereas 11.5% have been in the field for between 21 and 30 years, and 16.4% had taught for between 11 and 20 years. In accordance with the study's findings, teachers who have less teaching experience had higher levels of self-efficacy and utilization of computers intentions for both personal and professional use. The results supported the assertion made by Onwuagboke, Singh, and Ngozika (2014) that professional experience had minimal influence on one's ability to access and use technology to educate and learn.

Majority of teachers believed, on average (M= 3.854, SD= 0.962), that their years of teaching experience have prepared them to effectively integrate ICT into their lessons. The high standard deviation suggests that the observed data are very variable around the mean. This suggests that the observed data is widely dispersed. Majority teachers feel that their teaching experience helps them to anticipate how ICT tools can enhance students learning (M=3.474, SD=1.219). A substantial number of teachers (M= 4.279, SD= 0.888) said that they are open to adopting new ICT tools and strategies despite their teaching experience.

Similarly, the majority of teachers indicated that their teaching experience enables them integrate ICT seamlessly across different subject areas (M= 3.673, SD= 1.028). On the other hand, experienced teachers are able to troubleshoot ICT issues while teaching (M= 3.996, SD= 0.950). Most teachers rely on their teaching experience to adapt ICT tools to meet the diverse needs of their students (M= 3.867, SD= 1.170). According the study, the respondents concurred that teaching experience helps them to evaluate the effectiveness of ICT integration on students engagement and learning outcomes (M= 2.850, SD= 1.393). Experienced teachers

actively mentor less experienced colleagues in integrating ICT into their teaching practices (M= 3.420, SD= 1.301). It's possible for less experienced teachers to feel overwhelmed or uncertain about how to use ICT in the classroom. A mentor can assist them develop their confidence in utilizing these tools by offering direction, comfort, and support. By bridging the theoretical and practical divide, mentoring ensures that ICT integration in educational contexts involves more than merely utilizing technology—rather, it involves utilizing it meaningfully and successfully.

Most teachers perceive their teaching experience positively influences student outcomes when ICT is integrated effectively (M= 3.982, SD= 1.189), while majority of teachers (M= 3.589, SD= 1.093) continuously reflect on how their teaching experience influences their approach to ICT integration. The majority of teachers believed that years of teaching experience had influence on how ICT was used in the classroom, (β= 0.081, t (225) = 1.069, $p< 0.05$).

The majority of teachers believe that their experience in teaching enables them to integrate ICT in innovative ways. Experienced teachers possess a solid understanding of several pedagogical approaches and techniques. With this understanding, they may better incorporate ICT technologies that support their educational objectives and improve the quality of the learning process. With practice, teachers may modify ICT resources to meet the requirements and styles of students, increasing the effectiveness and creativity of their usage. The opinions and perceptions of different teachers about the degree of ICT integration among them are reflected in the remarks that follow:

> "As a seasoned teacher, I've discovered that my classroom experience has really helped me be more creative when it comes to integrating ICT. I've developed my abilities to use a variety of technology to improve student learning and engagement throughout the years. Having a thorough understanding of both material and pedagogy, I am able

to choose the best tools and resources to fulfill the various requirements of my students." (Teacher 18).

"I've been able to customize my approach for optimum influence by developing an understanding of what works best in various learning situations thanks to my teaching expertise. I keep ahead of the curve when it comes to incorporating ICT into my teaching methods because I am continuously reviewing my work and looking for fresh approaches. In the end, my experience as a teacher provides a solid basis for developing creative strategies that successfully integrate technology to enhance student learning and development." (Teacher 56).

"I've been a teacher for a long time, therefore I can attest to my expertise and skills in integrating ICT into my lesson plans. Trial and error has taught me what gets students' attention and enhances their learning the best. I can quickly adapt to new tools and platforms thanks to my understanding of a range of technology, and I can also come up with innovative methods to incorporate them into my lessons. Additionally, my knowledge of curricular frameworks and pedagogy allows me to effortlessly integrate ICT into a range of topic areas, which helps to make learning for students more relevant and interesting. All things considered, my experience as a teacher has not only increased my comfort level with technology in the classroom but also given me the confidence to integrate it in more creative and original ways." (Teacher 86).

Accordingly, the findings are consistent with those of Mulwa and Kimosop (2015), who claimed that teachers' work experiences influenced how they accepted and used technology in class. According to Rahimi and Yodollahi (2011), employment experience has minimal bearing on how successfully ICT is integrated into lesson planning. As a result, the study's findings demonstrated that a teacher's length of employment had influence on their proficiency with and readiness for utilizing technology in the classroom. It is necessary to have previous teaching experience to integrate ICT successfully. Teachers are equipped to effectively use ICT into their teaching practices with the support of continuous professional development and pedagogical knowledge. Teachers may improve student engagement and academic achievement in two ways: by integrating ICT into lesson planning and encouraging collaborative learning. The aforementioned ICT integration examples demonstrate how

instructors may create successful and interesting learning experiences for their students with the correct tools and assistance.

The effectiveness of ICT integration in education is not exclusively dependent on teaching experience. While teaching experience undoubtedly brings valuable skills and ideas to the table, it is critical to recognize that other elements, such as technological infrastructure, access to resources, and pedagogical approaches, are equally important in supporting effective integration. Teachers must realize the value of continuing professional development and training to improve their technology abilities and instructional tactics. Teachers can ensure that ICT integration becomes a transformative tool in delivering excellent education to students by embracing collaborative learning, investigating creative teaching approaches, and adapting to the fast-changing digital context.

Experienced teachers discover a variety of advantages in using ICT in their teaching techniques despite the difficulties. The capacity to capture and interest students is a key benefit. By utilizing technology, teachers may capitalize on the natural affinity that the generation of digital natives has for all things technological and produce more engaging, interactive lessons. Teachers have access to a wealth of tools and data because of ICT integration. Experienced teachers can enrich their courses by utilizing online platforms, educational apps, and digital libraries rather than only using textbooks and other conventional materials. Due to the abundance of resources, training may be more varied and tailored to the specific requirements and interests of each student.

To summarize, while teaching experience is important, it is not the only factor in successful ICT integration in education. Technological infrastructure, access to resources, teacher literacy, and perceptions all play important roles. Teachers may effectively integrate ICT into

their teaching practices and improve student learning experiences in the digital era by addressing these concerns and offering support.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The study had three main objectives: to find out how teachers' ICT literacy influence ICT integration, to evaluate how teachers' perceptions influence ICT integration, and to determine the influence of teachers' teaching experience on ICT integration in public secondary schools in Naivasha Sub-County. Below is a summary of the objectives in relation to the research findings.

5.1 Summary of the Result Findings

A summary of the study's findings based on the objectives is given in this section. The survey's findings demonstrated that, on average, the majority of instructors were proficient at utilizing simple ICT programs like Word processing, PowerPoint, and spreadsheets. They can modify ICT tools to fit the various learning demands of their students and are competent in fixing small ICT challenges that come up during instruction. They regularly communicate with colleagues to exchange best practices for ICT integration, and they are aware of current trends and advancements in educational technology, in terms of teaching methods. Teachers, on the other hand, have above-average advanced abilities in the use of digital learning platforms and educational software. Additionally, the study discovered that they have ICT abilities that allowed them to evaluate how well ICT integration improved student learning outcomes and to successfully integrate technology into a variety of subjects. The respondents stated that improving ICT literacy is crucial because it raises student success and engagement. The study also found that ICT literacy was a major influence on ICT integration in public secondary schools in the Naivasha sub-county.

The study revealed that participants thought positively of the use of ICT in the classroom. Depending on their perceptions' toward technology, providing instructors with access to ICT tools may encourage them to incorporate it into their lessons. In order to enhance the learning experience for both students and teachers, it is imperative that educators have confidence in the advantages of technology. ICT integration into the classroom is crucial, as is encouraging students to do online research on the topics they are learning. The study's findings imply that the effectiveness of ICT integration may be predicted by teachers' perception towards it.

The findings revealed that the majority of instructors who responded to the survey had been in the classroom for ten years or fewer. The majority of teachers believe that their teaching experience has an influence on their ability to incorporate ICT into the classroom. Teaching experience has allowed them to successfully use ICT into their lessons while anticipating its potential to increase student learning outcomes. They are willing to experiment with new tools and tactics, as well as modify ICT resources to meet the diverse needs of their students. Teaching experience allows them to address ICT challenges and evaluate the influence of ICT integration on student engagement and learning outcomes. They also advise less experienced colleagues and believe that successfully implementing ICT improves student outcomes. The study concluded that teaching experience has a substantial influence on ICT integration.

5.2 Conclusions

Teachers that possess an excellent understanding of ICT are able to create innovative instructional methods that make use of technology, such enhanced learning, virtual laboratories, and flipped classrooms, to enhance student engagement and make learning more dynamic. With ICT literacy, teachers may utilize technology to customize lessons to meet the requirements of each student individually, offering individualized learning opportunities that

meet varying learning preferences and speeds. ICT literacy motivates teachers to pursue ongoing educational opportunities, keeping them abreast of the most recent developments in both technology and pedagogy. The ability of educators to successfully incorporate new technologies as they become available is ensured by this ongoing learning. To successfully incorporate technology into education and create more dynamic, individualized, and productive teaching and learning environments, teachers must possess ICT literacy.

The way teachers view technology has an enormous influence on how it's incorporated into teaching. Teachers who view technology positively as a tool for teaching raises student achievement and optimizes learning. In order to create more dynamic and engaging learning environments, they are more likely to adopt innovative teaching strategies like blended learning, flipped classrooms, and digital tools for collaboration and evaluation. Therefore, incorporating technology into teaching methods effectively depends much on teachers' perceptions of it. For technology integration in education to be successful, teachers' opinions about it are essential. Negative views might result in resistance, underutilization, and lost opportunities, whereas positive perceptions promote adoption, creativity, and efficient usage. Positive teacher perceptions encourage a collaborative and innovative educational atmosphere, which makes them advocates for the use of technology. A divided approach may result from adverse perceptions that hinder school-wide operations. Promoting efficient and lasting technology integration in the classroom requires an understanding of and attention to teachers' views. Negative perceptions can result in underuse, missed chances to improve student learning, and rejection.

Likewise, the study discovered that teaching experience had an influence on how ICT was integrated in the classroom at Naivasha Sub-County public secondary schools. Teachers with

more experience could be better at identifying how ICT might support student-centered learning. With the use of technology, they may leverage their experience to provide more participatory and interesting learning opportunities. More experienced teachers might know more about how to adapt their teaching to successfully use ICT. Based on their understanding of various teaching pedagogies, they may leverage technology to improve learning results. ICT integration may be influenced positively by teaching experience, but to what degree relies on the teacher's willingness to adapt, their access to professional development, and the support system in their classroom.

5.3 Recommendations

5.3.1 The Authorities for Implementation

To encourage both male and female teachers to integrate ICT into the classroom and develop ICT literacy through training, the Ministry of Education needs to promote teacher training in this area. Also government officials and policymakers need to implement measures that promote ICT literacy, especially when it comes to providing infrastructure and ICT resources to schools.

5.3.2 Service Users or Beneficiaries

Recommendations for the service users or beneficiaries.

i. Provide Training and Professional Development

In order to gain proficiency with educational software, online resources, and digital teaching tools, teachers should regularly take part in training sessions. Similarly, administrators should oversee continuous professional development initiatives that provide teachers with up-to-date knowledge of the newest ICT tools and trends in the classroom.

ii. Incorporate ICT in the Curriculum

For students to use technology in all subjects, not just computer science, curriculum developers should integrate ICT-based learning modules. Teachers should also be prepared to use ICT tools, such as interactive whiteboards, online simulations, and educational apps, to create dynamic and engaging lessons.

iii. Encourage Feedback and Continuous Improvement

It is recommended that administrators and teachers periodically solicit student input about the efficacy of ICT integration and make any required modifications. Students should offer helpful criticism on the usage of ICT tools in the classroom, outlining areas for development or new resources that might improve instruction.

5.3.3 Other stakeholders

Recommendations for the other stakeholders.

i. Teacher Training Colleges (TTCs) and Universities should ensure that ICT is integrated into teacher education programs to ensure that teachers are ready to use it in the classroom.
ii. KICD should establish and maintain a standard planned ICT practical course curriculum consisting of one sit-in test to guarantee that graduates are professionally competent upon program completion.
iii. Teachers Service Commission and the Ministry of Education should provide rewards and recognition to educators and educational institutions that successfully incorporate ICT in innovative ways. School administrators should support ICT integration by offering tools, promoting creativity, and cultivating a tech-friendly culture. Develop policies that promote and support the use of ICT in education, including guidelines on digital citizenship, data privacy, and online safety.

5.4 Recommendations for Further Research in this Field of Study

Additional research has been suggested in the following areas:

i. All public secondary schools in Naivasha Sub County should undergo an audit to determine their ICT infrastructure. This will aid in inviting corporations, NGOs, and other stakeholders to support the government's efforts to digitize all school activities.

ii. It is essential to do research to determine what each teacher should accomplish and how the present curriculum may be modified to accommodate the usage of ICT in the educational environment.

iii. A comparable research should be conducted nationally by the Ministry of Education and the Teachers Service Commission in order to provide suitable recommendations to the government on the degree of ICT integration and the various challenges experienced.

REFERENCES

Abuhmaid, A. (2011). ICT training courses for teacher professional development in Jordan. Turkish Online Journal of Educational Technology, vol.10, no. 4, pp. 195-210.

Adebayo, O., & Fagbohun, M. (2013). An assessment of computer and ICT skills among secondary school teachers in Ota Ogun State. Library Philosophy and Practice (e-Journal). 846. Retrieved from https://digitalcommons.unl.edu/libphilprac/846

Agyei, D. D. (2013). Analysis of Technology Integration in Teacher Education in Ghana. Journal of Global Initiatives: Policy, Pedagogy, Perspective, 8(1), 5.

Ajzen, J. (2005). Attitudes, Personality and Behavior (2nd Edition).Milton Keynes, England: Open University press/ McGraw-Hill.

Alemu, B. M. (2015). Integrating ICT into Teaching-Learning Practices: Promise, Challenges and Future Directions of Higher Educational Institutes. Universal Journal of Educational Research, 3(3), 170–189.

Andrew B Kirumbi, (2018). Modelling the point spread function using principal component analysis. Department of Physics and Astronomy and College of Arts and Science. The University of Ohio p10-12. Approaches. Nairobi: Acts Press.

Atyang, F., Gathumbi, A., & Babusa, H. (2018). School Management and Technical Support to Teachers and Students in the Integration of ICT in Teaching/Learning English Language. Advances in Social Sciences Research Journal, 5(7) 249-258.

Bai, B., Wang, J., & Chai, C.-S. (2019). Understanding Hong Kong primary school English teachers' continuance intention to teach with ICT. Computer Assisted Language Learning, 1-23. DOI: https://doi.org/10.1080/09588221.2019.1627459

Beri, N., & Sharma, L. (2019). Teachers' attitude towards integrating ICT in teacher education. International Journal of Innovative Technology and Exploring Engineering, 8(8), 285-295.

Bhattacharjee, B., & Deb, K. (2016). Role of ICT in 21st Century's teacher education. International Journal of Education and Information Studies, 6(1), 1-6. Retrieved from http://www.ripublication.com

Blumberg, B., Cooper, D. R., & Schindler, P. S. (2005). Business Research Methods. Berkshire: McGraw Hill Education.

Brun, M., & Hinostroza, J. E. (2014). Learning to become a teacher in the 21st century: ICT integration in Initial Teacher Education in Chile. Journal of Educational Technology & Society, 17(3), 222.

Chai, C. S., Tan, L., Deng, F., & Koh, J. H. L. (2017). Examining pre-service teachers' design capacities for a web-based 21st-century new culture of learning. Australasian Journal of Educational Technology, 33 (1), 1-20. Education (8th Ed.). Boston: McGraw Hill.

Chakrabartty, S. N. (2013). Best Split-Half and Maximum Reliability. IOSR Journal of Research & Method in Education, 3(1), 1-8.

Christopoulos, A., Conrad, M., & Shukla, M. (2018). Increasing student engagement through virtual interactions: How? Virtual Reality, 22(4), 353–369. https://doi.org/10.1007/s10055-017-0330-3 [Crossref], [Web of Science], [Google Scholar]

Cohen, L. Manion, L. & Marisson, K. (2012). Research methods in education (6th Ed.). London: Routledge Falmer.

Coleman, L. O., Gibson, P., Cotten, S. R., Howell-Moroney, M., & Stringer, K. (2016). Integrating computing across the curriculum: The impact of internal barriers and training intensity on computer integration in the elementary school classroom. Journal of Educational Computing Research, 54(2), 275-294. DOI: 10.1177/0735633115616645.

Creswell, J.W. (2014). Research design: Qualitative, quantitative and mixed methods. (4th Ed). Los Angeles: Sage.

Creswell, J.W., Research Design: Qualitative, Quantitative and Mixed Methods Approaches. 4rth ed. 2014, Thousands Oals, California, USA: SAGE Publications Ltd. 342.

Dang, X.T. (2011). Factors Influencing Teacher's Use of ICT in Language Teaching: A Case Study of Hanoi University Vietnam, International Conference "ICT for Language Learning".

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

Fraenkel, J., Wallen, N., & Hyun, H. H. (2012). How to design and evaluate research in

Francom, G. M. (2020). Barriers to technology integration: A time-series survey study. J Res Technol Educ, 52(1), 1–16. https://doi.org/10.1080/15391523.2019.1679055 [Taylor & Francis Online], [Web of Science ®], [Google Scholar]

Gay, L. R., Mills, G. E. & Airasian P. (2015). Educational research: Competencies for analysis and application, London: Pearson.

Ghavifekr, S. & Rosdy, W.A.W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. International Journal of Research in Education and Science (IJRES), 1(2), 175-191.

Ghavifekr, S., Kunjappan, T., Ramasamy, L., & Anthony, A. (2016). Teaching and Learning with ICT Tools: Issues and Challenges from Teachers' Perceptions. MOJET, 4(2), 38-57. http://old.mojet.net/article/teaching-and-learning-with-ict-tools-issues-and-challenges- from-teachers-perceptions [Google Scholar]

Ghavifekr, S., Razak, A. Z., Ghani, M. F. A., Ran, N. Y., Meixi, Y., & Tengyue, Z. (2019). ICT integration in education: Incorporation for teaching and learning improvement. The Malaysian Online Journal of Educational Technology, 2(2), 24-45. Retrieved from www.mojet.net

Goktas, Y., Yildirim, S., & Yildirim, Z. (2009). Main barriers and possible enablers of ICTs integration into pre-service teacher education programs. Journal of Educational Technology & Society, 12(1), 193-204.

Heinrich, C. J., Aduana, J. D., & Martin, C. (2020). The potential and prerequisites of effective tablet integration in rural Kenya. British Journal of Educational Technology, 51(2), 498–514. https://doi.org/10.1111/bjet.12870

Hoyles, C. (2018). Transforming the mathematical practices of learners and teachers through digital technology. Research in Mathematics Education, 20(3), 209-228. DOI: https://10.1080/14794802.2018.1484799

Imenda, S. (2014). Is There a Conceptual Difference between Theoretical and Conceptual Frameworks? Sosyal Bilimler Dergisi/Journal of Social Sciences, 38(2), 185.

Inan, F. A., & Lowther, D. L. (2010). Factors affecting technology integration in K-12 classrooms: A path model. Educational Technology Research and Development, 58(2), 137–154. https://doi.org/10.1007/s11423-009-9132-y [Crossref], [Web of Science ®], [Google Scholar] instructional, managerial, and personal use matters.

Johnson, B., & Christensen, L. (2012). Educational Research: Quantitative, Qualitative and

K.I.C.D. (2018). Kenya Institute of Curriculum Development, KICD Report,

K.N.E.C. (2018). Kenya Certificate of Secondary Education Examinations Report KNEC, Nairobi

Kafyulilo, A., Fisser, P., Pieters, J., & Voogt, J. (2015). ICT use in science and mathematics teacher education in Tanzania: developing technological pedagogical content knowledge. Australasian Journal of Educational Technology, 2015, 31(4), 381-399.

Kamaruddin, K., Abdulla, A., Idris, M. N., & Nawi, M. N. M. (2017). Teachers' level of ICT integration in teaching and learning: A survey in Malaysian private preschool. AIP Conference Proceedings 1891, 020075. Retrieved fromhttps://doi.org/10.1063/1.5005408

Kent, H. (2008). Effective Population Size. University of Connecticut

Koehler, M. J., & Mishra, P. (2008). Introducing TPCK. In AACTE Committee on Innovation and Technology (Ed.), the handbook of technological pedagogical content knowledge (TPCK) for educators (pp. 3-29). New York, NY: Routledge. Koh, J. H. L., Chai, C. S., & Tay, L. Y. (2014). TPACK-in-action: Unpacking the contextual influences of teachers' construction of technological pedagogical content knowledge (TPACK). Computers & Education 78, 20–29. http://dx.doi.org/10.1016/j.compedu.2014.04.022

Kozma, R. B. & McGhee, R. (2003). ICT and innovative classroom practices. In R. B. Kozma (Ed.), Technology, innovation, and educational change: A global perspective (pp. 40–80). Eugene, OR: International Society for Educational Technology.

Kuskaya, F. M., & Kocak, Y. U. (2010). ICT in vocational and technical schools and teachers.

Lomax, R.G. (2017). An introduction to Statistical Concepts. London; Routledge Falmer.

Luhombo, C.S. (2015). Teacher Factors Influencing Integration of ICT in Teaching of English in Public Secondary School in Mumias Sub-County Kenya. Unpublished Research Project. University of Nairobi, Kenya. University Press.

Malero A. Ismail A. & Manyilizu M, (2015) ICT Usage Readiness for Private and Public Secondary Schools in Tanzania, a Case of Dodoma Municipality.

Manduku, J. Kosgey, A. & Sang, H. (2012) Adoption and use of ICT in enhancing management of public secondary schools: A survey of Kesses zone secondary schools in Wareng District of Uasin Gishu County, Kenya

Manu, M. (2014). Integration of information communication technology resources in distance learning: A case of national Open University, Bauchi study center, Nigeria. http://ir-library.ku.ac.ke/handle/123456789/11348

Mathevula, M. D., & Uwizeyimana, D. E. (2014). The Challenges Facing the Integration of ICT in Teaching and Learning Activities South African Rural Secondary Schools. Mediterranean Journal of Social Sciences. https://doi.org/10.5901/mjss.2014.v5n20p1087

Mayer, R. E. (2019). Computer games in education. Annual Review of Psychology, 70(1), 531–549. https://doi.org/10.1146/annurev-psych-010418-102744 [Crossref], [PubMed], [Google Scholar]

Mishra, P., & Koehler, M. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. Teachers College Record, 108(6), 1017-1054. Retrieved from http://www.tcrecord.org/Content.asp?ContentID=12516

Mixed Approaches. New York: Sage Publications.

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

Mugenda, A.G. (2011). Social Science Research. Theory and Principles. Nairobi: Applied Research & Training Services Press.

Muinde, S. M., & Mbataru, P. (2019). Determinants of implementation of public sector projects in Kenya: a case of laptop project in public primary schools in Kangundo sub-County, Machakos County. International Academic Journal of Law and Society, 1(2), 328–352.

Mwunda, N.M. (2014). A framework for integration of teaching and learning process in secondary schools in Machakos Sub-County. Journal of classroom instruction 37(2), 54-59. Nairobi.

Nzwili, K. M. (2017). Perception of teachers and principals on ICT integration in the primary school curriculum in Kitui County, Kenya. European Journal of Education Studies, 3(7), 408-430. Doi.10.5281/zenodo.824829

Omwenga, E. I., Waema, T. M., & Wagacha, P. W. (2004). A model for introducing and implementing e-learning for the delivery of educational content within the African

context. African Journal of Science and Technology, 5(1), 34–46. https://doi.org/10.4314/ajst.v5i1.15317

Orodho, J. A. (2009). Elements of Education and Social Science Research Methods. (2nd Ed.) Nairobi; Midsun Enterprises.

Rana, K. (2018). ICT in rural primary schools in Nepal: context and teachers' experiences. (Thesis). University of Canterbury, New Zealand. Retrieved from https://ir.canterbury.ac.nz/handle/10092/457

Rana, K. B. (2017). Use of Educational Technologies in Teaching and Learning Activities: Strategies and Challenges-A Nepalese case. (Thesis). The University of Oslo. Retrieved from https://www.duo.uio.no/bitstream/handle/10852/60803/ HEM4390.pdf ? sequence=1

Rana, K., Greenwood, J., & Fox-Turnbull, W. (2019). Implementation of Nepal's education policy in ICT: Examining current practice through an ecological model. The Electronic Journal of Information Systems in Developing CountriDOI DOI: https://doi.org/10.1002/isd2.12118

Rana, K., Greenwood, J., Fox-Turnbull, W., & Wise, S. (2018). A shift from traditional pedagogy in Nepali Rural Primary Schools? Rural teachers' capacity to reflect ICT policy in their practice. International Journal of Education and Development using ICT, 14 (DOI: http://ijedict.dec.uwi.edu/viewarticle.php?id=2521

S. Ghavifekr, T. Kunjappan, L. Ramasamy and A. Anthony, "Teaching and Learning with ICT Tools: Issues and Challenges from Teachers' Perceptions," vol. 4, no. 2, p. 20.

Scherer, R., Siddiq, F., & Tondeur, J. (2019). The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption

of digital technology in education. Computers & Education, 128, 13–35. https://doi.org/10.1016/j.compedu.2018.09.009 [Crossref], [Web of Science ®], [Google Scholar]

Sharma, Sonal, (2018) "ICT in Education: Catalyst for Effective Teaching-Learning".

Sulemana, A., Anyanful, V. K., & Abdulai, I. B. (2018). The relationship between teachers' ICT knowledge and availability of ICT facilities in the junior high schools: A case study in the Savulugu District in the Northern Region of Ghana. International Journal of Innovative Research & Development, 7(6), 7-10. DOI:10.24940/ijird/2018/v7/i6/JUN18006

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

Tekya, E., & Asare, Y. (2016). A survey of Information Communication Technology literacy among lecturers. Information and Knowledge Management, 6(8), 1-7.

TOJET: The Turkish Online Journal of Educational Technology, 9(1), 107-113.

Wambiri, G., & Ndani, M. N. (2016). Kenya primary school teachers' preparation in ICT teaching: teacher beliefs, attitudes, self-efficacy, computer competence, and age. African Journal of Teacher Education, 5(1), 1–16. https://doi.org/10.21083/ajote.v5i1.3515

Wanzala, O., & Nyamai, F. (2018). Big hurdles thwart Jubilee's laptops plan. Retrieved from Zack off, M. W., Real, F. J., Klein, M. D., Abramson, E. L., Li, and S.-T. T., & Gusic, M. E. (2019). Enhancing Educational Scholarship through Conceptual Frameworks: A

Challenge and Roadmap for Medical Educators. Academic Pediatrics, 19(2), 135–141. https://doi-org.proxy1.ncu.edu/10.1016/j.acap.2018.08.003

Yamane, T. (2000). Statistics: An Introductory Analysis. 2rd Ed. New York: Harper and Row.

Zhu, C., & Urhahne, D. (2018). The use of learner response systems in the classroom enhances teachers 'judgment accuracy. Learning and Instruction, 58, 255–262. https://doi.org/10.1016/j.learninstruc.2018.07.011 [Crossref], [Web of Science ®], [Google Scholar]

APPENDICES

APPENDIX I: LETTER OF TRANSMITTAL OF DATA COLLECTION INSTRUMENTS

Gideon Njiiri Gachari,

P.O Box 488-20117,

Naivasha.

March, 2023

Dear Respondent,

RE COLLECTION OF DATA FOR THE STUDY ON TEACHER-RELATED FACTORS IMPACTING INTEGRATION OF ICT IN TEACHING IN NAIVASHA SUB COUNTY PUBLIC SECONDARY SCHOOLS.

At Mount Kenya University, I am a graduate student pursuing a master's in education. I'm now conducting research on TEACHER-RELATED FACTORS IMPACTING INFORMATION COMMUNICATION AND TECHNOLOGY INTEGRATION IN TEACHING IN PUBLIC SECONDARY SCHOOLS IN NAIVASHA SUB-COUNTY, KENYA as part of the course requirement. As a result, your school was included in the study's sample, and you were picked as a respondent. Please be as honest as you can when responding to the questions. There is no right or wrong answer. Do not enter your name on the questionnaire. The results of this study will only be used for academic purposes. Thanks

Yours Faithfully,

GACHARI GIDEON NJIIRI

CELL PHONE: 0721-224929

EMAIL ADDRESS: gacharinjiiri@outlook.com

APPENDIX II: TEACHERS' QUESTIONNAIRE

INTRODUCTION

This questionnaire's objective is to gather data on the elements that influence the use of ICT in teaching and learning in Naivasha Sub-county's public secondary schools. The submitted data will be kept private and used solely for this study. A, B, C, D, and E are the seven sections that make up the questionnaire. Section A requests accurate background information, and you must tick the appropriate boxes or fill in the blanks with the requested details. In Sections B through E, you are cordially requested to provide your views, feelings, and facts based on your experience. Please be as truthful as you can in your response. You must tick the box next to each question to indicate your response.

SECTION A-DEMOGRAPHIC INFORMATION

Indicate your: -

1. Gender: (A) Male **[ ]** (B) Female **[ ]**

2. Age Bracket: (A) 21-30 years **[ ]** (B) 31-40 years **[ ]**

(C) 41 -50 years **[ ]** (D) 51-60 years **[ ]**

3. Highest Academic Qualification:

(A) Diploma **[ ]** (B) Bachelor **[ ]**

(C) Masters **[ ]** (D) PhD **[ ]**

4. Teaching Subject/s: ……..

5. Teaching load per Week: ……..

6. Teaching Experience: …….

SECTION B: Teachers' ICT Literacy on ICT integration in teaching

1. Please [√] indicate your level of agreement with the following statements regarding your ICT literacy and its influence on ICT integration in teaching:

Key: 1- Strongly Disagree, 2- Disagree, 3- Neither Agree nor Disagree, 4- Agree, 5- Strongly Agree

	Statement	**1**	**2**	**3**	**4**	**5**
1	I am proficient in using basic ICT tools such as Word processing, PowerPoint and Spreadsheet.					
2	I am confident in troubleshooting minor ICT issues that arise during teaching.					
3	I possess advanced skills in using educational software and digital learning platforms.					
4	My ICT skills enable me to effectively integrate technology into various subject areas.					
5	I regularly seek out new ICT tools and strategies to enhance my teaching.					
6	I can adapt ICT tools to meet the diverse learning needs of my students.					
7	I am aware of current trends and developments in educational technology.					

8	I am able to assess the effectiveness of ICT integration in improving student learning outcomes.					
9	I actively collaborate with colleagues to share ICT integration best practices.					
10	I believe that enhancing my ICT literacy positively impacts student engagement and achievement.					

2. In your own opinion

i. Which specific ICT skills do you find most essential for effective ICT integration in your school?

……
……
……

ii. What kind of training programs are available to enhance ICT literacy within your school and how frequently are these training programs conducted?

……
……
……

SECTION C: Teachers' Perception on ICT integration in teaching.

1. Please [√] indicate your level of agreement with the following statements regarding your Teachers' Perceptions and its influence on ICT integration in teaching:

Key: 1- Strongly Disagree, 2- Disagree, 3- Neither Agree nor Disagree, 4- Agree, 5- Strongly Agree

	Statements	**1**	**2**	**3**	**4**	**5**
1	ICT tools enhance the effectiveness of my teaching.					

2	I feel confident using ICT in my teaching practices.					
3	ICT helps me differentiate instruction to meet diverse student needs.					
4	It is important to encourage students to conduct online research on the subjects they are studying.					
5	ICT use in the classroom has a positive impact on pupils' capacity for higher-order thinking.					
6	ICT facilitates communication with students and teachers.					
7	For pupils to be ready to live and work in the twenty-first century, ICT integration in the classroom is essential.					
8	A lot of material may be covered in a short amount of time when ICT is integrated into the class.					
9	I believe ICT is essential for preparing students for future careers.					
10	When teaching with ICT integration, students pay more attention.					

2. In your own opinion

What challenges have you faced in integrating ICT into your teaching?

……
……
……
……

SECTION D: Teachers' Experience and ICT integration in teaching.

1. Please [√] indicate your level of agreement with the following statements regarding your Teaching Experience and its influence on ICT integration in teaching:

Key: 1- Strongly Disagree, 2- Disagree, 3- Neither Agree nor Disagree, 4- Agree, 5- Strongly Agree

	Statement	**1**	**2**	**3**	**4**	**5**
1	My years of teaching experience have prepared me to effectively integrate ICT into my lessons.					
2	I find that my teaching experience helps me anticipate how ICT tools can enhance student learning.					
3	I am open to adopting new ICT tools and strategies despite my teaching experience.					
4	My teaching experience enables me to integrate ICT seamlessly across different subject areas.					
5	I believe that experienced teachers are better able to troubleshoot ICT issues during teaching.					
6	I rely on my teaching experience to adapt ICT tools to meet the diverse needs of my students.					
7	I use my teaching experience to evaluate the effectiveness of ICT integration on student engagement and learning outcomes.					
8	I actively mentor less experienced colleagues in integrating ICT into their teaching practices.					
9	I perceive that my teaching experience positively influences student outcomes when ICT is integrated effectively.					

10	I continuously reflect on how my teaching experience impacts my approach to ICT integration.					

2. In your own opinion:

Do you feel that your teaching experience allows you to be more innovative with ICT integration? If so, how?

……
……
……
……

SECTION E: ICT Integration in Teaching

Please [√] indicate your level of agreement with the following statements regarding ICT integration in teaching:

Key: 1- Strongly Disagree, 2- Disagree, 3- Neither Agree nor Disagree, 4- Agree, 5- Strongly Agree

.No	**Statement**	**1**	**2**	**3**	**4**	**5**
1	I use ICT tools regularly in my teaching.					
2	Teachers in my school are adequately trained to integrate ICT into their lessons.					
3	ICT is seamlessly integrated into the curriculum across all subjects in my school.					
4	In my school, students have access to up-to-date ICT resources.					
5	In my school assessment methods includes ICT-based tasks.					

6	ICT enhances student engagement and motivation in learning.					
7	ICT improves collaboration and communication among students and teachers.					
8	There is sufficient technical support available for ICT use in my school.					
9	In my school the presence of ICT serves as a catalyst for students' interaction among themselves.					
10	The availability of ICT provides more opportunities for students to work independently.					

Thank you for the responses

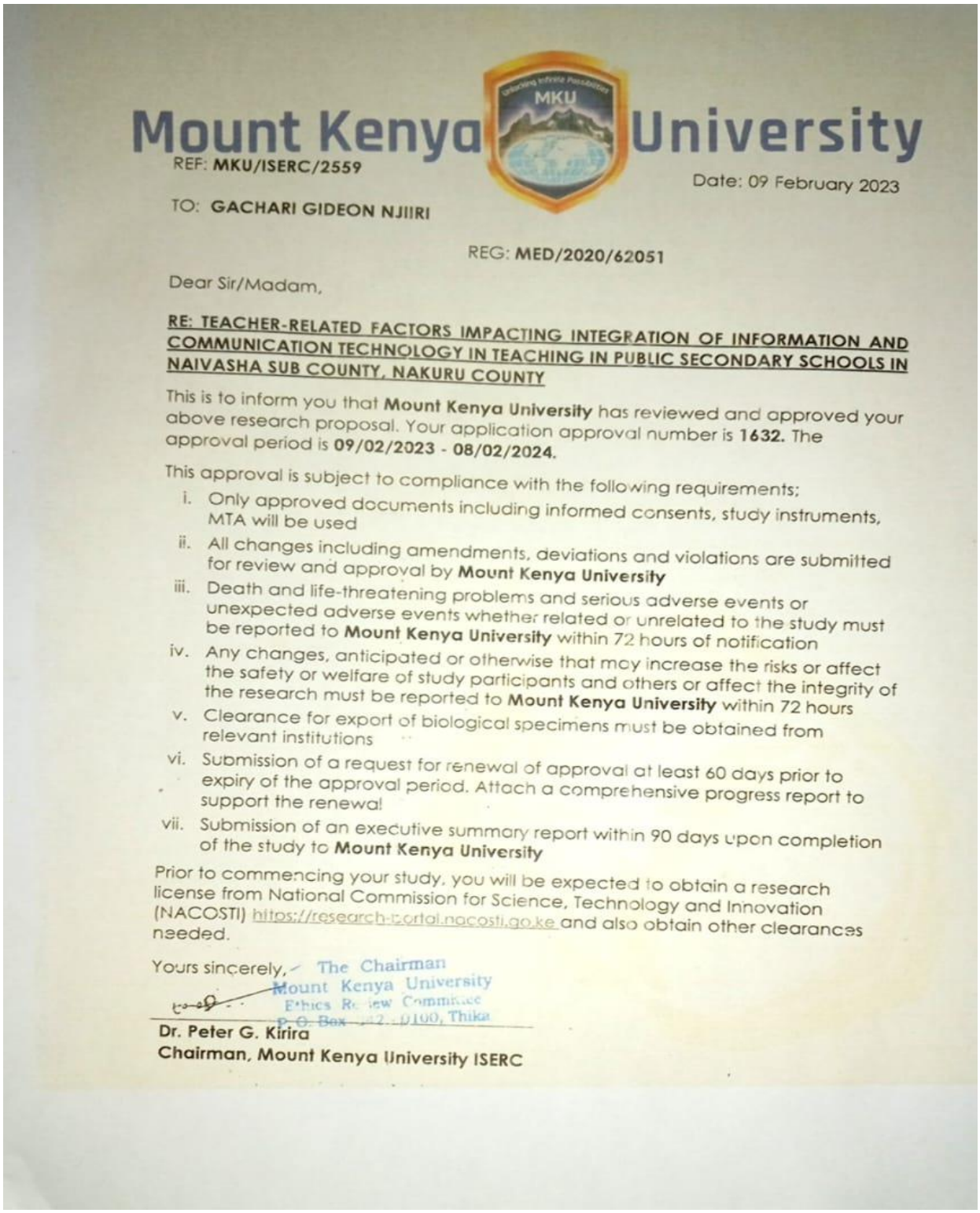
APPENDIX III: Schools in Naivasha Sub-County and number of teachers.

S.No	ZONE	SCHOOL	MALE	FEMALE	TOTAL
1	CENTRAL	NAIVASHA GIRLS	19	24	**43**
2		NAIVASHA DAY	22	10	**32**
3		NAIVASHA HIGH	16	15	**31**
4		MILIMANI HIGH	20	26	**46**
5		ENAIPOSHA GIRLS	9	6	**15**
6		GITUAMBA SEC	4	11	**15**
7		MAGEREZA ACADEMY	9	5	**14**
8		KARAI SECONDARY	2	4	**6**
			101	**101**	**202**
9	LONGONOT	KARIMA MIXED	13	10	**23**
10		MAAI MAHIU GIRLS	9	6	**15**
11		MAAI MAHIU BOYS	19	7	**26**
12		LONGONOT T/SH	12	5	**17**
13		KIAMBOGO SEC	6	9	**15**
14		KIJABE T/SHIP	4	3	**7**
15		NAMUNCHA	3	2	**5**
16		GOVERNOR	5	7	**12**
			71	**49**	**120**
17	MARAIGUSHU	NYONJORO SEC	8	5	**13**
18		MUNUNGA HIGH	7	7	**14**
19		NYONDIA SEC	11	9	**20**
20		KINUNGI	9	3	**12**

21		MARAIGUSHU	8	5	**13**
22		MWICIRINGIRI	8	4	**12**
23		GITURU SEC	9	6	**15**
24		NORTH KARATI	4	5	**9**
25		GATAMAIYU SEC	5	4	**9**
26		NYAKAIRU SEC	5	4	**9**
27		NYAMATHI SEC	9	5	**14**
28		RUTERE	3	3	**6**
29		MUNYU	8	6	**14**
			94	**66**	**160**
30	MAIELLA	MIRERA HIGH	22	25	**47**
31		NDABIBI SEC	10	6	**16**
32		ST ANDREWS	5	8	**13**
33		MAIELLA T/SHIP	13	1	**14**
34		RUBIRI HIGH	4	6	**10**
35		MOI NDABI SEC	5	2	**7**
36		NGONDI SEC	3	4	**7**
37		MAIELLA CENTRAL	4	1	**5**
38		KIPKONYO SEC	2	1	**3**
39		NDABIBI MAIN SEC	1	2	**3**
			69	**56**	**125**
		TOTAL	**335**	**272**	**607**

(Source: TSC Sub County Director- Naivasha, 2022)

APPENDIX IV: ERC CERTIFICATE



Mount Kenya University

REF: MKU/ISERC/2559

Date: 09 February 2023

TO: GACHARI GIDEON NJIIRI

REG: MED/2020/62051

Dear Sir/Madam,

RE: TEACHER-RELATED FACTORS IMPACTING INTEGRATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN TEACHING IN PUBLIC SECONDARY SCHOOLS IN NAIVASHA SUB COUNTY, NAKURU COUNTY

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **1632.** The approval period is **09/02/2023 - 08/02/2024.**

This approval is subject to compliance with the following requirements;

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

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

Yours sincerely,

The Chairman
Mount Kenya University
Ethics Review Committee
P. O. Box 342 - 0100, Thika

Dr. Peter G. Kirira
Chairman, Mount Kenya University ISERC

APPENDIX VI: INTRODUCTORY LETTER

Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

MED/2020/62051

13th February, 2023

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

Dear Sir/Madam,

RE: GACHARI GIDEON NJIIRI – REGISTRATION NO. MED/2020/62051

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

The title of the research is ***"Teacher – Related Factors Impacting Integration of Information and Communication Technology in Teaching in Public Secondary Schools in Naivasha Sub-County, Nakuru County."***

It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **February, 2023 and April, 2023.**

Any assistance accorded to the student will be highly appreciated.

Thank you.

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

Dr. Samuel M. Karenga, Ph.D
Director, Graduate Studies
Enc.

APPENDIX VII: NACOSTI RESEARCH PERMIT

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **548149**

Date of Issue: **22/February/2023**

RESEARCH LICENSE

This is to Certify that Mr.. GIDEON NJIIRI GACHARI of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nakuru on the topic: TEACHER-RELATED FACTORS IMPACTING INTEGRATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN TEACHING IN PUBLIC SECONDARY SCHOOLS IN NAIVASHA SUB-COUNTY, NAKURU COUNTY for the period ending : 22/February/2024.

License No: **NACOSTI/P/23/23822**

548149

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

APPENDIX VIII: AUTHORIZATION LETTER FROM SCDE-NAIVASHA

MINISTRY OF EDUCATION
State Department of Basic Education

Telephone: 0202352776

Email: naivashadeo@gmail.com

REF: MOE/NVS/GEN/112/102

SUB -COUNTY EDUCATION OFFICE,
P. O. BOX 2053 – 20117.
NAIVASHA
Date: 19TH MARCH, 2023

THE PRINCIPALS

NAIVASHA SUB COUNTY

RE: GACHARI GIDEON NJIIRI ID NO.13461360-REGISTRATION NO.MED/2020/62051

The above cited student refers. He is one of our teachers pursuing **Master of Education Degree** in the **Department of Education Management and Curriculum Studies** in the **School of Education** at **Mount Kenya University.**

He has been licensed to conduct research by the **National Commission for Science, Technology and Innovation**. The title of the research is **"Teacher-Related Factors Impacting Integration of Information and Communication Technology in Teaching in Public Secondary Schools in Naivasha Sub County, Nakuru County."**

The purpose of this letter is to request you to accord him all the necessary support and allow him to interact with your teachers as he conducts the said research. The research should not in any way interrupt learning in schools.

FOR
SUB - COUNTY DIRECTOR
OF EDUCATION
NAIVASHA

RAPHAEL NGANGA

FOR SCDE-NAIVASHA

APPENDIX IX: DATA ANALYSIS

Descriptive Statistics

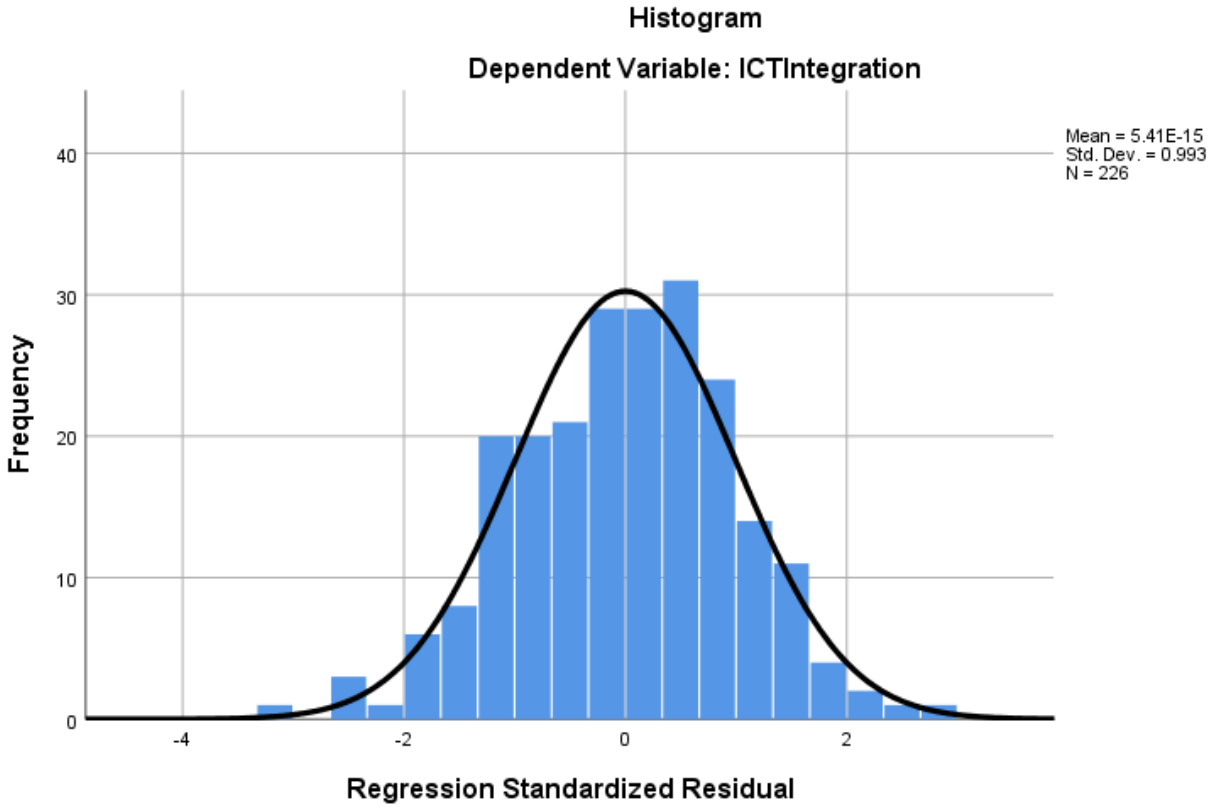
	Mean	Std. Deviation	N
ICT Integration	2.9721	.56030	226
ICT Literacy	2.5690	.60891	226
Teachers Perception	4.1876	.63465	226
Teachers Experience	3.4558	.64784	226

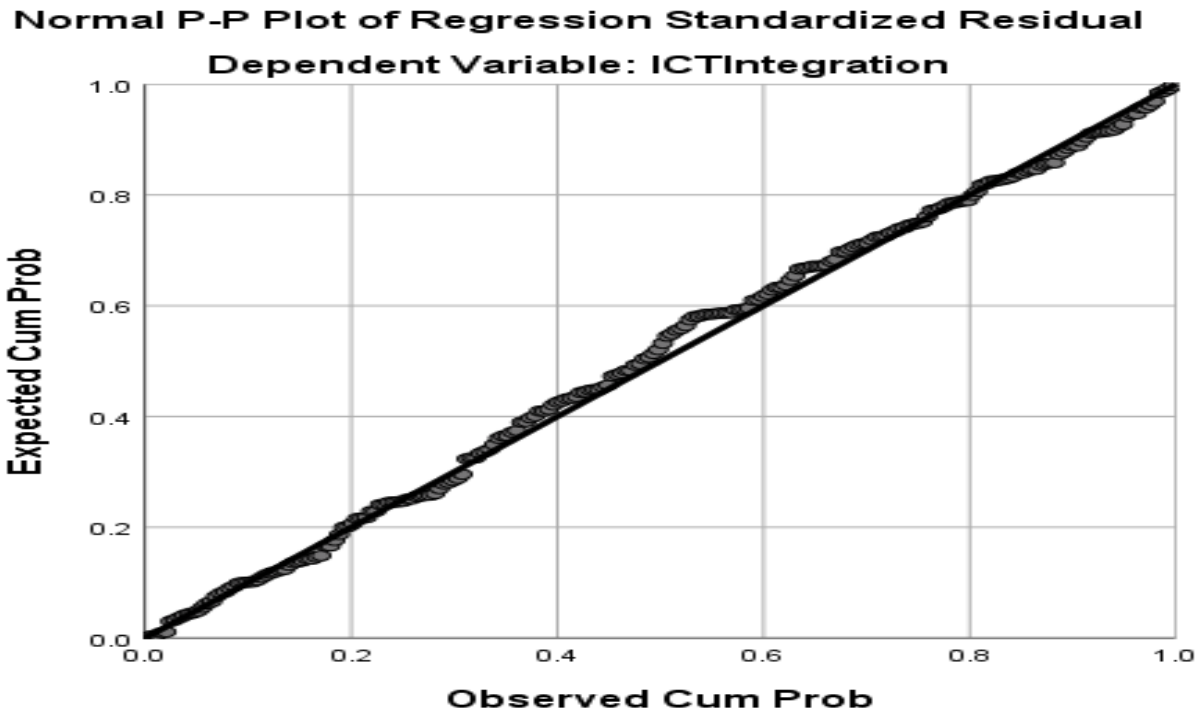
Correlations

		ICT Integration	ICT Literacy	Teachers Perception	Teachers Experience
Pearson Correlation	ICT Integration	1.000	.581	.234	.061
	ICT Literacy	.581	1.000	.183	.035
	Teachers Perception	.234	.183	1.000	.344
	Teachers Experience	.061	.035	.344	1.000
Sig. (1-tailed)	ICT Integration	.	.000	.000	.182
	ICT Literacy	.000	.	.003	.299
	Teachers Perception	.000	.003	.	.000
	Teachers Experience	.182	.299	.000	.

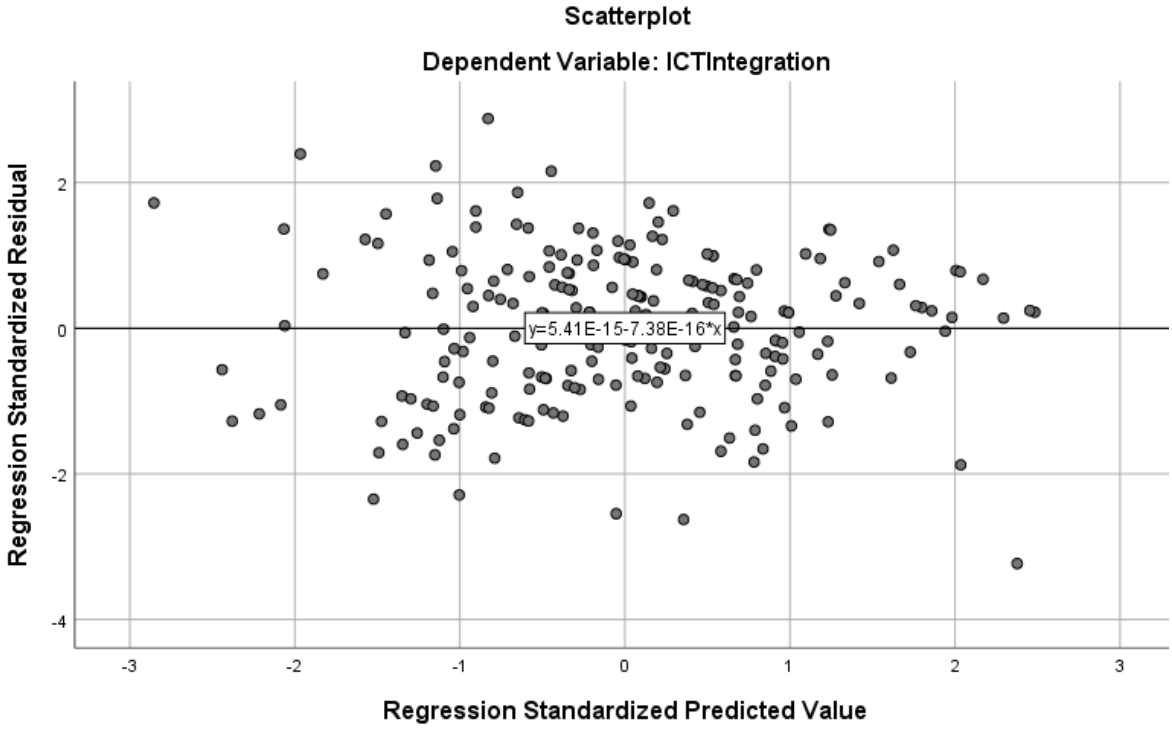
N	ICT Integration	226	226	226	226
	ICT Literacy	226	226	226	226
	Teachers Perception	226	226	226	226
	Teachers Experience	226	226	226	226

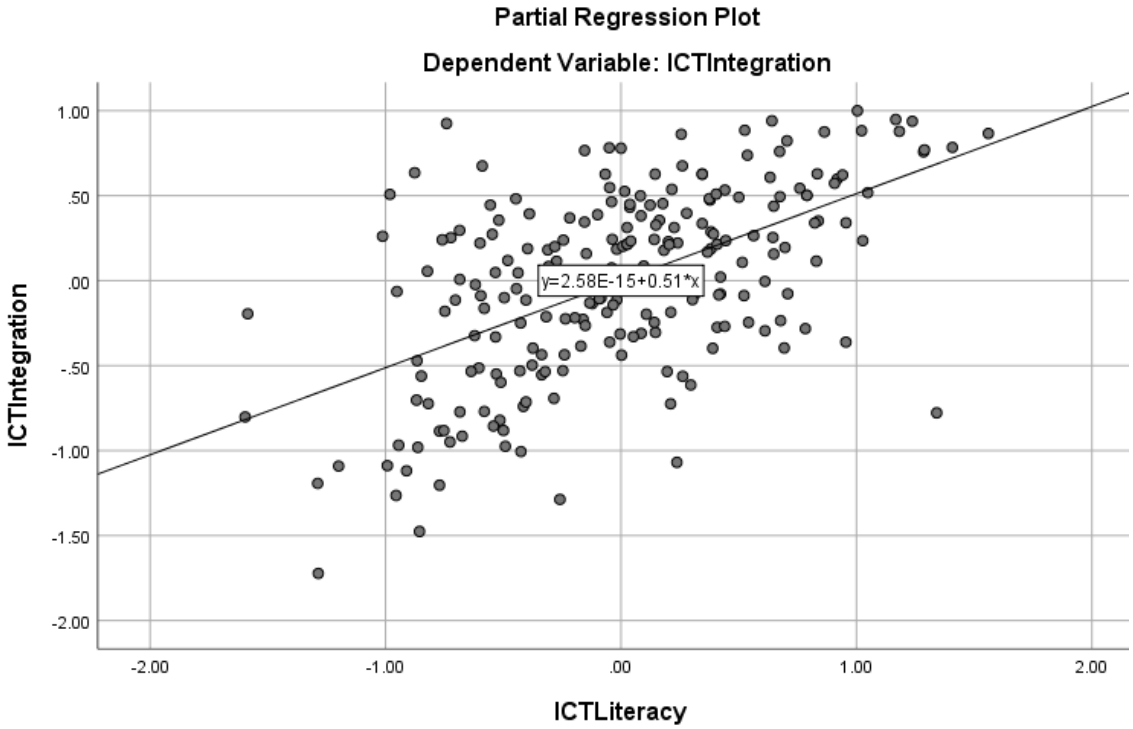
APPENDIX X: HISTOGRAM WITH NORMAL DISTRIBUTION CURVE

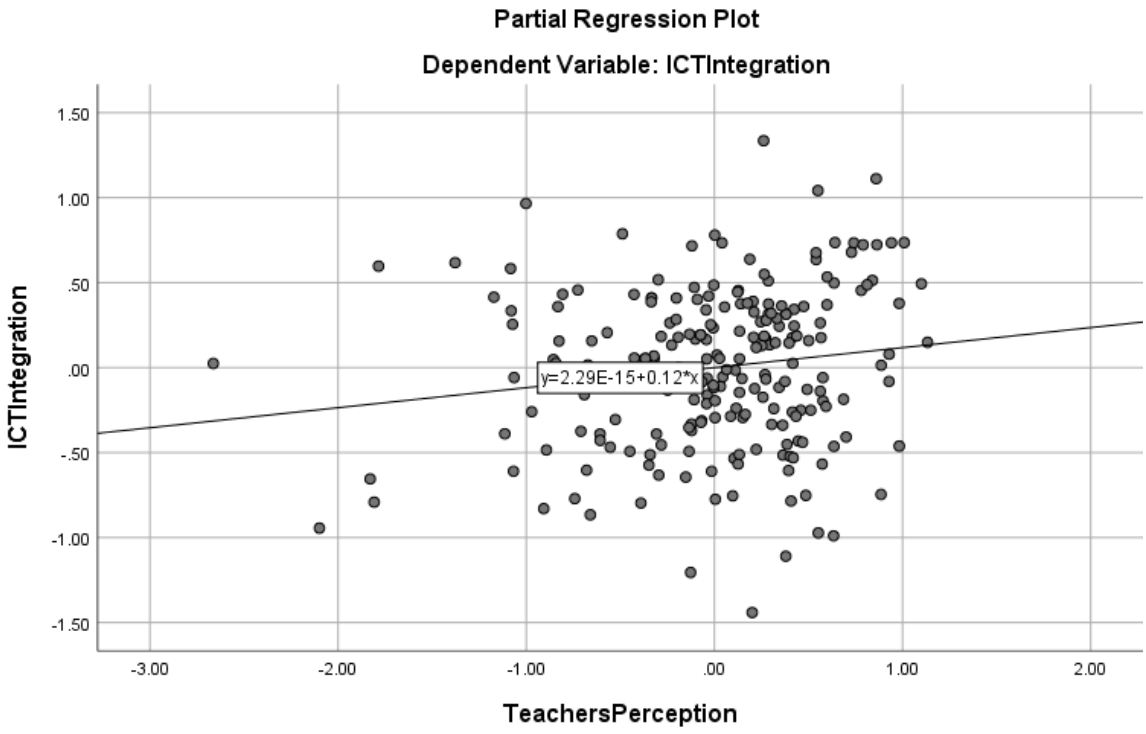


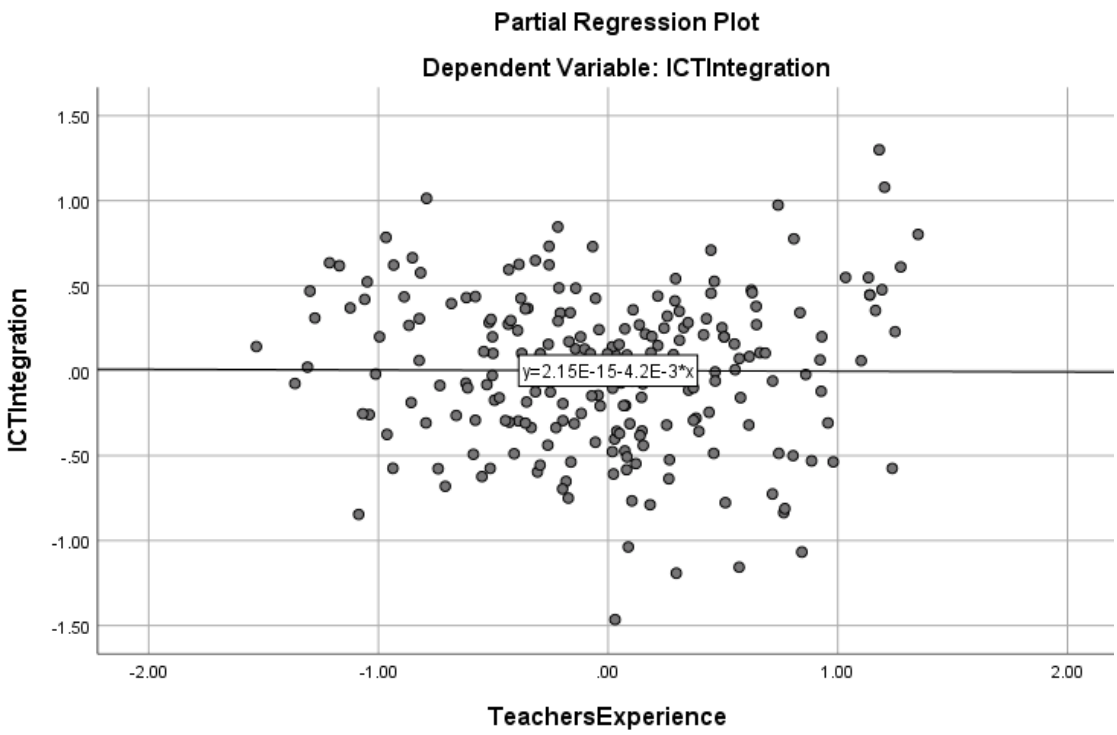


APPENDIX XI: SCATTER PLOTS

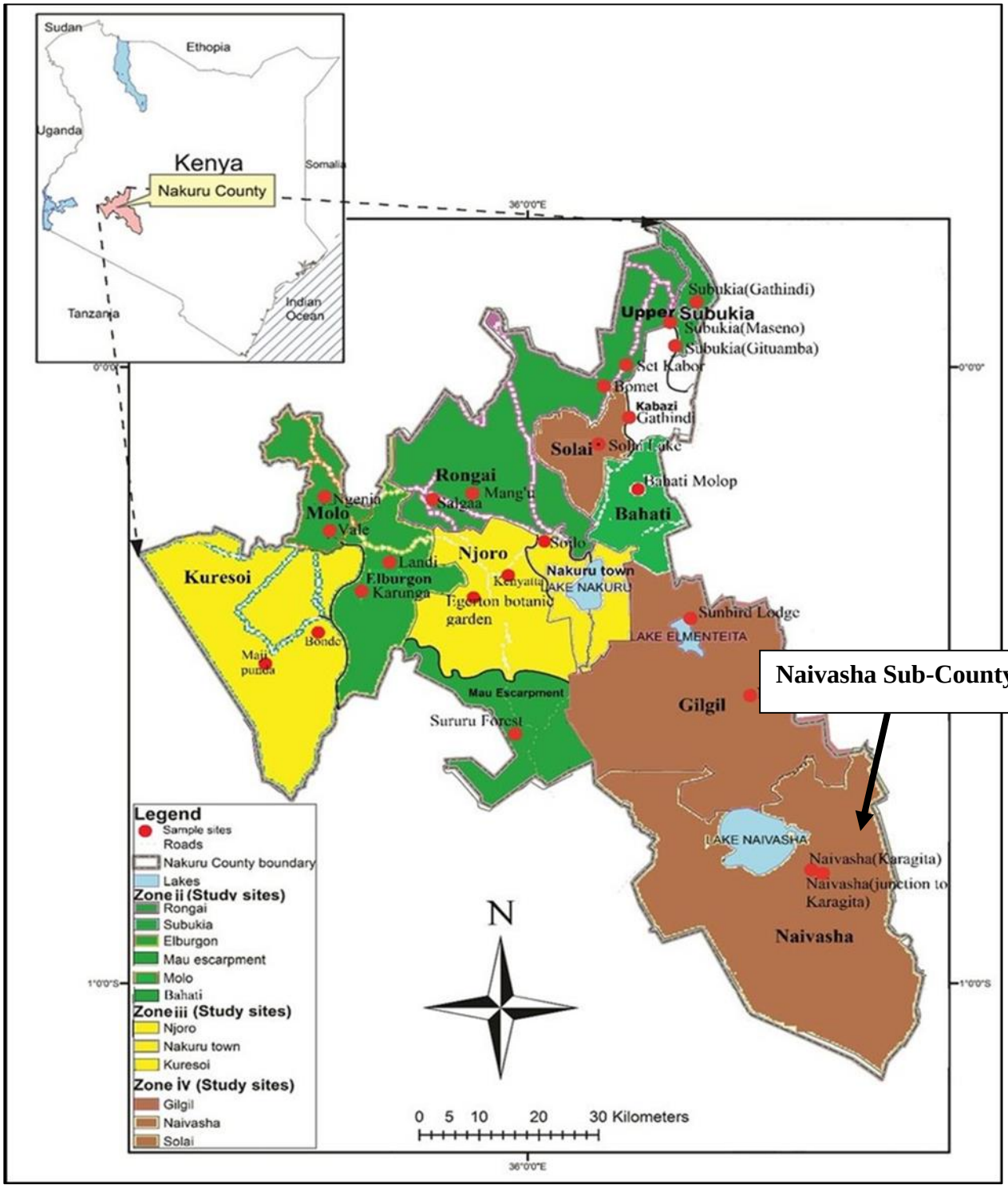





Partial Regression Plot
Dependent Variable: ICTIntegration
ICTIntegration
1.50
1.00
.50
.00
-.50
-1.00
-1.50
-3.00
-2.00
-1.00
.00
1.00
2.00
y=2.29E-15+0.12*x
TeachersPerception


Partial Regression Plot
Dependent Variable: ICTIntegration
ICTIntegration
1.50
1.00
.50
.00
-.50
-1.00
-1.50
-2.00
-1.00
.00
1.00
2.00
y=2.15E-15-4.2E-3*x
TeachersExperience

APPENDIX XII: MAP OF NAKURU COUNTY



Source https://tinyurl.com/Mapof-Nakuru-Count