ASSESSMENT OF SCHOOL ADMINISTRATOR'S SUPPORT IN IMPLEMENTATION OF DIGITAL LITERACY PROGRAMME IN PUBLIC PRIMARY SCHOOLS IN KITUI COUNTY,KENYA

BY

ESTHER WAMBUA

THESIS SUBMITTED TO THE SCHOOL OF EDUCATION IN PARTIAL FULFILLMENT FOR THE REQUIREMENTS OF THE AWARD OF DEGREE OF DOCTOR OF PHILOSOPHY IN EDUCATIONAL ADMINISTRATION OF MAASAI MARA UNIVERSITY

2023

DECLARATION AND APPROVAL

This thesis is my original work and has not been presented for a degree in this or any other university

Esther Wambua DEO1/4001/2015

Sign…… Date……

This thesis has been submitted for examination with our approval as the University supervisors

Prof. Florence Kisirkoi.

Maasai Mara University

Sign…… Date……

Prof. Paul Maithya

Maasai Mara University.

Sign…… Date……

ACKNOWLEDGEMENT

I express my sincere appreciation and reverence to the divine being who facilitated the successful completion of this endeavor. I express my heartfelt gratitude to the individuals of great significance who have played a wonderful role in contributing to my accomplishment in this academic endeavor. I express my appreciation to my supervisors, the esteemed Dr. Florence Oruta, Professor Florence Kisirkoi, and Professor Paul Maithya, for their essential advice, mentoring, and academic support. I would like to express my gratitude for the valuable advice provided by Dr. Mwaura, Dr. Rono, Dr. Mutisya, and Professor Tanui over the duration of this project. I would like to express my sincere thanks and gratitude to the County Director of Kitui County, as well as the sub county Directors of Education and the sub county ICT officials in the respective sub counties, for their valuable assistance extended to me.I express my gratitude to the school officials and teachers for their collaborative efforts during the duration of the research. To my parental figures, companions, and others with whom I have a passing familiarity, who provided support throughout my own journey. I am unable to list each and every one of you. Your collective support was provided to me in a substantial and unconditional manner.

May the kind God bestow upon you copious blessings.

DEDICATION

This research is dedicated to the author's spouse, Mr. Nicholas, as well as their granddaughters Antonella, Ariana, and Amelia, whose births brought immense joy to the author's life. The author also extends their dedication to their children Damaris, Purity, Jackson, Agnes, and David, and their sons-in-law Antony and John, for their expressions of love, encouragement, support, and prayers throughout the author's academic journey. Lastly, I would want to express my gratitude towards my parents, David and Rose. I express my sincere gratitude for the unwavering moral, spiritual, and financial assistance provided, as well as the understanding extended during my absence for academic pursuits. May divine blessings be bestowed to all individuals.

ABSTRACT

The establishment of the Digi School, also known as the Digital Literacy Programme, by the Kenyan government aims to provide pupils with the essential skills required to succeed in the information-driven economy of the twenty-first century. The main goal of the effort was to familiarise kids enrolled in public elementary schools in Kenya with technology improvements, while also providing instructors with the essential skills to effectively provide digital learning resources. The primary aim of this research was to determine the extent of readiness among public elementary schools in Kitui County, Kenya, to adopt and execute digital literacy programmes. The research aimed to investigate whether school administrators actively supported teachers in accessing digital literacy training, aided in the maintenance of digital literacy learning devices, examined the influence of teachers' beliefs and attitudes on the implementation of digital literacy, and coordinated with relevant authorities to ensure the provision of necessary resources. The study used a descriptive methodology. The study sample consisted of a total of 7560 participants, with 3280 individuals serving as school administrators, including both head teachers and deputy head teachers, and 4280 individuals serving as classroom instructors. The researcher used a random sampling technique to identify 164 institutions from the overall population. A total of 789 answers were gathered, with each category in the sample being allotted 10% of the total. The aforementioned group included 428 individuals serving as classroom teachers and 328 individuals holding positions as school administrators. The provision of information via surveys was facilitated by the voluntary participation of instructors and school officials. To verify the dependability of the research equipment, a test-retest technique was used. The data analysis process included the use of SPSS, a programme often used in the social sciences for descriptive and statistical analysis. The use of percentages and frequencies as a means of conveying information and providing descriptions. According to the poll, a significant number of educators obtained authorization from their superiors to participate in digital training sessions. The study put out a recommendation to do more research on the integration of digital literacy in primary public schools across the country. Further investigation is necessary to ascertain if students' academic performance shown any enhancements subsequent to their engagement in digital literacy training. The primary objective of this study is to examine the impact of different digital learning programmes on student results.

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LIST OF ABBREVIATIONS AND ACRONYMS

ADS: Administration Digital Skills

BOM: Board of Management

CBC: Competency Based Curriculum

CBL: Computer Based Learning

CC: Cloud Computing

COVID 19: Corona Virus of 2019

DDS: Digital Device Storage

DL: Digital Learning

DLI: Digital Learning Integration

DLP: Digital Learning Project

DS: Digital Software

DWR: Digital Wireless Router

EMI: Emissions of Electromagnetic Interference

EU: European Union

G.O.K: Government of Kenya

ICT: Information Communication Technology

10T: Internet of Things

IWB's: Interactive White Boards

KEMI: Kenya Management Institute

KESSP: Kenya Education Support Program

KICD: Kenya Institute of Curriculum Development

KNA: Kenya News Agency

KPLC: Kenya Power and Lighting Company

LAN: Local Area Network

LDD: Learners Digital Device

MECA: Ministry of Energy and Communication Authority

MOE: Ministry of Education

MOEST: Ministry of Education Science and Technology

NCATE: National Council for Accreditation of Teacher Education

NICTP: National Information and Communication technology

PC: Performance Contracting

PTA: Parents Teachers Association

RL: Remote Learning

SBM: Staff Board of Management

SDL: School Digital Literacy

SWAP: Sector Wide Approach to Planning

TDD: Teachers Digital Device

TDL: Teacher Digital Literacy

TPAD: Teachers Performance and Appraisal Development

TSC: Teachers Service Commission

UAS: United Arabian States

UK: United Kingdom

UNESCO: United Nations Educational Scientific and Cultural Organization

VC: Video Conferencing

CHAPTER ONE: INTRODUCTION

1.0 Introduction

This section provides a comprehensive outline of the research, encompassing the contextual backdrop, statement of the issue, aims and objectives, research inquiries, and significance. This excerpt presents a comprehensive outline of the study's methodology, foundational assumptions, and research scope.

1.1 Background of the study

The implementation of a computer supply program was identified as a prominent undertaking within Kenya's Vision 2030 strategic framework for education and training. This endeavor aimed to provide pupils with the essential competencies and understanding required to thrive in the contemporary era. This initiative recognized the importance of Information and Communication Technology (ICT) in expediting the process of industrialization in Kenya by the year 2030. The incorporation of digital literacy into learning and teaching has been shown to be of utmost importance within the educational system of Kenya, as outlined in the ICT Policy of 2006. The incorporation of digital literacy into education systems necessitated the safe and appropriate use of digital technology for the purposes of integrating, analyzing, and generating knowledge. As a reaction, the Kenyan government enacted the Digital Literacy Program (DLP) in all public primary educational establishments. The Digital Literacy Program (DLP) originated from Vision 2030, a governmental program in Kenya aimed at modernizing the country's education system and equipping pupils with the necessary skills to thrive in the contemporary digital landscape.

Digital inclusion refers to the ability to afford and use financial services, effectively employ information and communication technologies, and access and complete administrative chores online via e-government services. Similar abilities are present for both these competencies and digital literacy. The ever-increasing influence of technology on the global economy and societal aspects such as employment and leisure activities is a noteworthy phenomenon. Consequently, the possession of digital literacy has transitioned from a discretionary advantage to a necessary prerequisite for people to effectively engage in their routine tasks. Hence, it is imperative for educational institutions equipped with digital literacy tools to guarantee that teachers are proficient in their use, enabling them to optimize the teaching and learning experience by effectively loading essential digital information onto these devices. Digital literacy is a fundamental skill set that has significant importance not just within the realm of business, but also within the domain of education. The usefulness and instructional content depth of online resources have exceeded those of labs. Furthermore, there has been a significant increase in the accessibility of experimental resources, allowing researchers to use them from any geographical area worldwide. The relationship between digital literacy and the accessibility of digital tools is well apparent.

According to Afshari et al. (2013), the National Council for Accreditation of Teacher Education (NCATE) has found that the use of digital technology in Kuwaiti lecture halls is more successful when school officials support digital training initiatives. Ackler and Hardman (2001) argue that it is important for school managers to possess a favorable disposition towards innovative ideas in order to effectively establish a fresh instructional approach that incorporates digital

literacy tools. Kanamba (2014) referenced the work of Delft (2004), who argued that the viewpoints of educators and administrators on the teaching of digital literacy underwent significant changes subsequent to their participation in digital literacy training programs.

Digital learning is a significant element of the competency-based curriculum for online courses that students do. Its notable feature lies in its smooth incorporation into the curriculum. There is a growing trend among academic institutions worldwide to include digital literacy (Delft, 2000). While computer programming and coding have been included into the elementary and secondary curriculum of several jurisdictions such as England and Estonia, it is worth noting that digital literacy instruction has only been integrated into the educational systems of Norway and France (Belshaw, 2011; Eurocrative, 2015). The digital approach to education emphasizes the need of instructors acquiring contemporary technical tools and strategies to effectively conduct the digital literacy program. According to Brodovskaya et al. (2009), the responsibility of integrating technology and harnessing its digital potential in education lies with the technical staff and instructional administration of different institutions.

Several developing nations, such as Finland (Ministry of instruction and Culture, Finland 2011), have undertaken a reevaluation of their academic curricula, with a specific focus on enhancing the practical aspects of digital literacy instruction. The expansion of digital literacy education in Africa is occurring at an accelerated pace. This observation implies that on a daily basis, new tendencies are sprouting throughout the continent. The digital literacy learning programs implemented in

academic institutions are now experiencing a shift in response to the widespread adoption of the virtual age (Kanamba, 2014). The digital literacy in Africa is seen to be progressively advancing on a daily basis. This observation suggests that novel advancements are starting to take place. A significant proportion of African nations have embraced uniform information and communication technology (ICT) policies for educational establishments; nevertheless, the execution of digital literacy initiatives varies across these countries (Farrel & Isaac, 2007).

According to statistics obtained from the Global System for Mobile Communications, it has been observed that as of the conclusion of 2019, over 45% of individuals residing in sub- Saharan Africa own active mobile service subscriptions. According to the projections made by the Internet World Stats (IWS), it is anticipated that by the year 2020, around 47% of the African population would possess the capability to access the internet. Despite the slowdown in mobile and internet use. Africa is now seeing a significant rise in digital growth, with its population increasingly displaying a strong inclination towards advancing technology development, enhancing its capacities, and reducing the considerable global gap in digital literacy. Africa has used many strategies to leverage the cost-effectiveness and accessibility of digital technologies.

In order to further the incorporation of technology in the field of education, Tella et al. (2007) undertook a research investigation aimed at analyzing the patterns of technological use among secondary school educators in Nigeria. The study results indicated that a significant proportion of educators maintained the perspective that technology not only facilitated learning, but also had the potential to improve it. It

is advisable to adopt a strategy whereby digital competence policies promote the use of teaching techniques that include technology, specifically emphasizing those that foster collaborative engagement between students and instructors during digital literacy education. Moreover, it is crucial to take into account the pedagogical factors that impact the integration of technology in educational environments.

The utilization of ICT digital gadgets for specialized training in Africa is now in its early stages, with a significant number of nations falling behind in technical advancement due to the rapid integration of ICT into their training systems (Lloyd, 2020). Regrettably, a significant number of developing nations in Africa, including sub-Saharan countries like Kenya, Uganda, Libya, Zambia, and Sudan, have imposed limitations on the use of Information and Communication Technology (ICT) in the field of education. These restrictions are mostly attributed to their stringent adherence to ICT legislation and policies.

Numerous educational establishments and organizations are actively working towards narrowing the digital gap in Africa and promoting the digital literacy of the population in order to facilitate capacity development. Bossler et al. (2019) observed that a notable part of African nations developed efforts that had an influence on the promotion of digital literacy.

Zenzelen, a telecommunications network in South Africa that is controlled by a cooperative, serves as a notable example. The provided service delivers internet access that is equivalent in speed and quality to that found in the most

technologically sophisticated metropolitan areas of the nation. According to Catalano (2019), the infrastructure required to facilitate the provision of dedicated internet connections to residents, businesses, and organizations was established through this initiative. Alternatively, individuals could choose to work with the cooperative to identify areas within their communities or municipalities where internet access is readily available.

According to Samantha (2015), it is important for students to acquire a thorough understanding of digital literacy in a culture that highly values education centered on knowledge acquisition. As a result, a considerable number of educational institutions have adopted and are already reaping the advantages of incorporating various information and communication technologies (ICT) into their instructional and educational practices.

In the context of a modern culture characterized by the widespread presence of technology, it is of utmost importance to support educators at the pre-primary, primary, and junior secondary school levels in obtaining the necessary digital skills and competencies that are essential for effective classroom instruction. This will facilitate the cultivation of digital literacy among the general population and promote societal advancement outside the traditional educational setting. There is a consensus that our present era is characterized by the dominance of digital technology, which has a profound impact on a considerable percentage of our everyday lives. Over the course of time, there has been a growing integration of technology into both our everyday lives and educational system, resulting in the immersion of individuals in digital worlds and various social and cultural settings.

Contemporary young individuals have a strong inclination towards significant global changes, including globalization, digitization, and internationalization. Consequently, the digital era brings attention to educational issues, as highlighted by M. Ozden in 2018. The traditional educational model, which emphasizes teacher-centered and student-centered approaches, has seen a significant shift towards a dominant digital technology-based paradigm. This transition has been driven by the growing influence of digital technologies on educational systems. This technological progress necessitates innovative digital capabilities and is linked to imminent changes in the nature of labor.

The significance of digital literacy lies in its ability to foster economic growth, advance economic development, and empower people to effectively navigate the complexities and possibilities presented by the modern digital world. Curriculum architects are faced with a variety of opportunities and challenges when it comes to modifying their designs to align with the requirements of the present labor market (Catalano, 2019). Moreover, digital literacy is characterized by a focus on the extent of technology use and efforts made to eliminate deficiencies in technical knowledge and skills (Bossler et al., 2019). Moreover, the utilization of diverse digital methodologies fosters the advancement of novel educational capabilities, hence instigating transformative societal shifts within the next generation of young individuals (Ehret & Ciklovan, 2020). One of the defining characteristics of digital literacy in the field of education is the capacity to effectively handle large quantities of information. Simultaneously with the exponential growth in data generated by both machines and people, there exists an established fact within

institutions that the financial expenses related to energy storage exhibit a downward trend. The shift from human-generated data creation to machine-generated data production necessitates the use of digital technologies (Bortolazzo, 2020).

Numerous developing nations, including Kenya, have included digital literacy into their educational programs, recognizing the prevalence of digital technology in our culture and its impact on our daily activities and interactions with other entities. According to Bauman (2000), the personal computer (PC) serves as the primary avenue for cyberactivity in both professional and domestic settings, while mobile phones and MP3 players are the most prominent personal gadgets inside society. Nevertheless, it would be incorrect to claim that we presently inhabit a digital society. Such a statement would imply that society has been produced by digital technology and that its fundamental elements are solely responsible for its present condition. Contrary to popular belief, the opposite holds true. Governments, companies, and people have developed and enhanced digital technology in order to achieve their unique goals. The present generation bears the responsibility for the beginning of the "digital age" and the "information society." Although technology alone does not produce social hierarchy, it does enable significant societal changes. According to the scholarly work of Zygmunt (2000-2001), social theorists Ulrich Beck and Zygmunt argue that the traditional industrial system is undergoing a gradual shift towards a society marked by increased risk and unpredictability. In this context, the future becomes unclear and the long-term loses its relevance.

The advent of digital technology has facilitated the worldwide expansion of commercial cultural output and economic operations. Additionally, these technologies have facilitated the accumulation of vast amounts of personal data, which is today in great demand. The digital revolution has significantly contributed to the establishment and sustenance of the "post-modern reactor society." Notably, those who have actively advocated for technology advancement with the intention of furthering their political or financial interests have considerable influence within this community.

The integration of Information and Communication Technology (ICT) in public elementary schools in Kenya is a relatively new and experimental initiative that has been implemented on a modest scale. On the other hand, there has been a notable and consistent progression in the incorporation of technology in education, which includes the formulation of policies, the teaching of computer literacy, the dissemination of research and information, and the utilization of technology in various academic fields (Manduku et al., 2011). In the first sessional study of 2005, the Government of Kenya (GOK) asserted that technology has a direct role in education and, when used effectively, may provide benefits for educational institutions and communities alike. In addition, the study asserts that technology will play a pivotal role in enabling significant advancements in digital learning by fostering communities and facilitating communication between instructors and students (GOK Sessional report, 2005).

The discernible influence of technology on the living, working, and studying routines of modern civilization is plainly seen. The continuous progression of

technology leads to the development of more sophisticated user interfaces. The behavior of people is undergoing changes as a result of the establishment of new connections. This comprises a range of tactics pertaining to learning, internet purchases, administrative activities, and reading preferences. According to Kurmia (2013), online learning has potential benefits in terms of time efficiency and convenience for both students and school administrators. The growing incorporation of technology into everyday life provides people with more independence in selecting how and when to use it in the decision-making process (Ertmer, 2012). Instructors may encounter more obstacles while using technology-based training, such as their concerns over their proficiency in utilizing digital technology (Payton, 2010) and their discomfort with its use (Prensky, 2008). As a consequence of these unfavorable impressions, many educators may encounter difficulties when attempting to include technology into their instructional practices, while others may choose to entirely refrain from its use (Ertmer, 2012).

The significance of pre-ICT curricula arises from the emergence of the digital information economy, which has resulted in significant transformations to traditional educational systems and the restructuring of present educational approaches. The objective of these changes is to foster and enhance students' abilities in self-directed learning, problem-solving, and critical evaluation (Yuen et al., 2003). Currently, educational institutions have a responsibility to provide students with the fundamental technical skills that are essential for developing their abilities as technologically proficient learners. In light of the increasing pressure on institutions to achieve excellence in the realm of technology, it is imperative that effective leadership be in place to provide the essential support for this endeavor

(Metz & Mentz, 2003). Educational technology assume a crucial role in maintaining learning continuity across diverse platforms under exigent circumstances, such as natural calamities or pandemics (Kurt & Dogan, 2020). The advent of technology has facilitated students' ability to effortlessly access educational opportunities regardless of their physical location and time constraints. Moreover, it has effectively eradicated the need for students to engage in face-to-face interactions with their lecturers (Beldarrain, 2006).

Students have the ability to use digital technology for educational objectives, including but not limited to accessing learning management systems, engaging with e-books or e- magazines, participating in online quizzes, and exchanging electronic messages. In order to maximize the effective use of technology, it is essential for educators to possess a comprehensive understanding of how to structure instructional activities in alignment with its integration (Toker, 2008). The core role of the educator stays constant throughout diverse environments, including both traditional and virtual classrooms, as well as online and offline platforms. In the contemporary period, it is imperative for educators to possess the essential competencies to integrate educational technology into the pedagogical practices of instruction and learning. To ensure the successful integration of digital technology in educational settings, educators must exhibit high levels of literacy and digital pedagogical competency (Aslan, 2021).

The possession of digital literacy is a crucial competency for educators, enabling them to effectively and safely use technology in a thoughtful and inventive way, both in their professional and personal capacities. The concept of "digital

skills" spans a broad spectrum of proficiencies, including practical knowledge, disposition, work practices, technical competence, and critical thinking, as identified by UNESCO in 2017.

According to the ICT Trust Fund (2004), which aimed to generate funding and allocate resources for the creation of computer labs and the development of digital literacy curriculum, it was determined that Kenya exhibited the highest level of innovation in ICT instructional education. The need of financing for digital learning has arisen as a result of the insufficient monitoring and evaluation of the deployment of digital learning materials facilitated by the ICT Trust Fund. In January 2019, the Kenyan government implemented the National Information and Communication Technology Policy (NICTP) with the aim of promoting equal access to high-quality physical and digital services for all persons. The strategy aims to foster collaboration between the national and county authorities. The ICT strategy required the public sector to establish service charters and enhance public knowledge about them. The Kenya Economic Strategy for Wealth Employment (2003-2007) placed significant emphasis on the need of using digital technology in order to achieve the necessary curriculum changes. According to Broadly (2012), the level of support provided by school administrators to instructors has a crucial role in influencing the effectiveness of implementing digital literacy initiatives.

The development of ICT infrastructure in public elementary schools in Kenya was supported by the government via the Digital Literacy Project (DLP). The program consisted of many components, including the establishment of computer laboratories, the dissemination of fiber optic cables, the provision of teacher

training in digital education, and the facilitation of internet and grid access in rural areas. According to Kashorda and Waema (2014), the objective of the strategy was to create a thriving society in Kenya that was driven by information and communication technology (ICT), with ICT playing a crucial role in the country's development. The objective of the policy was to enhance the use of information and communication technology (ICT) in order to support the expansion and implementation of digital learning at all levels of education in Kenya. The major focus of the study conducted by Fruth and Naecsu (2015) was to improve the quality of digital literacy education and learning in public elementary schools. According to the Ministry of Education, Science and Technology (MOEST) in 2003, Kenya's Vision 2030 emphasizes the need of integrating digital technology in schools as a means to improve educational quality and foster greater academic success. Based on the evaluation of administrative support in line with the competency-based curriculum, which recognizes digital literacy as a crucial skill (CBC, 2017), a thorough analysis of the situation unveiled that a significant number of schools located in rural regions of Kenya, particularly in Kitui County, were affected by internet connectivity problems.

Additionally, unfavorable topography posed obstacles to internet access for certain schools. As a consequence, a significant disparity in access to digital resources emerged, resulting in little progress in the adoption of digital literacy. Consequently, the researcher initiated an inquiry to evaluate the assistance provided by educational administrators in facilitating the execution of a digital literacy program in public elementary schools located in Kitui County, Kenya.

1.2 Statement of the Problem

To facilitate administrative and instructional activities, the Kenyan government earmarked a significant amount of its budget for the purchase and distribution of digital literacy teaching tools to public elementary schools. If the gadgets were used correctly for their intended aims, the expected outcomes—such as enhanced performance in the application of digital tools and technology inside academic establishments—would be attained. Prior to the purchase and distribution of digital devices to educational establishments, it was necessary for school administrators and teachers to receive appropriate training and develop the necessary skills and competencies in order to effectively utilize these digital literacy tools in public elementary schools. But it's crucial to recognize that the digital literacy initiative in Kitui County schools began before administrators and teachers had gotten enough training on how to use these tools to effectively support the teaching and learning process.

Administrators and teachers took part in a training session after the installation. Still, it was clear that they had been using the tools before they acquired the necessary training and expertise. The administration's assistance was crucial in helping teachers develop the necessary skills to use the gadgets efficiently. This implies that there hasn't been enough success in implementing digital literacy instruction in academic settings. The motivation behind this study was a concern about how much school administrators in Kitui County, Kenya, helped integrate digital literacy initiatives into public primary schools. This study set out to evaluate the extent to which school administrators supported the execution of digital literacy initiatives.

1.3 Purpose of the Study

This research set out to evaluate the assistance that Kitui County, Kenya, public primary school administrators gave to their teachers in order to get them ready to administer the digital literacy program.

1.4 Objectives of the Study

The study was guided by the following specific objectives:

i) To establish whether the school administrators facilitate teachers to receive digital literacy training in public primary schools in Kitui County.

ii) To determine whether the school administrators facilitate the maintenance of digital literacy learning devices in public primary schools in Kitui County.

iii) To assess whether teachers' beliefs and attitudes in digital literacy affect their implementation of the programme in Kitui County.

iv) To examine whether the school administrators have relevant skills and competencies to enable implementation of digital literacy programme in public primary schools in Kitui County.

v) To determine whether the school administrators liaise with the relevant authorities for provision of digital literacy content for implementation of the programme in public primary schools in Kitui County.

1.5 Research Questions

The study sought to find answers to the following research questions.

i) How do school administrators facilitate teachers to access digital literacy training in public primary schools in Kitui County?

ii) How do school administrators ensure maintenance of the Digital Literacy

Learning Devices in public primary schools in Kitui County?

iii) How do teachers "beliefs and attitudes towards digital literacy learning affect their implementation of the programme in public primary schools in Kitui County?

iv) How do school administrators' digital skills and competencies influence implementation of the programme in public primary schools in Kitui County?

v) How does school administrator liaise with the relevant authorities for provision of digital literacy content to support the programme implementation in public primary school in Kitui County?

1.6 Significance of the Study

The outcomes would be pivotal since the Ministry of Education might use them to augment digital literacy trainings and educate teachers and school administrators on the utilization of digital gadgets.

School administrators might benefit from integrating the results into their implementation of digital literacy efforts. The study's results may provide valuable insights into how school administrators may effectively assist instructors in implementing digital literacy efforts. The study's results might be valuable for academics investigating the implementation of government initiatives overseen by numerous agencies, in order to assess whether similar obstacles are encountered in other projects and programs.

The Digital Literacy Program (DLP) is of utmost importance to the Kenyan government's objectives. If this initiative is implemented successfully, it has the potential to significantly change the education system and also stimulate the economic growth of the country by creating jobs and developing a skilled workforce that is essential in the 21st century digital economy. The results of this research will help the Kenyan government identify shortcomings in digital literacy education at the primary level in public institutions, perhaps leading to the creation of effective initiatives to remedy these shortcomings. By integrating the discoveries of the study, instructors might potentially expand the scope of their teaching methods. Furthermore, educators may have the chance to participate to the establishment of a digital framework for the twenty-first century by proposing components that they deem necessary for the framework, drawing on the study's discoveries.

Furthermore, school administrators seeking to include digital literacy programs may find the study results valuable. The study's findings may provide valuable support to policy makers, empowering them with the essential knowledge and confidence to traverse the domain of digital literacy. Consequently, this will streamline their capacity to establish connections, get information, and flourish in the modern, swiftly changing digital landscape. Donors will get advantages from the study's results as they will possess the ability to rapidly discern the most vital information and prudently allocate funding towards digital literacy efforts. The study findings will provide benefits for both instructors and pupils. Teachers may use this knowledge to help students recognize biased or inaccurate information on websites, allowing them to steer clear of such content and find trustworthy

materials from reputable sources. The study's results would provide each group with new knowledge, thereby enabling educational administrators to execute digital literacy programs more efficiently in public elementary schools in Kitui County, Kenya.

1.7 Delimitations of the Study

The study set out to quantify the extent to which school administrators in Kitui County, Kenya, helped in the rollout of digital literacy initiatives. The research aimed to reach primary school teachers, principals, and assistant principals in public schools. Given the variability in educational philosophy and practice among private school owners, this study focused only on public elementary schools in Kitui County. The Ministry of Education's (MOE) Digital Literacy Project (DLP), which supplied free digital gadgets to public primary schools, did not benefit private primary schools.

Public elementary school administrators provided the most of research responses, whereas classroom teachers provided the bulk of information. The study primarily focused on public primary schools that had adopted a digital literacy program, so it omitted administrators from private schools.

1.8 Limitations of the Study

The conclusions presented in this research were formulated using the data obtained from participant surveys concerning the implementation of a digital literacy initiative in public primary schools. Considering the fact that the execution of the digital literacy implementation had already begun, the researcher's contribution became insignificant.

Time constraints and the accessibility of participants to complete the self-administered questionnaires constituted the principal limitations of the research. In order to mitigate this constraint, the investigator employed a practical approach by granting participants a duration of two weeks to finalize the survey. Furthermore, the researcher underscored the importance and benefits of their participation in the research. Additionally, a portion of the participants harbored a negative attitude toward the study on account of apprehensions regarding the disclosure of sensitive personal information in the questionnaire, which put them at risk of the information becoming public. To mitigate this constraint, the investigator furnished participants with the assurance that their answers would be treated with utmost confidentiality and exclusively employed for the purposes of the study.

Regarding the implementation of digital literacy programs in public primary schools, the responses of participants formed the basis of this study's findings. Given the pre-existing implementation of digital literacy, the researcher lacked agency in the subject matter.

The two primary limitations of the research were time and respondent accessibility to the self- administered questionnaires. By granting participants two weeks to complete the survey and emphasizing the significance and benefits of their involvement in the research, the investigator managed to surmount this limitation. Secondly, a subset of participants exhibited an adverse response towards the research due to the inclusion of confidential personal information in the questionnaire, which sparked concerns regarding its potential disclosure to the public. The researcher remedied this limitation by assuring participants that their

responses would be utilized solely for research purposes and would be treated with the utmost confidentiality.

1.9 Assumptions of the Study

In the course of the study, the following assumptions were made.

i) That all the public primary schools in Kitui County received the digital literacy devices.
ii) That all the respondents were cooperative and that they provided honest responses.
iii) That all the school administrators were welcoming and ready to participate in the study.

1.10 Operational definition of terms

Public Primary School- This is a learning institution where primary education Learning takes place.

School Administrator- Refers to a person who is in charge of a public primary the school.

Administrators Support- This is the support given by administrators to their staff either moral, or financial.

Computer Knowledge- Refers to how much digital information the school has.

School Management- This refers to a group of individuals chosen, elected or appointed and charged with the responsibility of overseeing the running of public primary schools.

Digital Curriculum- Refers to any form of information that is stored digitally and can be used for digital learning.

Digital Preparedness- Refers to the concept that describes people's tendency and ability to use digital technologies for achieving set goals and objectives.

Digital divide- Refers to the inability of all to have equal access to technology. It means the 'the gap' between those who can benefit for digital technology and those who cannot.

E-learning- Refers to any teaching and learning that is facilitate Under computer mediated environment.

Instructional Media- Refers to the approaches and tools used in teaching and learning programmes.

Digital Literacy- Refers to the ability of having the current skills and competencies to handle and use technological devices.

Computer literacy- Refers to understanding of concepts, terminologies and operations that relate to general computer use.

Implementation- This refers to putting a plan or decision into effect or practically executing planned activities.

A developed country- Refers to a country with advanced technological infrastructure and diverse industrial service sectors. A developed country is also called an industrialized country.

Digital content- Refers to any digital media used for digital literacy learning. It exists as digital data and can be steamed or contained in digital devices and files.

Beliefs- This is a tendency of an individual accepting that something exists or is true without truth or proof.

Attitude- Refers to an opinion or a deep feeling about something which is sometimes very difficult to change.

Competency- This refers to the ability one has to do something perfectly or successfully.

Competency Based This refers to a learner centered and adaptive

Curriculum (CBC) - Curriculum that puts more emphasis on what learners are expected to do rather than focusing on what they know.

Digital Tools- Refers to the tools that assist teaching and learning processes. They are in other words online programs, applications or technologies that help in digital literacy learning.

Pre-technology-Refers to the time before the advent or start of modern Technology.

Support -Refers to giving assistance to someone either morally, spiritually or financially, for him /her to achieve a given objective.

East Africa-These are the Countries located to the eastern part of Africa. They include, Kenya, Uganda and Tanzania.

Digital learning resources -Refers to images, audio and video materials used for digital literacy teaching and learning.

Digital Technologies - Electronic devices that process and store binary bits such as personal computers, calculators, cellular phones and I-pads.

Professional Development-Refers to a coordinated set of planned activities that are based on research, are standard-based and are continuous.

Information literacy-is the ability to seek, access, and supply information.

Media literacy-refers to the way people analyze and interpret messages from mass media.

1.11 Organization of the Study

This piece of work comprises five chapters. The introduction section of the first chapter encompasses various elements, including background information, the problem statement, the study's purpose and objectives, research questions, the study's significance, limitations, delimitations, assumptions, an operational definition of terms, and the organization of the study.

Chapter two covers the theoretical framework, a summary of relevant literature on digital training, maintenance of digital devices, viewpoints of instructors on digital literacy, skills and knowledge of administrators, and digital resources for implementing digital literacy. This chapter is concluded with a summary of the conceptual framework and literature evaluation.

Chapter Three presents a comprehensive description of the research study's methodology. The covered subjects include: Introduction, Study Design, Target Population, Sampling Strategy and Sample Size, Research Instruments, Data Collection Methods, and Data Analysis Techniques.

Chapter Four provides a comprehensive analysis and explanation of the data.

Chapter Five concludes by providing a summary, offering ideas, and presenting concepts for future research that aligns with the study's aims and goals.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter presented a comprehensive review of the existing literature concerning the assistance that school administrators have received in order to implement digital literacy programs in primary public schools.Digital learning is an essential component of educational institutions due to the myriad benefits it offers to administrators, instructors, and students. Consistent access to pertinent digital information, according to Sun and Baris (2011), facilitates the development of digital literacy abilities. According to Sun et al. (2008), the implementation of digital technology in education yields several benefits, including reduced learning time, consistent service delivery, and the development of specialized expertise for administrators in the same field.

Digital literacy encompasses the ability to effectively and critically utilize information and communication technology (ICT) for a variety of objectives, including work, education, recreation, and civic participation (Ala, 2011).

Learning digital literacy (Elkaseh et al., 2015) denotes the acquisition of information and abilities through the utilization of computers and other information technology systems. In contrast, digital learning pertains to the dissemination of knowledge through the utilization of electronic devices and digital media (Woodcock et al., 2012). Digital literacy refers to the provision of educational content through the incorporation of information and communication technology (ICT) into the curriculum (UNESCO, 2015). Hazma, Nasir, and Wahhabi (2021) posit that in the twenty-first century, it is imperative for school administrators to demonstrate competence in using technology to fulfill their professional and daily

administrative obligations. This acts as a means to encourage their peers to utilize technology. While there is an increasing emphasis on technology leadership, the influence of school administrators on the success of digital adoption has received relatively less scholarly attention. Consider Kozkoski (2018).

Krumsvik (2007) provided a definition of digital literacy in his research on the digital competencies of educators. He described it as the ability to effectively employ information and technologies to find, evaluate, produce, and distribute content, which requires both cognitive and technical expertise. Digital inclusion, which pertains to the capability of individuals to access and employ information and communication technology, in addition to performing administrative duties via digital devices, is intricately linked to digital literacy (Koehler & Mishra, 2008).Lee et al. (2014) underscored the importance of offering assistance for digital literacy endeavors, including the enhancement of technology accessibility and digital literacy resources. They discovered that this assistance is vital for increasing student engagement in digital classes. In order to improve learners' competencies and aptitudes in communication, problem-solving, collaboration, and the development of perpetual learning principles, Voogt (2003) suggests the implementation of digital learning. Promoting the development of digital competencies relevant to the twenty-first century among students would be an incentive worthy of consideration by educational establishments across the globe.

The integration of information and communication technology (ICT) into educational systems in Africa is sluggish, limiting its application to fundamental levels. Consequently, several nations in the region face the imminent danger of lagging behind in technological progress (Llyod, 2020). Unfortunately, concerning

the advancement of literacy on a global scale, the majority of sub-Saharan African nations are wrestling with formidable obstacles.

The European Union identified a significant surge in the global digitalization of education over the last ten years in 2013. The integration of digital technology into educational practices has garnered particular attention in recent times. The general consensus regarding the potential of digital technologies to enhance education quality is that they possess considerable capability (UNESCO, 2009). In Uganda, this interest has resulted in investments made by the government, its development partners and private individuals to increase the availability of digital technologies in schools and support technology driven pedagogy in Teacher Education Programmes (Mutonyi&Norton,2017).In the context of this global technological development of digital technologies, administrators need to support the digital literacy learning.(Mishra &Koehler 2006).However, although Uganda like any other nations has been recognized for its efforts to integrate digital technology in teacher education, the use is still at the embryonic stages due to lack of effective digital policies, basic infrastructure(electricity, digital devices, internet), financial resources and teacher capacity (Ndiwalana& Tusubira,2012).For almost ten years, studies in Uganda continue to refill the gap between the technology available in classrooms and teachers abilities to use these technologies in teacher education programmes (Nakintu&Neema 2015).

Historically, the incorporation of digital technology into East African educational institutions has been a gradual one (Liverpool, 2002). Nonetheless, recent developments have occurred in this regard. Academic establishments are

progressively acquiring digital technology devices and tools to aid in the development of digital literacy and the performance of administrative responsibilities. Tanzania is the only East African nation to incorporate technology as a discrete subject matter within its public primary school curriculum. One of the determinants influencing technological integration in this nation is the accessibility of software in Kiswahili, which significantly simplifies its implementation. However, it is important to note that secondary institutions in Kenya and Uganda teach technology as a distinct subject. Although it undergoes scrutiny, its integration into public primary institutions is currently quite restricted. As a result of the wide array of subjects that students select in school, their degrees of access differ contingent upon the specific subject selected. Computers are readily available to students majoring in computer studies in nations such as Kenya and Uganda.

Educational establishments that offer virtual learning environments benefit significantly from having wide-ranging computer access. This encompasses academic establishments that maintain science and computer societies concurrently (Babikwa Baguna, 2009). As a result, the extent to which students and schools have access to digital literacy resources differs. A research study conducted by Ndidde et al. (2009) provided further support for this notion, demonstrating that learners' technological usage varied due to disparities in computer accessibility, institutional policies, and levels of technological expertise.

Individual differences, educational institutions, teacher preparation, student performance, and computer club membership all influenced the manner in which

students utilized computers. Several of these elements had an effect on the degree of achievement in incorporating technology into the academic curriculum.

In order to capitalize on digital literacy, a number of developed and developing countries have integrated digital learning technologies into their educational systems. Robust evidence suggests that ICT can effectively facilitate teaching and learning when employed appropriately and in suitable contexts. Over the past two decades, developing countries such as Kenya have placed significant emphasis on e-government and the empowerment of ICT professionals when it comes to digital technology in education. The secondary and tertiary levels have borne the brunt of substantial expenditures. As documented in Sessional Paper No. 4 of 2012, Kenya has encountered numerous challenges in its endeavor to implement digital literacy programs. Among these is a deficiency in digital training for instructors and school administrators, respectively, who bear the responsibility of executing digital initiatives and making critical decisions. The influence of technology in augmenting the capabilities of learners will persistently expand.

Throughout history, the conventional approach to education has entailed instructors developing lesson plans and directing learners through a sequence of instructional procedures with the aim of achieving specific educational goals. The citation is from 2011 by Tosun and Baris.

Throughout history, these pedagogical approaches have centered on purposefully transmitting information through nonverbal means, subsequently supplementing the learning process with interactive digital resources. Modern ICT learning approaches provide ample prospects for constructivist learning through the

facilitation of resource-centric, student-centered environments and the establishment of connections between learning and practical application and context. ICT resources enable the generation of knowledge during the learning process, and as students integrate ICT more frequently into their studies, the extent of their digital impact grows. Yeh & Chena (2008). Educators employ digital technologies in a strategic manner to facilitate learning through the development of engaging and purposeful educational encounters for their pupils. Students find learning and conducting independent investigation to be enjoyable. This enthusiasm is fostered through the innovative and efficient application of digital instruments (Damsa & Lange, 2019).

The digital literacy program, which aims to integrate all students into a digital education system, is an initiative that originated from the Kenya Vision 2030 (Tarus, Gichoya, & Muumbo 2015). Smith (2016) argued that public schools have benefited from digital literacy programs. To begin with, they have enabled advancements in human society and eliminated barriers to digital technology access, thus empowering students to engage in the worldwide digital economy and guaranteeing their continued familiarity with digital developments. In addition, equitable and impartial digital educational resources of superior quality are readily available. This has enabled the exchange and dissemination of knowledge. It is imperative to acknowledge digital literacy as a fundamental component of integrating curricula for students around the globe. According to studies, the prevalence of technology use among children aged 5 to 15 in the United Kingdom is quite high. The citation is from a 2016 work by Smith.

In the current era, digital literacy is an indispensable set of abilities (Mishra, 2013). To provide digital natives with an excellent and contemporary education, it is crucial that instructors of today possess digital literacy skills. In order to accommodate the swift progressions of information and communication technology (ICT) and its integration within the realm of education, it is imperative that teacher education programs integrate up-to-date regulatory standards. Albion et al. (2015) and Fu (2013) are the sources specified in the references. An element of this implementation entails educating instructors who possess a high level of proficiency in digital literacy. An educator who possesses digital literacy is anticipated to exhibit an extensive array of competencies and skills. The aforementioned encompass the following: employing technology to augment pedagogical approaches; possessing an extensive understanding of diverse technological instruments; maintaining an optimistic perspective regarding the integration of technology into pedagogical practices; and exhibiting adequate technical, cognitive, and socio-emotional proficiencies in digital literacy, the digital milieu, and societal involvement. The appropriate citation is "Ala, 2011."

The instruction of digital literacy within educational institutions is feasible, and the onus is on literacy instructors to augment the digital proficiencies of their pupils. Diverse educational environments may adopt this approach. Educators fulfill an indispensable function by imparting invaluable knowledge to students and to society at large. Their selection of educational philosophies also influences the governance of the teaching-learning process.

Therefore, their approach to education impacts various facets, such as the choice of

classroom activities, the application of strategies, models, and methods, the implementation of digital evaluation tools and assessments, and the structure of approaches and frameworks for student discipline (Aslan, 2017; Doganay & San, 2003; Ornstein & Hunkins, 2012; Posner, 2009).

Digital literacy skills pertain to the continuous and interactive procedures that necessitate proficient communication and demand expertise in information and communication technologies (ICTs), with a specific emphasis on the Internet. Individuals are able to develop a fresh comprehension of cultural creativity by utilizing these abilities (Kumar & Bhushan, 2020). The acquisition and effective utilization of technology essential for daily life, education, and employment in a society where communication and information retrieval are critical for efficient operation are contingent upon digital literacy (Al-Omari, 2019).

The integration of digital technologies into education has substantially altered the relationship between school administrators, teachers, and these technologies, according to research. According to Silvester, Phadungtin, and Buchanan (2009), the dissemination of knowledge has gone beyond conventional lecture methods and has grown substantially since the advent of new technologies. Digital technologies are expanding their presence in the realm of education to include mobile devices, video projectors, smartboards, e-books, downloadable music, uninterrupted audio and video networks, and online social networks. In 2022, Yildiz published the citation. Ronzhina et al. (2021) posit that educators assume the dual role of knowledge imparters and facilitators of learning support for students during the digital age.

Digital literacy is an essential competency that both instructors and administrators must possess within an academic institution. This encompasses the capacity to acquire and apply precise information with efficacy, with the aim of empowering learners.

Through this process, pupils are able to generate and produce novel work, assess and substantiate circumstances, scrutinize and establish connections between concepts, implement and employ acquired knowledge, comprehend and elucidate principles, and retrieve factual information. It is imperative that educators and school administrators exercise prudence when extracting vital information from the digital realm in order to guarantee its precision. Ensuring the safety and prosperity of their students' thoughts is a critical responsibility that falls squarely on the shoulders of educators (Bhaumik, 2020).

According to Kiget, Mugembi, and Asselemo (2014), the internet, in conjunction with various digital technologies including personal computers, mobile devices, iPads, tablets, social media platforms, online gaming, and multimedia, has substantially accelerated the integration of digital procedures. In light of these considerations as a whole, the authors of these studies agree that the availability of appropriate digital literacy devices and resources was critical to the effective implementation of digital literacy programs in schools. Modern- day students possess a comprehensive understanding of digital technologies due to their familiarity with the workflow involved in producing, accessing, and disseminating digital content via digital apparatus, including laptops, smartphones, computers, and tablets. Consider Foote and Flip (2007). According to Tondeur et al. (2007),

digital literacy comprises the capacity to evaluate and integrate digital knowledge in addition to the ability to locate content on the web and internet. Digital literacy encompasses not only technical expertise but also the comprehension of fundamental concepts and ideas.

It is the responsibility of the administrative division of an academic institution to ensure that all departments operate with maximum effectiveness and efficiency. This department acts as an intermediary between instructors and senior management. Furthermore, it functions as a catalyst for employee motivation and ensures the achievement of organizational goals.

Following the establishment of the digital system at the academic institution, it is critical that all staff members attain expertise and complete training in the proper utilization of the same digital platforms and software. The onus of such decision-making and the implementation of systematic procedures to ensure that all educators possess sufficient digital competencies falls on the senior management. Scholars from Australia have conducted research (Hammond & Macken, Horarik 2000, Makin & McNaught 2000) which indicates that educators, regardless of their level of experience, have a restricted understanding of digital literacies. This finding suggests that current and prospective educators may not be able to adequately meet the demands and requirements of the twenty-first century.

Henderson (2003) investigated the correlation between students' acknowledgment of their digital proficiency, the pedagogical methods utilized by educators, and the accessibility of digital resources both within the classroom and at home. The

results unveiled a substantial discrepancy. Neglecting to consider the technological proficiency of learners may hinder endeavors to narrow the digital divide.

Henderson (2003) emphasized the need for educators to be aware of the various digital devices that students bring into the classroom. Srivastava and Dey (2018) conducted an investigation into the technological challenges that educators face in their study. The responses to the survey regarding configurations of digital systems in classrooms and challenges faced when implementing technology, such as limited time for engaging with digital technologies, insufficient technical support, and restricted digital resources, revealed a range of viewpoints. Robollo-Catan and Garcia-Perez (2016) discovered in a separate investigation that the efficacy of social networks and digital literacy tools was ambiguous. An examination of the instructor's routine teaching and learning activities revealed that their digital literacy skills and competencies were noticeably deficient.

The application of digital technology in education has been the subject of an expanding body of research in recent decades (OECD 2015; Sung et al. 2016). Digital technologies serve a wide range of educational objectives and provide numerous benefits in comparison to conventional learning resources (Faber et al., 2017). Digital technologies are not only effective in facilitating collaborative learning and enhancing learning achievement (Laakso et al., 2018; Kurvinen et al., 2020), but they are also valuable assessment tools for monitoring students' progress and improving teachers' instructional strategies (Faber et al., 2017; Kurvinen et al., 2016; Laakso et al., 2018). The existing body of literature is replete with findings

from comprehensive studies that have examined digital literacy in educational institutions. Tyger (2011) undertook research to evaluate the proficiency levels of students and instructors in the digital realm. Moreover, additional scholarly investigations have examined the perspectives and convictions of educators concerning distance learning (Kaleli Yilmaz & Guven, 2015).

2.1 School Administrator's Support for Teachers Training in Implementation of Digital Literacy

According to Kincaid and Filder (2002), the support of administrators is essential for the effective implementation of digital literacy teaching in educational settings. The use of technology in the classroom is contingent upon the presence and involvement of school administrators, as shown by the research conducted by Ziegler in 2006. The scholarly literature suggests that a significant concern is on the integration of technology into educational courses. According to Demoski (2012), it is essential for leaders in the area of educational technology to acknowledge and embrace their own potential as leaders.

In order to enhance the provision of digital literacy education of a superior standard, scholars have proposed that educational administrators should provide various resources such as teacher training, administrative support, financial allocation, and promotional efforts (Giannoni & Tesone, 2003). According to the findings of Olojo et al. (2012), the implementation of a meticulously planned digital literacy program has the potential to provide desired outcomes for pupils. This entails fostering students' engagement and commitment towards their digital education. The role of managers in online digital learning

programs should include the responsibility of fostering a culture of excellence via their role as motivators and supporters. According to Cuellar (2002), administrators have the task of fostering a culture that motivates instructors to use technology into their instructional practices. School administrators have the obligation of providing and organizing the necessary administrative and technical support, while they champion the cause of enhancing digital literacy among both students and instructors. In order to ensure a successful implementation of the digital literacy teaching process, Giannini and Tesone (2003) argue that administrators should provide support in the form of training, financing, and promotional materials, as suggested by Levy (2003).

The cultivation, reinforcement, and enhancement of educators' digital competencies in the field of education are imperative in order to foster the emergence of proficient specialists in digital technologies. According to Eynon and Geniets (2016), individuals who possess digital skills are characterized by their capacity to use digital technologies for activities such as information retrieval, data processing, analysis, problem-solving, communication, and several other functions. Nevertheless, a dearth of agreement exists about the most effective methodologies for instructing individuals in the cultivation of these proficiencies within educational and managerial contexts.

The efficacy of educational institutions using information and communication technology (ICT) is contingent upon the instructors' proficient utilization of the available instruments, as indicated by research produced and disseminated by esteemed worldwide organizations.

According to a study conducted by Gene (2018), it was shown that students who are enrolled in Massive Open Online Courses (MOOCs) exhibit subpar levels of digital literacy. As a consequence, a surplus of replicated digital content emerged, posing challenges for staff members in the process of organizing and selecting the most relevant materials to provide to students. Consequently, it is unsurprising that there has been a continuous interest in assessing the effectiveness of initiatives aimed at enhancing instructors' digital proficiency. Nevertheless, assessors have encountered obstacles due to a dearth of innovative methodologies for cultivating more effective educators, as well as the difficulty of sustaining training efforts over an extended period (Murillo, 2005).

Numerous endeavors have been made to establish teacher training programs in Latin American countries. Despite the significant financial investment, the accomplishments so far have fallen short of the desired ideal. Examining the lack of results. Ciardelli and Duhalde (2001) argue that a notable conflict arises between the use of information for digital content generation and the prevailing regional educational beliefs that value teaching as the transfer of knowledge and learning as the passive absorption of such information.

In Korea, educators have access to a range of professional development options via various channels, including as conventional face-to-face teaching, online courses, and distance learning programs (Ministry of Education, 2020). According to Kerris (2015), the provision of courses by online teacher training centers, whether privately or publicly operated, began in the year 2000. Subsequently, Kang (2016) reported that these centers expanded their offerings to include both completely

online and blended learning options for educators by 2016. The projects overseen by KERRI include a range of educational initiatives, including the Edunet online learning platform, the Wedorang online school/class community designed for teachers, data services for educational administration, and support for the cyber education system. Supporting teachers' digital training and capacity development has been identified as a key aspect in the preparations of several governments for the widespread implementation of digital literacy (Ministry of Education, 2020).

It is imperative for educational leaders to proactively provide resources to support their teachers' participation in digital training programs, so enabling them to gain the essential skills and knowledge in this domain. According to Buckworth (2017), participation in a digital training course has the potential to enable instructors to exceed their educational goals and objectives. To effectively address the needs of contemporary students, educators are required to adapt their instructional approaches and acquire the necessary knowledge and experience to facilitate the development of their students' competencies (Rusznyak, 2008).

In the realm of professional development, the integration of digitalization and training initiatives not only enhances teachers' accessibility to professional programs and digital learning materials, but also enhances instructors' capacity to engage in collaborative teaching- related endeavors (Halid, 2020). Digital trainings have brought about a significant transformation in the manner in which professional development is imparted to educators. This revolution has facilitated the ability to reach a larger number of teachers in a shorter span of time, irrespective of their geographical location. Furthermore, digital trainings offer a

wider range of options in terms of course duration, content coverage, and level of specialization. Additionally, they provide alternative pathways for certification (Vuprikari, 2018).

According to the OECD (2019), some occupations have the potential to be automated, while others may see modifications or improvements in their operations as a result of the integration of digital technology. Emerging technologies provide the potential to significantly transform the approach educators do various tasks, including administrative responsibilities and assessments, so affording them more time to dedicate towards enhancing their own professional growth. Moreover, individuals who operate in digitally intensive environments are inclined to maintain the currency of their abilities, acquire knowledge from their colleagues, engage in experiential learning, and remain up-to-date. This observation also holds true for educators who possess digital training. According to Stein (2015), the increasing prevalence of digital trainings in professional settings would need a shift in the practices and use of information by educators and other professionals. Insufficient digital training is a significant challenge for educators who lack prior, concurrent, and subsequent digital literacy instruction when integrating digital literacies into their classrooms. As an example, the citation provided in the text is from a study conducted by Betancourt et al. in 2021.

The utilization of technology as a tool for implementation in education is significantly influenced by societal pressure on administrators. This pressure serves as a potent catalyst for the increased adoption of technology in teaching, learning, and learner achievement (O'Dwyer et al., 2004). Within the realm of education,

technology has the potential to enhance the overall experience for both teachers and students. Nevertheless, a limited number of school administrators assert their expertise in technology due to their limited exposure to emerging technologies. Nonetheless, in the current period, technology permeates every facet of education, necessitating the provision of adequate assistance to teachers in developing digital literacy skills (Gosmire & Grady, 2007).

According to Dias (2001), it is crucial for educational administrators to possess a comprehensive understanding of the principles that define optimal approaches to incorporating technology into the classroom, as well as the need to provide enough support for such endeavors.

Administrative personnel inside educational institutions that possess inadequate digital literacy skills are ill-prepared to assess the effectiveness of teachers' endeavors in enhancing students' digital literacy and academic performance. A collaborative effort between educators and business leaders resulted in the creation of two sets of standards: the National Education Technology Standards for Administrators (NETS-A) and the National Educational Technology Standards for Students (NETS-S), developed by the International Society for Technology in Education (ISTE). These standards aim to assist educational institutions nationwide in optimizing the integration of technology within the classroom environment. The planning criteria aim to enhance the effectiveness of implementation by providing faculty with the necessary training to optimize the use of technology resources.

Demonstrating support for teachers throughout the implementation of the digital literacy curriculum is a crucial aspect for administrators (Rodriguez, 2012). The aforementioned standard effectively fulfills this need. This included offering financial and ethical support to educators, enabling their engagement in digital literacy training programs and facilitating the acquisition of essential competencies and understanding for proficient use of digital resources within educational settings. In order to achieve the objective of incorporating technology into educational settings, school administrators actively promote the implementation of the vision standard and actively include all relevant stakeholders.

According to the study conducted by Afshari et al. (2009), it is imperative for educational administrators to actively encourage and cultivate widespread and proficient involvement in leadership activities, particularly as the need for schools to transform into more productive and streamlined digital learning communities continues to grow. It is imperative that administrators possess a high level of proficiency in using technology, as this will enable them to effectively guide and lead the use of technology for administrative, instructional, and learning objectives. Based on the guidelines provided by ISTE/NETS-A, it is recommended that educational administrators foster a culture of participation among teachers in digital training programs. These initiatives aim to provide educators with the necessary skills and knowledge to effectively execute digital literacy programs inside educational institutions.

The provision of needed support for a successful, integrated student-centered usage of digital technology is primarily facilitated by school administrators. It is

vital for educational institution authorities to possess a well-defined objective regarding the instruction of digital literacy abilities to pupils. According to Richardson et al. (2012), There has been a sustained interest in assessing initiatives aimed at enhancing teachers' digital literacy skills through their participation in digital training sessions and workshops. This interest stems from findings of various studies conducted by international organizations, which indicate that the efficacy of information technology in educational settings is heavily reliant on the digital competencies possessed by teachers. Nevertheless, school administrators are now facing many obstacles due to the scarcity of innovative approaches to enhance their effectiveness, as well as the inherent difficulty in sustaining their training efforts over an extended period (Murillo, 2005).

While the availability of infrastructure and digital resources is undeniably important, it is the support provided by school administrators that has shown to be a more significant factor in determining teachers' use of computers for the implementation of digital literacy initiatives inside educational institutions. Based on the findings of a study conducted by Anderson and Dexler (2005), it can be inferred that educators have a higher inclination towards integrating technology into their instructional practices when their educational administrators devise effective approaches to enhance students' digital literacy and effectively convey this objective to them. In contrast, the study conducted by Wong and Li (2008) examined the various factors that played a role in the effective digital transformation of eight educational institutions located in Hong Kong and Singapore. The findings of their research indicated that the promotion of collaboration and experimentation by leadership, as well as the dedication of

teachers towards student-centered learning, were found to be highly influential in this process. In a subsequent study, Ng (2008) conducted further investigation into the concept of transformational leadership.

The researcher identified and expounded upon several key characteristics associated with this leadership style, including the ability to establish and communicate a clear vision, fostering a sense of shared goals among group members, offering personalized digital support, stimulating intellectual growth, serving as a suitable role model, setting high performance expectations, and enhancing the implementation of digital literacy initiatives within educational institutions. Furthermore, a case study was conducted by Yuen et al. (2003) in which 18 schools in Hong Kong were examined. The study revealed that schools that employed the catalytic integration model had school administrators who played a crucial role as change agents. These administrators demonstrated visionary leadership and actively encouraged staff development, training, and involvement in the implementation of digital literacy. Anderson and Dexler (2005) posited that the successful integration of ICTs in educational settings is contingent upon robust administrative leadership and comprehensive support for instructors. The delegation of responsibility for expanding digital literacy programs from school administrators to teachers and other staff members has advantages for all parties involved.

The endorsement of top-level executives and the development of strategic plans are characteristic traits of progressive organizations, and information and communication technology (ICT) strategies play a crucial role in facilitating digital

literacy endeavors. Kiungu (2019) conducted a study on the integration of digital literacy (DL) in education, whereby school administrators and educators were surveyed. The findings revealed that educators faced a deficiency in digital training, hindering their ability to effectively implement DL practices within their classrooms. Furthermore, the study said that the training provided to educators on Dual Language Immersion (DLI) was very restricted and failed to include fundamental pedagogical techniques. The findings of the study indicated that trained teachers were susceptible to attrition as a result of several circumstances, including transfers, promotions, retirements, and natural attrition. Additionally, it was observed that there was a lack of adequate support for trainings provided by school administration. McGraw and Kearney (2009) conducted a qualitative survey to examine the impact of ICT technology on school administrators' perceptions and outcomes.

The study revealed that a significant number of school administrators experienced disappointment due to their inability to fully implement the anticipated level of ICT technology. The research used a methodology that included simple random sampling and utilized a descriptive survey research design. Data was collected from headteachers, who served as the school administrators, via the use of interview guides and self-administered questionnaires. The researchers encountered challenges in conducting digital trainings due to constraints such as time limitations, limited financial resources, and insufficient support.

In a separate study conducted by Maurizio and Wilson (2004), it was observed that the majority of school communities in undeveloped countries had little or

nonexistent exposure to digital technologies, with a notable absence of any prior training in computer technology use. Hence, the insufficient allocation of financial resources for information and communication technology (ICT) remains a significant obstacle to the advancement of digital literacy, fluency, and competency in the contemporary period. When considering the whole of these research, it becomes evident that a prevailing observation is the insufficient digital training acquired by school administrators and instructors. According to Rent and Meelised (2008), the proficient use of digital technology in the field of education is of utmost importance, as it serves both educational and administrative purposes. They assert that providing enough support for this endeavor is essential. The successful implementation of digital literacy programs necessitates school administrators to possess the necessary readiness and capability to effectively support and manage digital technologies, including computers and associated software and hardware.

According to Johnson et al. (2016), it is essential for teachers to get comprehensive administrative and peer assistance in order to effectively adopt digital literacy. In a study conducted by Musset et al. (2012), it was observed that educators should be provided with the necessary support from proficient specialists in order to effectively operate and troubleshoot equipment and software. Insufficient assistance from other students and educational administrators might potentially result in increased time and effort required for the successful integration of novel technology into instructional practices within the classroom setting. Educators within professional learning networks may get support via continuous technological conversation. According to Johnson et al., in order to develop and execute innovative teaching practices that use digital technology, educators need

ongoing support from both their peers and school administrators. According to Johnson et al. (2016), professional learning networks have the potential to provide support in the form of conducting regular discussions on technology subjects.

The attitudes and skills of educators towards digital technology might potentially have a substantial influence on the extent to which pupils are exposed to and use these technologies within the educational setting. In order to enhance student learning, it is necessary to implement changes in the pedagogical training of teachers and their continuous professional growth. According to Thijis et al. (2014), educators who lack adequate training may have difficulties in properly integrating technology into the classroom setting. Educators need to allocate a significant amount of time to engage in rigorous study in order to transition from the role of mere information transmitters to that of facilitators who assist students in the practical application of acquired knowledge. The effective integration of technology in the classroom necessitates the imperative professional development and training of teachers. The effectiveness of using any technology is contingent upon the presence of a proficient workforce (Tilya, 2007). Hennessey et al. (2010) shown that educators' reluctance towards e- learning mostly arises from their limited understanding and familiarity with the subject matter. According to Henderson (2003), a significant number of instructors exhibit reluctance in embracing novel instructional approaches due to concerns over the security of students' information while using online resources. In contrast to the assertion that instructors are incompetent, Kiptalam (2010) expressed a dissenting viewpoint. The observer noted that both teachers and students demonstrated a comprehensive understanding of contemporary technology advancements. According to Kozma et

al. (2004), the primary concern was an over packed curriculum resulting from time constraints, rather than the competence of teachers.

In the context of effective implementation of learning initiatives, educators' acquaintance with instructors has equal significance to teachers' proficiency in digital technologies. This is due to the fact that some teachers may lack knowledge with these tools, while others may possess extensive training in their use. According to a report by UNESCO (2014), the integration of technology in various educational stages may be facilitated by the presence of a champion who can provide necessary training and support to teachers. This, in turn, can enhance the effectiveness and achievements of digital learning programs. School administrators are likely to provide high support for digital learning initiatives if they have had appropriate training and have access to adequate assistance. According to Greaves et al. (2010), integrative learning environments prioritize the investment in professional development for school administrators and seek to get cooperation from instructors. Following the completion of training, school administrators have the potential to formulate and enforce regulations that require the integration of digital technologies within the educational setting. Furthermore, it is imperative for educational institutions to prioritize the professional development of their teachers in the realm of technology integration within the classroom (UNESCO, 2004; Greaves et al., 2010). Educators should be provided with appropriate guidance on leveraging technology to effectively meet curricular objectives, along with continuous training in pedagogical strategies that optimize digital learning initiatives.

2.2 Maintenance of Digital Literacy Learning Devices

According to Kincaid and Filder (2002), the support of administrators is essential for the effective implementation of digital literacy teaching in educational settings. The use of technology in the classroom is contingent upon the presence and involvement of school administrators, as shown by the research conducted by Ziegler in 2006. The scholarly literature suggests that a significant concern is on the integration of technology into educational courses. According to Demoski (2012), it is essential for leaders in the area of educational technology to acknowledge and embrace their own potential as leaders.

In order to enhance the provision of digital literacy education of a superior standard, scholars have proposed that educational administrators should provide various resources such as teacher training, administrative support, financial allocation, and promotional efforts (Giannoni & Tesone, 2003).

According to the findings of Olojo et al. (2012), the implementation of a meticulously planned digital literacy program has the potential to provide desired outcomes for pupils. This entails fostering students' engagement and commitment towards their digital education. The role of managers in online digital learning programs should include the responsibility of fostering a culture of excellence via their role as motivators and supporters. According to Cuellar (2002), administrators have the task of fostering a culture that motivates instructors to use technology into their instructional practices. School administrators have the obligation of providing and organizing the necessary administrative and technical support, while they champion the cause of enhancing digital literacy among both students and instructors. In order to ensure a successful implementation of the digital literacy

teaching process, Giannini and Tesone (2003) argue that administrators should provide support in the form of training, financing, and promotional materials, as suggested by Levy (2003).

The cultivation, reinforcement, and enhancement of educators' digital competencies in the field of education are imperative in order to foster the emergence of proficient specialists in digital technologies. According to Eynon and Geniets (2016), individuals who possess digital skills are characterized by their capacity to use digital technologies for activities such as information retrieval, data processing, analysis, problem-solving, communication, and several other functions. Nevertheless, a dearth of agreement exists about the most effective methodologies for instructing individuals in the cultivation of these proficiencies within educational and managerial contexts.

The efficacy of educational institutions using information and communication technology (ICT) is contingent upon the instructors' proficient utilization of the available instruments, as indicated by research produced and disseminated by esteemed worldwide organizations. According to a study conducted by Gene (2018), it was shown that students who are enrolled in Massive Open Online Courses (MOOCs) exhibit subpar levels of digital literacy. As a consequence, a surplus of replicated digital content emerged, posing challenges for staff members in the process of organizing and selecting the most relevant materials to provide to students. Consequently, it is unsurprising that there has been a continuous interest in assessing the effectiveness of initiatives aimed at enhancing instructors' digital proficiency. Nevertheless, assessors have encountered obstacles due to a dearth of

innovative methodologies for cultivating more effective educators, as well as the difficulty of sustaining training efforts over an extended period (Murillo, 2005). Numerous endeavors have been made to establish teacher training programs in Latin American countries. Despite the significant financial investment, the accomplishments so far have fallen short of the desired ideal. Examining the lack of results. Ciardelli and Duhalde (2001) argue that a notable conflict arises between the use of information for digital content generation and the prevailing regional educational beliefs that value teaching as the transfer of knowledge and learning as the passive absorption of such information.

In Korea, educators have access to a range of professional development options via various channels, including as conventional face-to-face teaching, online courses, and distance learning programs (Ministry of Education, 2020). According to Kerris (2015), the provision of courses by online teacher training centers, whether privately or publicly operated, began in the year 2000. Subsequently, Kang (2016) reported that these centers expanded their offerings to include both completely online and blended learning options for educators by 2016. The projects overseen by KERRI include a range of educational initiatives, including the Edunet online learning platform, the Wedorang online school/class community designed for teachers, data services for educational administration, and support for the cyber education system. Supporting teachers' digital training and capacity development has been identified as a key aspect in the preparations of several governments for the widespread implementation of digital literacy (Ministry of Education, 2020).

It is imperative for educational leaders to proactively provide resources to support their teachers' participation in digital training programs, so enabling them to gain the essential skills and knowledge in this domain. According to Buckworth (2017), participation in a digital training course has the potential to enable instructors to exceed their educational goals and objectives. To effectively address the needs of contemporary students, educators are required to adapt their instructional approaches and acquire the necessary knowledge and experience to facilitate the development of their students' competencies (Rusznyak, 2008).

In the realm of professional development, the integration of digitalization and training initiatives not only enhances teachers' accessibility to professional programs and digital learning materials, but also enhances instructors' capacity to engage in collaborative teaching- related endeavors (Halid, 2020). Digital trainings have brought about a significant transformation in the manner in which professional development is imparted to educators. This revolution has facilitated the ability to reach a larger number of teachers in a shorter span of time, irrespective of their geographical location. Furthermore, digital trainings offer a wider range of options in terms of course duration, content coverage, and level of specialization. Additionally, they provide alternative pathways for certification (Vuprikari, 2018). According to the OECD (2019), some occupations have the potential to be automated, while others may see modifications or improvements in their operations as a result of the integration of digital technology.

Emerging technologies provide the potential to significantly transform the approach educators do various tasks, including administrative responsibilities and assessments, so affording them more time to dedicate towards enhancing their own

professional growth. Moreover, individuals who operate in digitally intensive environments are inclined to maintain the currency of their abilities, acquire knowledge from their colleagues, engage in experiential learning, and remain up-to-date. This observation also holds true for educators who possess digital training. According to Stein (2015), the increasing prevalence of digital trainings in professional settings would need a shift in the practices and use of information by educators and other professionals. Insufficient digital training is a significant challenge for educators who lack prior, concurrent, and subsequent digital literacy instruction when integrating digital literacies into their classrooms. As an example, the citation provided in the text is from a study conducted by Betancourt et al. in 2021.

The utilization of technology as a tool for implementation in education is significantly influenced by societal pressure on administrators. This pressure serves as a potent catalyst for the increased adoption of technology in teaching, learning, and learner achievement (O'Dwyer et al., 2004). Within the realm of education, technology has the potential to enhance the overall experience for both teachers and students. Nevertheless, a limited number of school administrators assert their expertise in technology due to their limited exposure to emerging technologies. Nonetheless, in the current period, technology permeates every facet of education, necessitating the provision of adequate assistance to teachers in developing digital literacy skills (Gosmire & Grady, 2007). According to Dias (2001), it is crucial for educational administrators to possess a comprehensive understanding of the principles that define optimal approaches to incorporating technology into the classroom, as well as the need to provide enough support for such endeavors.

Administrative personnel inside educational institutions that possess inadequate digital literacy skills are ill-prepared to assess the effectiveness of teachers' endeavors in enhancing students' digital literacy and academic performance. A collaborative effort between educators and business leaders resulted in the creation of two sets of standards: the National Education Technology Standards for Administrators (NETS-A) and the National Educational Technology Standards for Students (NETS-S), developed by the International Society for Technology in Education (ISTE). These standards aim to assist educational institutions nationwide in optimizing the integration of technology within the classroom environment. The planning criteria aim to enhance the effectiveness of implementation by providing faculty with the necessary training to optimize the use of technology resources.

Demonstrating support for teachers throughout the implementation of the digital literacy curriculum is a crucial aspect for administrators (Rodriguez, 2012). The aforementioned standard effectively fulfills this need. This included offering financial and ethical support to educators, enabling their engagement in digital literacy training programs and facilitating the acquisition of essential competencies and understanding for proficient use of digital resources within educational settings. In order to achieve the objective of incorporating technology into educational settings, school administrators actively promote the implementation of the vision standard and actively include all relevant stakeholders.

According to the study conducted by Afshari et al. (2009), it is imperative for educational administrators to actively encourage and cultivate widespread and proficient involvement in leadership activities, particularly as the need for schools

to transform into more productive and streamlined digital learning communities continues to grow. It is imperative that administrators possess a high level of proficiency in using technology, as this will enable them to effectively guide and lead the use of technology for administrative, instructional, and learning objectives. Based on the guidelines provided by ISTE/NETS-A, it is recommended that educational administrators foster a culture of participation among teachers in digital training programs. These initiatives aim to provide educators with the necessary skills and knowledge to effectively execute digital literacy programs inside educational institutions. The provision of needed support for a successful, integrated student-centered usage of digital technology is primarily facilitated by school administrators. It is vital for educational institution authorities to possess a well-defined objective regarding the instruction of digital literacy abilities to pupils. According to Richardson et al. (2012), There has been a sustained interest in assessing initiatives aimed at enhancing teachers' digital literacy skills through their participation in digital training sessions and workshops. This interest stems from findings of various studies conducted by international organizations, which indicate that the efficacy of information technology in educational settings is heavily reliant on the digital competencies possessed by teachers. Nevertheless, school administrators are now facing many obstacles due to the scarcity of innovative approaches to enhance their effectiveness, as well as the inherent difficulty in sustaining their training efforts over an extended period (Murillo, 2005).

While the availability of infrastructure and digital resources is undeniably important, it is the support provided by school administrators that has shown to be

a more significant factor in determining teachers' use of computers for the implementation of digital literacy initiatives inside educational institutions. Based on the findings of a study conducted by Anderson and Dexler (2005), it can be inferred that educators have a higher inclination towards integrating technology into their instructional practices when their educational administrators devise effective approaches to enhance students' digital literacy and effectively convey this objective to them. In contrast, the study conducted by Wong and Li (2008) examined the various factors that played a role in the effective digital transformation of eight educational institutions located in Hong Kong and Singapore. The findings of their research indicated that the promotion of collaboration and experimentation by leadership, as well as the dedication of teachers towards student-centered learning, were found to be highly influential in this process. In a subsequent study, Ng (2008) conducted further investigation into the concept of transformational leadership. The researcher identified and expounded upon several key characteristics associated with this leadership style, including the ability to establish and communicate a clear vision, fostering a sense of shared goals among group members, offering personalized digital support, stimulating intellectual growth, serving as a suitable role model, setting high performance expectations, and enhancing the implementation of digital literacy initiatives within educational institutions. Furthermore, a case study was conducted by Yuen et al. (2003) in which 18 schools in Hong Kong were examined. The study revealed that schools that employed the catalytic integration model had school administrators who played a crucial role as change agents. These administrators demonstrated visionary leadership and actively encouraged staff development, training, and involvement in the implementation of digital literacy.

Anderson and Dexler (2005) posited that the successful integration of ICTs in educational settings is contingent upon robust administrative leadership and comprehensive support for instructors. The delegation of responsibility for expanding digital literacy programs from school administrators to teachers and other staff members has advantages for all parties involved.

The endorsement of top-level executives and the development of strategic plans are characteristic traits of progressive organizations, and information and communication technology (ICT) strategies play a crucial role in facilitating digital literacy endeavors. Kiungu (2019) conducted a study on the integration of digital literacy (DL) in education, whereby school administrators and educators were surveyed. The findings revealed that educators faced a deficiency in digital training, hindering their ability to effectively implement DL practices within their classrooms. Furthermore, the study said that the training provided to educators on Dual Language Immersion (DLI) was very restricted and failed to include fundamental pedagogical techniques. The findings of the study indicated that trained teachers were susceptible to attrition as a result of several circumstances, including transfers, promotions, retirements, and natural attrition. Additionally, it was observed that there was a lack of adequate support for trainings provided by school administration. McGraw and Kearney (2009) conducted a qualitative survey to examine the impact of ICT technology on school administrators' perceptions and outcomes. The study revealed that a significant number of school administrators experienced disappointment due to their inability to fully implement the anticipated level of ICT technology. The research used a methodology that included simple random sampling and utilized a descriptive survey research design. Data was

collected from headteachers, who served as the school administrators, via the use of interview guides and self-administered questionnaires. The researchers encountered challenges in conducting digital trainings due to constraints such as time limitations, limited financial resources, and insufficient support.

In a separate study conducted by Maurizio and Wilson (2004), it was observed that the majority of school communities in undeveloped countries had little or nonexistent exposure to digital technologies, with a notable absence of any prior training in computer technology use. Hence, the insufficient allocation of financial resources for information and communication technology (ICT) remains a significant obstacle to the advancement of digital literacy, fluency, and competency in the contemporary period. When considering the whole of these research, it becomes evident that a prevailing observation is the insufficient digital training acquired by school administrators and instructors. According to Rent and Meelised (2008), the proficient use of digital technology in the field of education is of utmost importance, as it serves both educational and administrative purposes. They assert that providing enough support for this endeavor is essential. The successful implementation of digital literacy programs necessitates school administrators to possess the necessary readiness and capability to effectively support and manage digital technologies, including computers and associated software and hardware. According to Johnson et al. (2016), it is essential for teachers to get comprehensive administrative and peer assistance in order to effectively adopt digital literacy.

In a study conducted by Musset et al. (2012), it was observed that educators should be provided with the necessary support from proficient specialists in order to effectively operate and troubleshoot equipment and software. Insufficient assistance from other students and educational administrators might potentially result in increased time and effort required for the successful integration of novel technology into instructional practices within the classroom setting. Educators within professional learning networks may get support via continuous technological conversation. According to Johnson et al., in order to develop and execute innovative teaching practices that use digital technology, educators need ongoing support from both their peers and school administrators. According to Johnson et al. (2016), professional learning networks have the potential to provide support in the form of conducting regular discussions on technology subjects.

The attitudes and skills of educators towards digital technology might potentially have a substantial influence on the extent to which pupils are exposed to and use these technologies within the educational setting. In order to enhance student learning, it is necessary to implement changes in the pedagogical training of teachers and their continuous professional growth. According to Thijis et al. (2014), educators who lack adequate training may have difficulties in properly integrating technology into the classroom setting. Educators need to allocate a significant amount of time to engage in rigorous study in order to transition from the role of mere information transmitters to that of facilitators who assist students in the practical application of acquired knowledge. The effective integration of technology in the classroom necessitates the imperative professional development and training of teachers.

The effectiveness of using any technology is contingent upon the presence of a proficient workforce (Tilya, 2007). Hennessey et al. (2010) shown that educators' reluctance towards e- learning mostly arises from their limited understanding and familiarity with the subject matter. According to Henderson (2003), a significant number of instructors exhibit reluctance in embracing novel instructional approaches due to concerns over the security of students' information while using online resources. In contrast to the assertion that instructors are incompetent, Kiptalam (2010) expressed a dissenting viewpoint. The observer noted that both teachers and students demonstrated a comprehensive understanding of contemporary technology advancements. According to Kozma et al. (2004), the primary concern was an over packed curriculum resulting from time constraints, rather than the competence of teachers.

In the context of effective implementation of learning initiatives, educators' acquaintance with instructors has equal significance to teachers' proficiency in digital technologies. This is due to the fact that some teachers may lack knowledge with these tools, while others may possess extensive training in their use. According to a report by UNESCO (2014), the integration of technology in various educational stages may be facilitated by the presence of a champion who can provide necessary training and support to teachers. This, in turn, can enhance the effectiveness and achievements of digital learning programs. School administrators are likely to provide high support for digital learning initiatives if they have had appropriate training and have access to adequate assistance.

According to Greaves et al. (2010), integrative learning environments prioritize the investment in professional development for school administrators and seek to get cooperation from instructors. Following the completion of training, school administrators have the potential to formulate and enforce regulations that require the integration of digital technologies within the educational setting. Furthermore, it is imperative for educational institutions to prioritize the professional development of their teachers in the realm of technology integration within the classroom (UNESCO, 2004; Greaves et al., 2010). Educators should be provided with appropriate guidance on leveraging technology to effectively meet curricular objectives, along with continuous training in pedagogical strategies that optimize digital learning initiatives.

2.3 Teachers Beliefs and Attitudes towards Digital literacy implementation.

Bahcivan (2016) and Bahcivan & Cobern (2016) define beliefs as individuals' personal evaluations of themselves, their environment, or their propensity to engage in particular actions. Teacher educators have come to the conclusion, based on these definitions, that teachers' beliefs exert an influence on their instructional decisions by shaping attitudes and behaviors and sifting context-based knowledge (Fives & Burgh, 2012). However, due to the evidence they have provided concerning the resistance of beliefs to change, teacher educators have come to the conclusion that addressing the beliefs of pre-service teachers is the most effective approach to producing digitally literate teachers (Bahcivan & Cobern, 2016).

Bahcivan and Kapucu (2014) posit that personal beliefs exist along a continuum extending from the central to the periphery, wherein core beliefs are more

interconnected with other perspectives than peripheral beliefs. As a result, modified core beliefs are more challenging to alter than peripheral beliefs, given that any modification to a central belief necessitates corresponding adjustments to all of its associated peripheral beliefs.

Since research has shown that ICT can enhance learning and instruction, the application of digital literacies has become an important topic in education for the past two decades. Ajayi (2011) examined the knowledge, beliefs, attitudes, and perceptions of pre-service teachers with respect to the acquisition of digital literacies. According to the results of his investigation, pre-service educators were cognizant of the fact that technology was revolutionizing literacy methodologies and that students must possess digital literacies and be proficient with digital tools to remain competitive with learners of the twenty-first century. Scholars have demonstrated, for example, that the integration of ICTs and digital tools into the classroom environment can potentially improve students' conceptual understanding, problem-solving, and collaborative proficiencies (Culp et al., 2005; Tao & Gunstone, 2009; Nocente & Martin, 2005).

As educational institutions are notoriously resistant to change and innovation (Kearsky, 2004), the proliferation of ICT is beginning to influence how instructors instruct (Reid, 2002). The integration of ICT into the curriculum is a contemporary concern regarding its implementation in Canadian institutions (Plante & Beattie, 2004). Consequently, a significant proportion of curriculum documents emphasize the criticality of ICT and advocate for their consistent implementation by educators. Teachers, nevertheless, require specialized instruction to effectively incorporate digital technologies into their pedagogical practices.

Academic institutions had high expectations for individuals who completed teacher education programs to possess a proficient comprehension of digital technology utilization. This expectation was based on the fact that the curriculum materials provided rationales for incorporating ICT into the classroom environment (Montgomery & Irvine, 2001). Presently,the prevailing design of in-service training programs and teacher preparation programs has been to accommodate traditional educational technology settings. Consequently, the individuals enrolled in these courses lack knowledge regarding the attributes, functionalities, modes of interaction, and protocols associated with technologically mediated learning. Effectively developing instructors' competency appears to necessitate a systematic, multifaceted approach as opposed to being a straightforward process. It is essential to conduct an initial requirements assessment in order to identify the digital competencies and expertise that educators require in the classroom. As part of an English for Speakers of Other Languages (ESOL) program, Kim and King (2011) examined the perspectives of pre-service educators regarding the instruction of emerging literacies.

To disseminate their case studies, the students who participated in the study were mandated to establish blogs and podcasts. Although the participants lacked prior experience in podcasting or blogging, they were all novices. Based on the findings of the study, participants initially exhibited feelings of fear, but gradually developed an increased sense of confidence over time. In order to complete their coursework, the pre-service teachers were required to develop expertise in the use of journals and podcasts. According to research on ESOL teacher candidates conducted by Kim and King (2011), instructors' attitudes toward the use of digital

technology may be altered through professional development. Guided instruction in emerging digital technologies and literacies may assist pupils in gaining confidence and enhancing their digital proficiencies.

Considering that they determine the most effective ways to implement technology in the classroom, educators play a critical role in the incorporation of digital resources and instructional materials. Digital resource designers are educators who create and modify their own materials in order to meet the specific requirements of their students (Alonso, 2016). Consequently, the role of an educator is undergoing a transformation. Presently, rather than acting as a conduit for the dissemination of information, educators are required to act as mentors and architects of learning-supportive environments and educational settings (Area- Moreira et al., 2016). Individuals hold beliefs to be true conceptualizations and psychological comprehensions. Due to their correlation with personal experiences, emotions, and internal assessments, they function as both indicators and predictors of human behavior, decisions, and actions, including the perspectives of educators. An analysis of educators' attitudes and beliefs necessitates an appreciation of the practices they implement during class time and, more significantly, the manner in which those practices influence instruction and student learning.

Due to the unique characteristics of different teacher education programs, shifting population trends, and rapid technological advancements, there is always a need for additional research regarding the role of ICT in teacher education programs in this specific context, despite the abundance of research on technology and teacher education. It is imperative for education program developers and designers to

possess an understanding of the beliefs and attitudes of instructors regarding the incorporation of digital literacy into the curriculum (Murphy, 2000). This is because the attitudes and beliefs of prospective educators greatly influence the manner in which they implement digital literacy devices in the classroom (Sassevile, 2004). Teacher education programs ought to consider the two prevalent rationales for implementing digital literacy in the classroom. One argument emphasizes the criticality of IT skills. For the purpose of fostering positive attitudes toward digital technology among prospective educators, advocates of this viewpoint urge teacher education programs to equip candidates with a comprehensive set of technical competencies. Enhanced obligations on the part of educators are imperative in order to foster positive perceptions regarding their pedagogical proficiency in the integration and utilization of technology. Numerous studies have demonstrated the criticality of technological proficiency in content-related domains for the effective implementation of digital literacy tools. Mishra and Koehler (2006) employ the term "Technological Pedagogical Content information" (TPACK) to refer to this data.

To effectively integrate new technology into the classroom, teachers must acquire proficiency in three distinct types of knowledge, according to this paradigm. At the outset, anticipation was that they would have a sufficient comprehension of the subject matter. Furthermore, they must possess expertise in the methodologies, teaching-learning strategies, and instructional approaches (content knowledge). (Expertise in education). Merging these three classifications of knowledge could potentially yield favorable results through the application of technology. Educators who possess high levels of TPACK Competencies are more likely to support the

integration of new technology in the classroom, according to research. It is imperative for organizations endorsing teacher education programs to recognize these contrasting perspectives and capitalize on the opportunity to develop a comprehensive ICT curriculum for instructors.

A considerable number of studies have provided evidence that the implementation of computers in educational settings remains relatively basic in the majority of institutions worldwide (Teo, 2009). In Europe, for instance, a number of nations (Poland, Belgium, and Germany, among others) continue to remain behind the OECD average in the implementation of ICT in schools, according to OECD publications (OECD2006, 2015). A plausible hypothesis for this phenomenon is that educators occupy a "keystone species" status in regards to the integration of digital literacies into the educational process within schools (Donnelly et al., 2011; Davis et al., 2013). It was also believed that the attitudes and beliefs of educators regarding digital literacy and its worth were crucial to their successful implementation in educational environments (Zhao et al., 2001).

In general, scholarly investigations have demonstrated that the effective implementation and acceptance of digital literacy in the classroom are contingent upon the personal beliefs and attitudes of educators (Badia et al., 2014; Petko, 2012), with respect to the empirical data of the instructors. Zogheib (2003) examined the correlation between their attitudes (such as confidence and liking of their ability to use the internet) and their perceived likelihood of incorporating the internet into their daily classroom instruction and teaching, using both achievement-related and value-related motivational beliefs. In addition, the author explored the practical and perceived experiences of educators regarding the

utilization of digital tools and the internet. Furthermore, they investigated the impact of motivating frameworks on achievement-related attitudes. Regarding the advantages of the internet, value-related perspectives identified the following six domains: personal necessities, future career goals, interpersonal connections, offspring, prospective students, and the broader society. The likelihood of incorporating the internet into educational settings to address issues such as inequitable resource access, instructional demands, and student learning.

To foster technology integration in educational institutions and broaden the perspectives of educators, Blackwell et al. (2013) underscored the importance of understanding the pedagogical uses of emerging technologies.

A belief can be defined as a personal and often widely disseminated piece of information or perspective that an individual considers to be valid and crucial with respect to a particular subject matter, predicated on the way in which things appear to operate. Individuals frequently associate their beliefs with their past experiences, emotions, and personal values. As stated in Petko (2012). On the other hand, an attitude can be defined as a persistent way of thinking or feeling regarding a particular subject, or as an individual's positive or negative beliefs regarding participating in a particular behavior (Zhang & Akman, 2007). Hence, there was a prevailing belief that the perspectives and attitudes of classroom instructors were critical in determining the success of educational innovations, specifically those that integrated technological advancements and pedagogical approaches.

Mingaine (2013) found that educators were more likely to implement digital literacy tools when they perceived that doing so would fulfill the needs of their students, institutions, or themselves.

Zogheib (2006) analyzed the utilization of computers by instructors in consideration of their instructional styles, demographic characteristics, motivation for use, and experiences with digital technology. For his investigation, he gathered information through interviews and a survey. The qualitative aspect of the research demonstrated that female instructors utilized computers at a reduced frequency compared to their male counterparts. Analysis of data revealed that instructors whose native language is not English utilized computers at a higher frequency than their counterparts. During the interviews, instructors shared their perspectives on the computing "training" course that was an element of the teacher education program. Teachers remarked that the course was instructive and improved their positive attitudes toward digital trainings and learning. There is a contention that educators who are uninformed about the advantages and have limited experience with digital technologies will continue to employ conventional teaching approaches and remain mired in the analogue age. Teachers' attitudes and beliefs, in addition to resistance to technology use, may constitute internal obstacles that impede the implementation of digital technology in the classroom (Johnson et al., 2016). According to scholarly research (Aduwa-Ogiegbaen, 2009; Johnson et al., 2016), educators might experience a lack of confidence or familiarity when it comes to utilizing digital technology effectively. It is worth mentioning that during their childhoods, the majority of educators in educational institutions did not have access to computers or the internet.

In Nigerian secondary schools, Tella et al. (2007) investigated the manner in which school administrators and instructors utilized technology and provided suggestions for future developments in the application of technology in education. In addition

to its positive attributes, the findings revealed that the majority of school administrators held the belief that technology enhanced the learning process. Competency standards should prioritize technology-enhanced teaching models, particularly those that encourage student-teacher collaboration throughout the learning process, according to one suggestion. A primary concern should also be the pedagogy that influences the application of technology in education.

School administrators in the United Arab Emirates (UAE) were receptive to the use of technology in the classroom and willing to support its implementation in order to facilitate the integration of digital literacy into the local curriculum and enhance computer literacy and skills, according to a study by Derar (2007). Educational administrators in Ghana had favorable attitudes toward digital learning, had online access to administrative resources for education, witnessed enhanced teaching and learning, and observed increased student engagement in digital learning, according to a study by Adoh (2012). Inspire educators to participate in digital literacy programs, according to this research, by fostering a positive attitude among school administrators toward the initiative. Instructors will effectively implement the digital literacy program in public primary schools if school administrators take a positive stance and elevate the morale of their staff.

While investigating the effect of administrators' attitudes and perspectives on the implementation of digital learning in classrooms, Eugene (2006) identified inconsistencies between the implementation of digital technology by administration and its actual use. The apparent inconsistencies were attributed to various factors, according to the research. These included a limited availability of digital resources

and access to appropriate technology, inadequate educational training, and insufficient support from relevant authorities. This indicated that the school administrators, notwithstanding their optimistic perspective, should have possessed adequate training.

According to studies conducted by Hew and Bush (2007), Keengwe and Onchari (2008), and et al. (2005), school administrators are more inclined to adopt digital technologies when they perceive that such technologies fulfill their own or their organizations' needs. The researchers find that the dispositions and perspectives of school administrators regarding the integration of digital literacy into instruction have a substantial bearing on their preparedness to employ and employ such technologies. Kyriacos (2011) undertaken an additional investigation at Fredrick University in Nicosia, Cyprus, which explored the perspectives of principals concerning the elements that facilitate or hinder digital integration in primary schools across Cyprus. In order to investigate the central inquiry, the study employed a sequential mixed method. The results indicated that educational administrators who hold optimistic views and convictions regarding the incorporation of ICT can significantly augment the pedagogy and acquisition of digital literacy.

A disposition to respond in a consistently positive or negative way with regard to a specific item is what attitude is defined as (Wen & Shih, 2008). Computer anxiety is an empirically documented phenomenon that affects approximately one-third of the industrialized nations worldwide. A considerable proportion of educators, according to a study by Jimoyiannis and Komis (2007), have a negative view of the

incorporation of digital literacy and display adverse computer reactions spanning from "mild discomfort to extreme avoidance" (Todman,2000). Educational administrators and managers, according to Korukonda and Finn (2003) and Walsh (2002), must exhibit a consistent, steadfast dedication in order to effectively incorporate digital literacy into their respective institutions. It appears that the perspectives and convictions of educators are critical in regards to educational innovations, particularly those that integrate pedagogers and technology. At the outset, administrators who espouse ICT formulate approaches to maintain technological presence within their institutions. They also tend to provide assistance to faculty members who endeavor to incorporate technology into their pedagogy, aiding them in comprehending "the potential of the available technologies and the manner in which they can be seamlessly incorporated into the daily operations of the school" (BECTA, 2007). An individual's positive or negative emotions (evaluative effect) regarding the performance of the objective behavior can also be defined as an attitude.

The fact that students utilize technology in virtually every aspect of their existence in the twenty-first century is universally acknowledged as evidence that they are digital natives. Kimani and Onyancha (2018) argue that in our increasingly interconnected global society, children must develop novel digital literacy skills and cognitive frameworks that transcend the perspectives and beliefs of their educators. A digitally literate instructor who possesses the appropriate positive dispositions toward digital literacy technology can assist students in achieving greater digital literacy proficiency. Educators who are proficient in digital technologies frequently report enhanced teaching experiences and reduced tension

levels (Zhang & Aikman, 2007). In their study, Cheok and Wong (2015) identified three characteristics—attitude, anxiety, and self-efficacy—that exhibited a significant correlation with instructors' engagement and success with technology. The researchers determined that "institutional management, technical support, and training support are all important factors necessary in initiating teachers into adopting new innovation."

To promote the effective and efficient utilization of digital tools and resources (including the exchange of knowledge among educational institutions), educators must modify their professional identity (attitude) to encompass the character of "innovator." In order to facilitate the effective utilization of technology, Parette et al. (2009) reached the conclusion that educational institutions must offer greater assistance to instructors by demonstrating how to integrate it into the curriculum. According to a study by Fredrickson (2008), empowering educators to experiment with small-scale innovations and share successful practices increases the likelihood that they will develop and implement innovative technological solutions.

Even when utilized for extended durations, the implementation of digital technology in the classroom does not substantially modify the pedagogical approaches of instructors towards teaching and learning, according to research by Black Wall (2013). Standeur et al. (2008) and Lyndall & Folkesson (2012) are two such sources. His deduction led him to the conclusion that technology might not be sufficient to alter the deeply ingrained teaching methodologies and ideologies of early childhood educators. A considerable body of research (OECD, 2015; Younie & Leask, 2013) has determined that educators who embrace constructivist

pedagogical approaches—that is, who regard themselves as facilitators of their students' independent inquiry or prioritize critical thinking and reasoning over curriculum content—are cognizant of and more inclined to grasp the pedagogical benefits associated with the implementation of active teaching techniques, including learning and teaching.

A teacher who possesses digital literacy should not only have the ability to locate content on the internet, but also the capacity to analyze and integrate digital knowledge critically, according to Tondeur et al. (2007). Digital literacy transcends mere technological proficiency as it encompasses substantive comprehension of various concepts. Similar to other competencies, digital literacy ought to originate within the educational setting. As the primary implementers of the program, educators ought to be furnished with the necessary readiness to assist in the digital implementation process. Several studies conducted by Australian academicians (Hammond et al., 2000; Makin and M'Naught, 2001) revealed that novice or recent college graduates lacked even the most fundamental knowledge regarding digital literacy. This strongly suggests that educators, both present and future, may not be sufficiently tackling the challenges and demands of the learning domain, especially in the twenty-first century.

Henderson (2003) investigated the correlation between the pedagogical approaches employed by instructors, the recognition of digital skills by students, and the availability of digital devices in both the home and school environments. There was a significant difference in the results. Identifying and addressing the digital divide could potentially present unique challenges for educators who fail to

consider the technical proficiencies of their students. Henderson (2003) emphasized that instructors must be cognizant of the digital technology-related information that students bring to the classroom due to the diversity of their student bodies. In their study, Srivastava and Dey (2018) examined the technological challenges that educators face within the classroom environment. The findings of their inquiry unveiled divergent viewpoints regarding the arrangement of digital systems in educational settings and the challenges linked to technology utilization, such as inadequate technical support, limited resources, and insufficient time to interact with digital media. Robollo-catan and Garcia-Perez (2016) discovered in a separate study that the utilization of social networks and digital tools by instructors suggested questionable levels of digital literacy. The routine instructional and learning processes unveiled that the instructors possessed considerably less developed digital literacy skills and competencies.

Digital literacy has become an integral component of nearly all aspects of our daily lives. Erstad and de Lange (2007) found that instructors can now implement collaborative teaching strategies that capitalize on digital literacies due to advancements in computer capacity and high-speed broadband internet connection speed facilitated by the digitization of various media. Educators who have undergone adequate digital literacy training are without a doubt the most effective at imparting these skills. Voogt and Roblin agreed in a subsequent study that there was empirical support among educators for curricular modifications in the digital age. As stated by Thijs et al. (2014), instructors were also required to provide substantial support in the establishment of digital literacy. There have been several endeavors to equip educators with the essential digital competencies through the

implementation of diverse frameworks and standards that align with their level of education (Fraser et al., 2013; INTEF, 2017; UNESCO, 2018). However, since the majority of instructors continue to hold negative views regarding digital learning and technology, the manner in which to incorporate these skills into the initial training remains a contentious issue. Nevertheless, as highlighted in the Horizon Report 2019 for Higher Education (Educause, 2019; Le et al., 2022), considerable emphasis has been placed on the creation of innovative and pedagogical experiences that incorporate technology into the classroom in order to modify teaching methods.

Lagarto and Lopes (2018) found that educators predominantly utilized ICTS to transmit content, ignoring the learning processes of their pupils; as a consequence, the application of ICT and digital competencies in pedagogical practice was extremely limited. Therefore, schools must adapt to the demands of the modern classroom while continuing to support instructors' ICT and digital education training, according to these authors. To aid students in utilizing digital literacies and technologies for learning, instructors must possess the critical and creative thinking abilities required to generate, locate, and communicate knowledge, according to Payton and Hague (2010). Critical thinking, problem-solving, originality, and creativity are thinking abilities that are crucial for any modern educator who wishes to nurture digital literacy and incorporate new technologies and pedagogical practices into their courses, according to Sharma (2017). In a similar vein, Garcia et al. (2016) found that numerous general education instructors exhibited a moderate level of digital literacy when utilizing social networks and digital tools. Curiously, consistent practice and education unveiled

that their level of digital literacy was considerably less advanced. Furthermore, eighty percent of the language instructors who participated in a Juurakko-Paavola survey in Finland and the United Arab Emirates (UAS) deemed digital literacy for their students to be of the utmost importance. A mere 50% of the educators indicated that they possessed proficient or excellent technological skills. Nevertheless, the most deficient characteristic among these educators was their failure to engage in technical trainings, digital training communities, and relevant support.

Pratolo and Solikhat examined the implementation of digital literacy at a private junior high school in Temanggung in 2020. Additionally, they ascertained the instructors' perspectives on this practice, identified the challenges they encountered, and devised coping mechanisms. As a representative sample, the researchers conducted interviews with ten instructors from the institution using qualitative research methods. Smartphones and personal computers were the two most frequently used digital devices, according to the findings. In practical application, educators exhibited positive attitudes toward the implementation of diverse literacies, the adoption of efficacious learning strategies, the recognition of the syllabus's significance, and the enhancement of the four language skills. Lack of funding, the origins of the students, a dearth of time, and inadequate technology constituted some of the most significant obstacles to the implementation of digital literacy.

McGuinness and Fulton (2019) conducted a study to examine the relationship between teaching digital literacy (TDL) and other components of school-level

digital literacy (SDC) that contributed to the Digital Divide (DD) in primary schools in Ghana. The results indicated that the layout, duration, usability, and accessibility of tutorials all played a role in increasing user engagement. However, several technical challenges impeded the learning experience, such as browser incompatibility, inconsistent sound quality, and overall issues with internet connectivity.

To ascertain existing obstacles to digital literacy education and identify the necessary support systems to enhance instruction, Hosseini (2018) examined the perspectives and attitudes of early elementary school teachers regarding the subject matter. For the purpose of conducting a quantitative descriptive study, a sample of 37 kindergarten, first-grade, and second-grade educators in California was administered an online questionnaire.

According to the findings, this educational system provides early elementary students with a greater emphasis on computer literacy instruction compared to information literacy. Educators identified several significant obstacles to the implementation of digital literacy instruction in the early primary grades: an excessive number of pupils per teacher, insufficient time for lesson preparation and execution, and inadequate self-management and independent abilities. However, they demonstrated that knowledge of grade-level technology standards, access to off-site technical support and district-level technology instructors, and the opportunity to observe exemplary technology courses all enhanced their ability to teach digital literacy. In order to ensure proficient supervision of digital literacy instruction, it is essential that educators possess the necessary digital literacy,

pedagogical acumen, and relevant proficiencies (Demirbitek, 2021). They must be capable of premeditating and developing the necessary instructional materials in order to facilitate digital learning activities. Nevertheless, it appears that educators are in need of assistance with digital literacy initiatives (Lynch, 2020; Reich et al., 2020; Reimers, 2020). Teachers face challenges in adapting to new online environments due to their limited proficiency in digital education (Kong, 2020). Kong (2020) asserts that educators encounter difficulties in establishing their identity during digital learning sessions, and their intransigence regarding digital literacy fails to captivate students with their inflexible, monotonous language. Consequently, educators encounter difficulties in involving learners in digital lessons, leading to an instructional approach that is exclusively instructor- centric (Bakker & Wagner, 2020; Kong, 2020).

Scholarly investigations suggest that applications frequently fail to meet the anticipated standards of users, especially when it comes to digital education, due to deficiencies in vision, sound, and communication, in addition to minimal user engagement throughout the instructional and learning phases (Kaleli Yilmaz & Guven, 2015; Demrirbilek, 2021). Mary-Anne et al. (2013) found that educators still harbor the erroneous or negative perception that computers and the internet are the sole beneficial technological resources accessible for instructional purposes. However, contemporary technologies extend beyond mere computers and the internet. Several supplementary technical instruments have been demonstrated to be advantageous in supporting specific courses and educational objectives.

According to the findings of Almekhlafi and Almegdadi (2010), who investigated the perspectives of Saudi Arabian educators regarding the integration of technology in the classroom, teachers consider such integration to be an indispensable element of education. Furthermore, there is a belief among certain educators that the extent to which an instructor utilizes technology is contingent upon their level of confidence. Creative thinking, the capacity to advocate for student-centered learning, and a willingness to embrace process- oriented approaches are all essential qualities for the successful implementation of digital literacy. While implementing digital literacy, utilizing digital tools and technologies, and modifying instructional technology to affect the process, a number of variables may exert an influence. Although there is a common misconception that instructors' performance is the sole determinant of success in the implementation process, these elements are not unique to that group. Among the factors that impact the implementation and utilization of digital literacy tools are educational boards' enforcement of government policies, inadequate support for teacher professional development, limited training opportunities, technology tools and software unreliability, and inadequate support for teacher professional development. (2013) (Marie & Moraga).

Educators can enhance their utilization of technology by cultivating a positive disposition towards digital learning. They may utilize smart portfolios as an evaluative instrument for their pupils. As soon as one hears the word "portfolio," thoughts of organizing, compiling, classifying, and populating the pages with ongoing and completed work come to mind. Seeking an Intelligent Portfolio Evaluation? It is related because it encompasses comparable elements,

notwithstanding its relevance to education. Educators can enhance the precision of identifying areas of student deficiency and modify their utilization of digital materials and instructional strategies through the implementation of Smart Portfolio Assessments. As a result of recent technological advancements, assessments are shifting from high-pressure evaluations that emphasize the value of difference to recurring formative evaluations that provide periodic information updates (Morag & Marie, 2013). Ajzen and Fischbein (2010) as well as Guoyuan et al. (2009) have conducted research that defines attitude as the degree of preference an individual has in regard to a tangible entity. Attitude is a component of the cognitive structure that individuals employ to systematize and organize their experiences and behaviors, according to the findings of both researchers.

However, a number of scholarly investigations (Gulbahar et al., 2008; Fouzieh et al., 2013; Bulent et al., 2009) contend that there exists a correlation between attitudes, competence, and awareness. According to Gulbahar (2008), the attitudes of instructors play a crucial role in determining how they utilize new technologies when employing ICT as a pedagogical instrument. Albrin (2004) further elaborated on the notion that attitudes play a substantial role in both promoting and hindering the adoption of digital literacy. Therefore, instructors' attitudes, whether positive or negative, have a substantial effect on the implementation of ICT as a tool for teaching and learning. The competency of instructors is regarded as a significant variable in determining the attitude exhibited by students when those instructors themselves lack a positive attitude.

According to Oladosu (2011), educators' attitudes merely depend on whether they recognize, appreciate, and comprehend the advantages of integrated community teaching and learning, in addition to their propensity to implement it. He also emphasized that instructors' comprehension of digital issues is the cornerstone for the utilization and efficacy of digital literacy programs. A teacher who possesses expertise on a specific policy will cultivate a constructive mindset among students, ultimately resulting in increased output and success. In addition, the research revealed that the effective integration of ICT and new pedagogies was contingent upon the comprehension and dispositions of instructors regarding groundbreaking developments.

According to Lawal (2006), contemporary Nigerian educators exhibit a pessimistic outlook and mindset regarding change. In order to determine the level of knowledge and perspective of fundamental technology instructors in Lagos State Education Districts (LSED) I, IV, and VI regarding the application of information technology for sustainable development, Oladusu (2012) conducted research on this topic.

Furthermore, he underscored that this pessimism stems from an ignorance of ICT policies and the valid advantages that ICT offers as an instructional and learning instrument. To determine the sentiments of pre-service teachers regarding computers, Teo (2008) compiled a sample of them and rated them on four distinct factors using a Likert scale questionnaire: affective, perceived utility, control, and behavioral intention. As stated by Teo (2008), the proficiency with which educators implemented digital technology in the classroom was influenced by their

attitudes. Regardless of the academic discipline they were pursuing, he discovered that every pre-service teacher possessed a favorable disposition toward computers.

Furthermore, their exceptional proficiency in computer usage was a direct result of the working conditions they encountered during their education and training. Jegede (2008) conducted research with the objective of comprehending the nature of the correlation between the ICT utilization of Nigerian educators and their ICT attitude construct. The researcher selected 467 instructors from teacher-training institutions at random for his study due to the imposition of political zoning on the nation. These educators originated from six states contained within a single geopolitical zone. Teachers' Use of ICT and the Teachers Attitudinal Scale were the two research instruments he employed to gather pertinent data for his study. Jegede (2008) observed that, in line with the research of Kenzie et al. (2004), a teacher's self-efficacy forecasts their computer usage; thus, their confidence in their ability to operate a computer or other ICT tool will invariably mirror their perspectives on digital technology. The application of analysis of variance to the data unveiled a noteworthy association between the degree to which instructors utilized ICT and the consolidation of attitudinal components. In their investigation of information and communication technology, Onyasanya, Shehu, Ogunlade, and Adefuye (2011) assessed the attitudes and level of comprehension of 240 instructors. The study's findings indicated that individuals of all genders made limited use of digital literacy technology.

Yusuf and colleagues (2012) investigated the perceptions of instructors at Upper Basic Schooling in Kwara State, Nigeria, regarding the ConNet/Multi-Choice

Resource Center. The investigation unveiled that although there were signs of positive instructor attitudes and a preparedness to adopt ICT, the state-related high schools were not optimizing the utilization of the allocated resources. This essentially confirmed the findings of Yusuf (2011), which concluded that students' attitudes toward technology or computers in the classroom do not always correspond with their level of ICT usage. In other words, positive attitudes do not necessarily translate into actual ICT usage. Gilakjani and Leong (2012) initiated an inquiry to determine the perspectives of EFL instructors regarding the use of computers in the classroom. Both studies reaffirmed and underscored the conclusions drawn from previous research that teacher attitudes are the sole determinant of digital literacy implementation effectiveness. They both concurred that individuals' perspectives on computers could be influenced by a variety of factors.

Additional researchers who have concurred with this notion are training and computer experience (Kumar & Kumar, 2003; Tsitouridou and Vryzas, 2003), which they cite as factors that do indeed affect computer attitudes. The subjects of investigation comprised Delirium (2000), Mukti (2000), computer proficiency, computer aversion and affinity, and computer knowledge. Another study's findings support the notion that instructors' attitudes and beliefs regarding the perceived usability and simplicity of technology influence its implementation in the classroom (Teo et al., 2007). By analyzing one dependent variable (computer attitude), two mediating variables (subjective norm and facilitating conditions), and two independent variables (perceived usefulness and perceived ease of use), the study identified the primary determinants that shape the attitudes of pre-service

teachers toward computers. In addition to variables such as subjective norm having direct and indirect effects on computer attitudes, the results demonstrated that beliefs regarding perceived utility and perceived simplicity of use determine computer attitudes.

2.4 Administrators Digital Skills and Competencies for Digital Literacy Implementation

The idea of digital competence is multifaceted and dynamic, making it challenging to encapsulate inside a single definition. The European Digital Competence Framework (DigiComp) offers a standardized framework for facilitating the assessment of digital competence across different countries. The advent of digital transformation has had a profound influence on the daily lives of individuals. In their study, Peralta and Costa (2007) conducted research whereby they gathered and analyzed data pertaining to the level of confidence and competency among administrators in using information and communication technology (ICT) for instructional purposes. The results of the study indicated that several factors hindered teachers' confidence and competence in utilizing information and communication technology (ICT) in their classrooms. These factors included limited time for teachers to acquire new skills, outdated ICT equipment, overcrowded classrooms, insufficient availability of technical and pedagogical resources for learners' digital devices, inadequate technical and pedagogical support, and a lack of collaboration among teachers.

The study's findings indicate that the increasing prevalence of technologies has introduced complexities in its implementation and integration within classroom

settings. Huang and Law (2005) found that teachers' attitudes towards digital literacy played a significant role in shaping their acceptance of the utility of technology and its incorporation into instructional practices. The impact of technology on various aspects of society, such as social interactions, communication, education, consumer behavior, and leisure activities, has been significant. In order to effectively promote digital literacy, it is crucial to recognize the importance of digital skills and competencies across all professional domains (Pelaez et al., 2020). According to Phuapan et al. (2016), the acquisition of digital literacy and its associated skills is crucial within a highly competitive professional setting. Furthermore, the policies of the European Union regarding lifelong learning recognize the necessity of providing school administrators with advanced digital skills and competencies. This is due to the emergence of new job requirements resulting from the widespread adoption of technology (Ala-Mukta et al., 2008). Ananiadou and Claro (2009) also emphasized the importance of digital skills as integral elements.

I am used in several professional domains. Laar et al. (2019) argue that digital skills required in contemporary educational institutions are increasingly knowledge-based. Consequently, the relevant digital skills and competencies should extend beyond basic digital tasks. They should encompass a broader range of abilities, including cross-cultural and cross- institutional communication, remote group collaboration, and interpretation of knowledge in digital environments. Furthermore, Iordache et al. (2017) emphasize the importance of individuals acquiring the necessary skills to address the risk of exclusion from various aspects of daily life resulting from the disruptive impacts of digitization.

The emergence of the digital sphere presents a significant issue for governments and organizations, such as the European Union, the Organisation for Economic Co-operation and Development (OECD), and the United Nations Educational, Scientific and Cultural Organization (UNESCO). These entities are faced with the task of defining the essential digital competences and abilities that administrators and individuals need in order to effectively navigate and use digital technology. The digital competence (DigiComp) project was initiated by the European Union with the aim of creating a comprehensive evaluation instrument for digital competence. DigiComp offers a persistent framework that undergoes regular updates, with the objective of providing guidance in the selection of indicators for the assessment of digital competence. However, it is important to note that just evaluating an individual's digital competence level is not enough. This is because there is a dearth of comprehension about the potential impact of many background elements on digital implementation and performance. One potential solution to address this gap is to provide school administrators with comprehensive digital training. This training would provide them with the necessary skills and competences required to effectively navigate and adapt to the demands of the 21st-century digital environment. According to the study conducted by Pelaez et al. (2020), it was found that...

The skills and competences of school administrators encompass a range of attitudes and personal characteristics, such as flexibility, technical capabilities, problem-solving abilities, and the quality of interpersonal relationships (Kayoko et al., 2011). Additionally, administrators possess professional technical and work skills, which are demonstrated by the educators and staff within an educational institution

(Kwok et al., 2011). Voogt et al. (2013) have identified several limitations to the implementation of digital literacy programs, including inadequate digital competencies for teaching and learning in the 21st century digital era, insufficient preparation of teachers through digital trainings, attitudes and beliefs regarding Information Communication Technology (ICT), and the absence of a systematic strategy for digital literacy learning. Ozdama and Koyle (2015) conducted a research investigation pertaining to the study habits of distant learners and their abilities in digital literacy. The research was centered on a sample size of 20,172 students enrolled at Anodolu University. The research used principal component factor analysis to examine the relationship between project work skills and proficiency in using digital tools, and their impact on digital learning habits. The findings of the study revealed that individuals who had strong project work skills and demonstrated successful utilization of digital resources exhibited increased digital learning habits. The findings of the research suggest that possessing fundamental digital literacy abilities and ICT skills is crucial for effectively engaging with digital literacy programs in Kenya.

The study conducted by Oyedokun et al. (2018) aimed to evaluate the level of Digital Competencies among library workers in Kware state, Nigeria. The researchers used a descriptive research methodology and collected data from 191 participants. The study's results indicated a significant degree of information and communication technology (ICT) proficiency, professional aptitude, and use of ICT resources inside libraries at the chosen institutions. The study identified many factors that hinder the integration of information communication technologies (ICTs) in university libraries, including inadequate motivation, ineffective time

management, lack of expertise and training, and an imbalanced curriculum. The study only examined the personnel of libraries and did not take into account the extensive use of digital technology across other departments within an institution. The primary objective of this research was to examine the level of assistance provided by school administrators in facilitating the integration of digital literacies into educational settings. The implementation of digital literacy was carried out by key stakeholders, including public primary school administrators, head teachers, deputy head teachers, and classroom teachers.

In recent decades, there has been a growing prevalence and discourse around the notions of digital competence and digital literacy, notably within policy papers and associated conversations pertaining to the acquisition of skills and knowledge in using digital technologies (llomaki, Paavola, & Lakkala, 2016). Frequently, these terms are used interchangeably, despite their diverse origins and meanings (Maren et al., 2017; Martin & Grudziecki, 2016). Occasionally, these skills are used to support other aspects, such as the European Union's competency framework for all individuals (European Commission, 2006), whereby digital competences, one of the eight competencies, are delineated as follows:

Digital competence encompasses the adept and discerning use of Information Society Technology (IST) for professional, recreational, and communicative purposes. The foundation of this concept relies on fundamental ICT abilities, which include the use of computers for tasks such as information retrieval, assessment, storage, production, presentation, and exchange. Additionally, these skills enable individuals to interact and engage in collaborative networks via the

internet. According to Martin and Grudziecki (2006), digital competences are supported by digital literacy. The digital competence framework, which was issued by the European Commission in 2013, has five distinct categories and 21 skills. Among these competences, the concept of digital literacy is included (Ferrari, 2013). Policy papers within education systems often highlight the need of enhancing digital skills to foster economic development and promote digital competitiveness (European Commission, 2010). Moreover, scholars have posited that in our globally linked society, the achievement of sustainable development and social cohesion is contingent upon the competences possessed by all members of our population. These competencies include a broad range of attributes, including knowledge, skills, attitudes, and values (OECD, 2005). Furthermore, it is worth noting that UNESCO introduced a policy paper in 2008 titled "ICT Competency Standard for Teachers," which primarily emphasizes teacher education and digital literacy. However, it is important to highlight that the text does not provide a clear definition of the idea (UNESCO, 2008). In the context of Sweden, the notion of digital competence is also used as a fundamental principle within the recently implemented national policy for the digitization of education, as outlined by the Swedish Ministry of Education in 2017.

In order to meet the demands of the twenty-first century, educators have been presented with the challenge of incorporating digital technologies into their teaching practices (Albion et al., 2015). Studies have indicated that a small number of teachers expressed satisfaction with their knowledge and skills in utilizing digital technologies in the classroom, and they were not adequately prepared to integrate the promotion of mandatory digital competence into their instructional

methods (Brigas et al., 2016; Pittman and Gaines, 2015). Furthermore, even when some school administrators attempted to integrate digital competences into their work, researchers discovered that the integration of digital technologies was primarily limited to a basic level and for illustrative purposes (Brigas et al., 2016; Aslan and Zhu, 2016).

The education systems in numerous countries globally are founded upon a proficient approach, the practical implementation of which presents various challenges. This approach entails the acquisition of digital skills and competencies, which are becoming increasingly important due to the rising digitization of society and the development of information societies (Carretero et al., 2017). In light of the COVID-19 pandemic, primary education must prioritize the development of teachers' digital skills to effectively adapt to the growing utilization of digital learning models. These emerging trends are reshaping educational processes and necessitate the acquisition of suitable digital skills and competencies. This statement affirms the need of creating initiatives aimed at implementing a structured methodology for cultivating and enhancing digital skills and capabilities. According to Jansen et al. (2013), the concept of digital competence encompasses more than just the use of digital technology. It also encompasses the individual's cognitive competency, which includes their knowledge, abilities, and connections.

According to Ferrari (2012), the concept of digital competence encompasses the confident, critical, and creative utilization of information and communication technologies (ICT) to accomplish specific goals and objectives related to digital literacies in various domains such as work, employment, learning, leisure, digital

inclusion, and participation in the digital society. Digital competence is regarded as a comprehensive collection of knowledge, skills, attitudes, technologies, subjects, and disciplines, which are influenced by digital learning theories, contexts, educational processes, and the interplay among these components of digital competencies. According to Deursen (2014), the categorization of digital skills into operational, formal, informational, and strategic skills is influenced by the educational attainment of the population, which plays a crucial role in their growth. In their study, Sicilia et al. (2018) saw an increased emphasis on the cultivation of information retrieval and communication abilities. According to Cruz and Diaz (2016), the author posited that the acquisition of digital competences is not contingent upon age, but rather is heavily impacted by the technical and pedagogical abilities of educators.

The concept of digital competence is widely discussed and has varying definitions among researchers and policy makers (Spante et al., 2018). In this particular study, teachers' digital competence refers to their proficiency in utilizing information and communication technology (ICT) with a sound understanding of pedagogy and awareness of its impact on student learning (Krumsvik, 2014). Ilomaki et al. (2016) propose that digital competence comprises four key components: (1) technical skills necessary for utilizing digital technologies, (2) critical evaluation of digital technologies in terms of ethical considerations, limitations, and challenges, (3) application of digital technologies in diverse professional contexts, and (4) motivation to actively engage in and embrace digital culture. According to Krumsvik (2014), digital competence encompasses more than just the technical skills required for utilizing digital technologies. In addition, educators must

possess the ability to rationalize their choices regarding the selection and implementation of specific digital technologies in different professional contexts.

The available body of literature pertaining to digital literacy skills and competencies is extensive in terms of definitions and classifications. However, a definitive and all- encompassing definition for these terms is still lacking (Heitin, 2016). For instance, current inventories of internet skills and competencies suffer from issues such as incompleteness, oversimplification, and conceptual ambiguity (Van Deursen et al., 2015). It is important to note that internet skills are just one aspect of digital skills. Sousa and Rocha (2019) elucidated the significance of digital skills and competencies in the context of disruptive digital business, emphasizing that these competencies extend beyond technical skills. In addition to being proficient in various technologies, such as the internet of things (IoT), cloud technology (also known as cloud computing), big data, and artificial intelligence, educators must also be capable of adapting to the latest digital advancements. Scholars have expressed concerns with the identification and classification of the many capacities associated with the functioning of Digital Literacy from its inception.

Raman and Thanimalai (2019) found that a majority of school administrators lacked the necessary information and communication ICT capabilities, and had limited availability of ICT resources. Consequently, there is a potential for a deficit in the transmission of information and skills from administrators to teachers. Due to the absence of opportunities to gain essential proficiencies and competences in digital technologies, learners are therefore deprived of the advantages offered by digital literacy programs. Ugur and Tugba (2019) believe that inadequate

integration within educational institutions may be attributed to deficient leadership styles and insufficient digital literacy. The incorporation of technology in academic courses presents a difficulty known as digital literacy (Blau et al., 2020). The exponential expansion of information technology and the rapid digitalization of education necessitate the need for all participants in the educational process to possess up-to- date capabilities. The use of digital talents in contemporary times is a prerequisite for the competitive advantage of an individual with specialized expertise. The education system is tasked with proactively staying ahead of current trends and developments.

In order to be effective in the 21st century, educators must stay abreast of current trends and developments. The individual should possess knowledge of diverse contemporary technologies, own ownership of those technologies, and demonstrate the ability to effectively use them in practical settings, contingent upon the specific aims and objectives of digital training initiatives. According to Hamalainen et al. (2014), the concept of digital competence encompasses a collection of knowledge, abilities, and attitudes that enable individuals to effectively use digital technology in order to accomplish various objectives in their lives. Within the realm of education, the process of digitalization imposes two responsibilities upon teachers: the cultivation of their own digital competencies, and the cultivation of the competencies required for students to navigate the digital landscape (Hamalainen et al., 2014). In their research, Hamalainen et al., (2014) conceptualized the digital competence of teachers as encompassing digital skills, attitudes towards digital technologies, and knowledge of said technologies.

The authors conducted a study that examined the relationship between digital literacy, knowledge, and digital relationships among teachers, as well as how these factors are influenced by personal and contextual factors such as gender, age, subject, training, and teaching experience. The study utilized data from two international studies conducted by PIAAC (International Adult Competence Assessment Program) and TALIS (International Study of Teaching and Learning). The findings of the study indicated that teachers universally acknowledged the significance of incorporating digital technology in educational settings, leading to positive attitudes towards the implementation of digital literacy (Hamalainen et al., 2014).

In a study conducted by Ayesha (2020), an examination was made of teachers' behavioral and control beliefs pertaining to the integration of digital literacy. The findings indicated that teachers' incorporation of digital literacy was associated with their behavioral beliefs, specifically their attitudes towards the outcomes of such behavior, including the perceived value of digital literacy in fostering students' 21st-century skills, enhancing student engagement, and preparing them for future careers. Additionally, normative beliefs, encompassing social support from school administrators, parents, colleagues, and students, were found to influence teachers' integration of digital literacy. Lastly, control beliefs, encompassing perceived behavioral control, were identified as factors affecting the ease of integrating digital literacy, including access to technology, professional development opportunities, and curriculum resources.

Educators and educational administrators have the responsibility of formulating instructional and learning methodologies that use digital technologies. In this context, their role extends beyond the mere dissemination of knowledge, as they are tasked with fostering students' abilities and proficiencies by leveraging information and communication technology (ICT) and digital educational resources. The use of these tools should be seen as a mechanism for facilitating change within educational settings. By engaging in collaborative and genuine learning activities, students are able to actively construct knowledge and engage in discovery.

The skills and competences that are deemed crucial in contemporary society include teamwork, communication, digital literacy, citizenship, problem-solving, and critical, creative, and productive thinking. According to Llorente (2008), Technological advancements provide a diverse array of opportunities, with augmented reality making its way into contemporary educational settings. Although these advancements may indicate a disparity in educational quality, they are often executed by instructors in a straightforward manner inside the classroom. However, their full potential remains untapped, causing alarm among some scholars. According to Kopcha (2012), In a separate investigation conducted by Intefjord et al (2005), the focus was on examining the professional digital competences shown by instructors in Norway.

Additionally, the research explored the incorporation of digital competence into pedagogical education. The researchers discovered a positive correlation between the digital competency of instructors and their efficacy. Kopcha (2012) recognizes

the presence of a significant disparity between the quantity of technology accessible to educators and the actual use of ICT for educational purposes within teaching and learning contexts. According to the findings of Ray et al. (2010), a significant proportion of educators, including both teachers and school administrators, use technology in their professional practice, although to a limited extent. The research reveals that this employment of technology mostly revolves on administrative tasks rather than instructional purposes.

Furthermore, the use of digital technologies in education is often insufficient, resulting in a lack of improvement in the quality of teaching and learning. Based on their research, technology is seen as a revolutionary educational tool capable of altering the educational environment; nevertheless, the actualization of this transformation has yet to be fully realized. Area-Moreira et al. (2016) conducted additional research that identified two distinct technology integration models in the context of education. The first model encompasses teachers who possess professional experience, digital competencies, and are proficient users of technology due to adequate training. The second model pertains to teachers who primarily rely on traditional resources and only sporadically incorporate technology into their instructional practices. Hence, the untapped educational potential of emerging technologies remains unfulfilled in the realm of educational application. Educators continue to include conventional resources and instructional approaches alongside digital tools, displaying a lack of utilization and hesitancy in integrating information and communication technology (ICT) into their educational frameworks.

In their study, Suarez-Rodriguez et al. (2015) put up a theoretical framework that establishes a connection between the technical and pedagogical capabilities of educators in the field of information and communication technology (ICT) and their use of ICT tools. The study revealed that the competence of instructors had a crucial role in shaping their teaching practices and their use of ICT in education as a whole. Lister (2016) conducted a study examining the perceptions of educators on digital literacy. In the conducted research, educators were tasked with selecting abilities from a pool of 24 options, as proposed by the authors, based on their perceived significance in the context of digital literacy. The research conducted a categorization of digital literacy ideas, resulting in the identification of four distinct profiles: technology-oriented, digital-oriented, goal-oriented, and critical use-based. Significant disparities were identified while examining the notions of digital literacy among educators in the United States and Sweden.

The notion of digital competences and digital literacy has evolved over time, resulting in a complex modern understanding that encompasses not just technological abilities but also attitudinal aspects of an individual's personality. The objective of integrating digital competence into primary schools, as well as other types of starting education and further education, is to enhance the educational outcomes and the degree of digital literacy among students. Digital competences are often defined as a comprehensive and versatile collection of information, cognitive abilities, practical skills, attitudes, and values that are inherent to a person (OECD, DeSeCo, 2005). Further research has been conducted to enhance the understanding and specification of digital competencies and their components, building upon the inclusion of Digital Competencies as a vital aspect

of lifelong learning (European Parliament and the Council, 2006). One of the notable studies in this field is the Digital Competency Project (DigiComp), conducted by the Institute for Prospective Technological Studies in Spain, which is an institute affiliated with the European Commission-Joint Research Center (Ferrari, 2013). The DigiComp project focused on the recognition of essential competencies, including the capacity to responsibly and autonomously apply relevant knowledge and skills, while adopting a creative and intercultural approach in the domains of work, leisure, and education (Ala-Murka, 2011; Ferrari, 2012).

In the last decade, there has been a notable acceleration in the digitization of education, as seen globally (European Union, 2013; Farrell et al., 2017). There is a growing interest in the incorporation of digital technology into the realm of education. This interest is often grounded on the belief that digital technologies provide significant potential for enhancing the caliber of education (Toit, 2015; UNESCO, 2009; Trucano, 2015). According to Van Dijk (2005), digital competence encompasses a range of operational, informational, and strategic proficiencies. The author describes digital skills as a compilation of abilities necessary for effectively operating digital technology, such as computers and associated networks, as well as for conducting information retrieval and utilization for personal objectives. The author categorizes the concept into three distinct skill sets: operational skills, information skills, and strategic skills. Operational skills refer to the abilities required to effectively operate hardware and software. Information skills encompass the competencies necessary to search, select, process, and evaluate information obtained from computer and network sources.

Lastly, strategic skills denote the capabilities to utilize digital sources in order to accomplish specific and overarching goals and objectives. Additionally, the author recognizes that the acquisition of digital skills can transpire through both formal and informal means. In this particular context, formal methods pertain to the implementation of an organized and structured training system that encompasses certain learning goals within the confines of a school or workplace environment. On the contrary, informal approaches refer to the acquisition of digital skills and competencies through everyday experiences and personal interest in utilizing digital technologies.

Consequently, the development of digital skills and competencies often involves learning through practical application, trial and error, and collaboration with peers and colleagues (Van Djik, 2005). Recent studies conducted by Hasniza et al. (2003) have indicated that effective utilization of digital technology in educational settings necessitates administrators to possess relevant digital skills and competencies. This includes staying updated on technological advancements (such as digital hardware and software), pedagogical techniques (methods of teaching and administrative functions), and the specific subject matter or digital content to be delivered, as well as the intersection of these elements. The development of Teachers Digital Competencies (TDC) is most effectively achieved when school administrators and teachers possess a comprehensive understanding and application of the knowledge derived from the interplay between technology, pedagogy, and digital content. This understanding should be reflected in their instructional and administrative practices within the educational setting (Van Dijk, 2005).

The notion of digital competence emerged from a novel perspective on formal education, which emphasizes the identification and development of skills and competencies necessary for individuals to progress in their academic pursuits and beyond (Gisber et al., 2016). This approach, known as key competence learning, is supported by the European Higher Education Area (EHEA), which recognizes the importance of equipping students with a comprehensive set of fundamental abilities to effectively navigate the digital landscape of the 21st century. According to the European Commission (2006), digital competence refers to the responsible and discerning use of information and communication technology (ICT) within the context of the information society, including many domains such as work, leisure, and communication.

The concept revolves on fundamental information and communication technology (ICT) competencies, which include using computers to acquire, assess, retain, generate, showcase, and trade data, facilitate communication, and engage in cooperative networks. Flores and Roig (2019) propose that digital teaching competence is a multidimensional competence that encompasses the ability to effectively utilize information and communication technologies (ICT) to search, critically select, obtain, and process relevant information. This competence also involves transforming this information into knowledge and effectively communicating it through various technological and digital media. Furthermore, individuals with digital teaching competence are expected to act responsibly, adhere to socially established rules and regulations, and leverage digital tools to inform, learn, solve problems, and communicate in diverse interaction scenarios.

Numerous international institutions have endeavored to establish a conceptual

framework including this notion, with the aim of providing a shared reference point for educational systems and curriculum. Research indicates that one of the most notable frameworks in the field is the European Framework of Digital Competence (EFDC), also referred to as Dig Comp, which was developed by the European Commission in 2013. The purpose of the tool was to enhance the digital competencies of school administrators, facilitate the development of policies supporting digital training, and aid in the planning of education and training initiatives aimed at improving digital competence among educators in schools (Ferrari, 2013).

This report introduced version 2.0 of the digital competence Framework for citizens (Vourikari et al., 2016), which was endorsed by the international society for Technology in Education in Canada (ISTE). The ISTE values the significance of creativity, professional growth, and leadership. Additionally, the report mentioned other frameworks such as the ICT competency standards for Teachers promoted by UNESCO and the common Framework for Digital Teacher Competency promoted by the National Institute of Educational Technologies and Teacher Training (INTEF) of Spain. The latter is an adaptation of the concept of digital competencies (Quiroz et al., 2016).

The paramount aspect of the educational process is the presence of a teacher possessing essential and proficient abilities. This teacher should possess a comprehensive understanding of contemporary educational technologies and actively engage in the ongoing maintenance and advancement of the educational system. The study conducted by et al. (2013) posited that digital competence

encompasses not only the use of digital technology, but also encompasses cognitive competency, which comprises knowledge, skills, and connections.

According to Ferrari (2012), the term "digital competency" may be widely characterized as the proficient and discerning use of information and communication technology (ICT) to accomplish objectives pertaining to many domains such as labor, employment, education, recreation, social integration, and societal engagement. Pedagogical digital competence encompasses the continual application of attitudes, knowledge, and abilities necessary for the purpose of planning, conducting, evaluating, and revising educational activities in a continuous manner. Computer technology plays a crucial role in facilitating teaching practices by incorporating theoretical frameworks, current research findings, and established pedagogical experiences. The primary objective is to enhance students' learning outcomes by leveraging the potential of computer technology to its fullest extent.

This study examined digital competence as a comprehensive construct including several components such as knowledge, skills, attitudes, technologies, topics and disciplines, learning theories, context, and educational processes. The interactions among these components were also explored to better understand the nature of digital competences. When considering this description, it is logical to use a methodical approach to elementary education that incorporates these factors in order to foster the development of digital abilities.

This study examines the concept of digital skills, which encompasses a range of abilities related to searching, processing, analyzing, and managing data and

information, as well as communicating and collaborating using digital tools and technologies. Additionally, it includes the capacity to generate digital material, safeguard against potential threats, and address technical issues. Deursen, Helper, and Eynon (2014) proposed a classification of digital skills into four categories: operational, formal, informational, and strategic skills. The degree of development of these skills is closely tied to the educational attainment of the population. In their study, Sicilia et al. (2018) saw an increased emphasis on the cultivation of information retrieval and communication abilities.

The emergence of the skills and competencies approach to teaching and learning may be attributed to the societal transformations seen in recent decades. Nevertheless, the fast expansion of globalization has only been apparent in recent years. Indeed, the perpetual updating of information and information technologies (ICTs), the rapid generation of knowledge, the use of diverse resources and digital media, their unparalleled consumption, and the need for educational platforms. The concept of distance teaching and learning, or the immediate transition from face-to-face teaching to Emergency Remote Teaching (ERT), has become increasingly prevalent in the educational context (Trust & Whalen, 2020). Consequently, digital competency has gained significant importance in recent times within the field of education (Tejada & Pozoz, 2018). This is due to the widespread use of technology in everyday life and the growing reliance on efficient and appropriate utilization of information and communication technology (ICT) for professional development. According to Cabero et al. (2020), it has been emphasized that digital competence is a crucial competency that must be acquired by school administrators, instructors, and students in the context of society, schools, and the future.

In Spain, the National Plan of Digital Competence (MINECO, 2021) has recognized the importance of Teachers Digital Competencies (hereinafter referred to as DC) in all educational levels, including universities. This recognition is part of the strategic axes of the plan, which aims to foster sustainable and inclusive economic growth. School administrators play a pivotal role in the integration of digital technologies and are instrumental in the adoption and implementation of information and communication technology (ICT) within a school environment. The successful transformation and enhancement of education depend, in part, on educational initiatives that necessitate teachers possessing effective digital competencies to effectively integrate and utilize technologies in a pedagogical manner (MINECO, 2021). Consequently, teachers assume a crucial responsibility in determining the appropriate utilization of technology. Consequently, individuals must possess proficiency in independently using technology (Thijs et al., 2014).

The European Union (EU) provides a definition of digital competence that encompasses the secure, discerning, and accountable use of digital technology for educational purposes, professional endeavors, and societal engagement. It includes information and data literacy, communication and collaboration, media literacy, digital content creation (including digital programming), security (including digital wellbeing and cyber security-related skills), intellectual property issues, problem solving and critical thinking. (Council of European Union, 2018).Sylvester et al. (2018), Duran (2019) further points out that the Teachers' Digital Competencies (TDC) is a set of knowledge , skills and attitudes necessary for teachers to make effective use of ICT from its different aspects like technological, informational, multimedia, communicative, collaborative and ethical, assuming pedagogical-didactic

criteria for an effective integration of ICT in their educational practice and in general, in that the TDC must be holistic, situated, systematic and constant development and in addition ,susceptible to integrate the skills, attitudes and knowledge that teachers require to support the learning of their student as active participation in digital world(Domingo et al., 2020). It is important considering if university institutions have now incorporated digital competence into their academic practices, after the definition of TDC (Technology and Digital Competence) has been established. Within this particular setting, many models and frameworks have been implemented by some nations to delineate the digital capabilities that instructors need to acquire via training.

The 'European Framework for digital competence for teachers: DigCompEdu' is structured based on six distinct competency areas that teachers need to acquire in order to facilitate successful, inclusive, and creative learning practices via the use of digital resources (Caena & Redecker, 2019). The responsibilities of teachers and school administrators have become more challenging in recent times due to the need of enhancing their digital literacy. This is essential for effectively using novel instructional techniques inside classrooms and administrative operations, while concurrently augmenting their existing knowledge and abilities. According to Voogt and Roblin (2010), it is essential for educators to acquire the necessary skills and abilities in order to effectively administer digital literacy programs inside educational institutions.

The emergence of digital literacy abilities was first documented by Lim and Newby (2021), who defined it as the capacity to effectively identify, find, and critically evaluate information. Nevertheless, despite its innovative nature, the concepts it incorporates have undergone significant changes. Numerous endeavors

have been undertaken to provide prospective educators with digital proficiencies, as shown by several standards and frameworks that aim to assess the extent of their gained knowledge (Fraser et al., 2013; UNESCO, 2018). Nevertheless, the integration of digital skills into primary educational programs continues to be a topic of intense academic debate. There is a discernible focus on incorporating digital training and offering pedagogically innovative experiences as part of efforts to alter teaching methodologies. According to the Horizon Report 2019 for Higher Education, the integration of technological instruments inside virtual learning environments has significant importance. Based on the findings of Educause (2019) and Le et al. (2022), the increasing prevalence of digital resources and gadgets in contemporary and forthcoming educational methodologies underscores the growing significance of providing digital competency training to aspiring educators.

The acquisition of digital skills by educators throughout their first training is crucial for facilitating their successful incorporation into instructional strategies (Nikou & Aavakare, 2021). The abilities indicated above include a range of skills, starting from fundamental digital literacy to the effective integration of technological tools into the regular educational practices of instructors (Gisbert et al., 2016; Alanoglu et al., 2022).The specific markers that constitute digital competencies have been specified in academic study conducted by Siddiqi et al. (2018), Rodriguez-Garcia et al. (2019), and Cabero-Almenara & Palacios-Rodriguez (2020).The significance of digital literacy is underscored by the ability of prospective educators to effectively use active methodologies, digital competencies, and novel strategies, modalities, and approaches (Gomez-Garcia et

al., 2021; Garcia-Martin and Garcia-Sanchez, 2017).Presently, the focal point of a comprehensive and effective program endeavor is in the pursuit of professional education by those seeking to join their desired field. The seminars include customized, concise training modules as well as extensive, semester-long courses provided by undergraduate and graduate programs at institutions of higher education. Moreover, the available body of literature indicates a dearth of engagement with experts in the field of literacy (Ata & Yildirim, 2019; Campbell & Kapp, 2020; Domingo-Coscolla et al., 2020; Tomczyk et al., 2020; Vinokurova et al., 2020).

2.5 School Administrators' liaison with relevant authorities for provision of Digital Content and power connectivity for implementation of the digital literacy programme

The principal objective of the Kenyan government's 2013 Digital Literacy Programme was to deliver tablet devices equipped with the national curriculum materials to all first-grade students (Digi School, 2018; Makura, 2019). A conspicuous inequity is evident in the worldwide allocation of superior education. Heinrich et al. (2020) argue that the potential for reducing disparities among individuals exists through the implementation of digital literacy education. Digital literacy possesses the capacity to facilitate extensive enrollment in high- quality education, consequently reducing inequalities among users and effectively closing the digital divide.

The United Nations Millennium Development Goals (UNMDG) have established a comprehensive framework with the objective of attaining universal primary

education. Nevertheless, given the progress that has been made thus far, it is unlikely that this goal will be realized (UNESCO, 2011). Numerous initiatives have been undertaken in an attempt to furnish disadvantaged rural students with digital access to superior educational materials, thereby promoting educational parity. The successful interconnection of more than 1,200 islands in the Maldives through a broadband program has enabled easier access to online training opportunities. According to UNICEF (2007), a significant number of pupils are now experiencing access to contemporary technology and digital resources for the very first time. Likewise, in the United States, a significant number of students residing in rural areas are now able to access online courses that would not have been available to them without the presence of technology and online digital resources, thereby facilitating the implementation of distant learning.

According to Banks and Farmer (2009), Although several studies have failed to establish a direct correlation between access to technology and academic achievement among students, other research has shown that the use of digital literacy material and associated technologies may enhance students' understanding in the realm of digital literacy (Pedro, 2012).Contemporary students possess a high level of proficiency in digital technologies since they are well-acquainted with the process of generating digital material, as well as accessing and disseminating digital information (Hannum & Irvin, 2007).

Digital content encompasses any form of material that exists in the format of digital data. The content is a compilation of up-to-date, easily understood, and beneficial information that is designed for readers. It is common practice to store digital

content in designated formats on digital media or analog storage systems. Digital content includes broadcasting, streaming, and computer file storage, among other methods of disseminating information. Individual user preferences and behaviors influence the availability and accessibility of digital resources. While it is true that not all individuals will be receptive to emotionally charged information, certain individuals may be more susceptible to forceful and impactful content. The pedagogical emphasis on digital literacy in public schools stems from the recognition that modern youth must possess a wide range of technological skills and proficiencies. This empowers them to engage in critical analysis, evaluate their own work, and actively contribute to a global community. There have been notable progressions across multiple disciplines in recent times. This has propelled these developments.

Digital literacy comprises the knowledge and abilities necessary to engage with, evaluate, employ, and produce digital content in a deliberate and morally upright fashion. A transformation is occurring in the traditional instructional methods employed for educational objectives, as digital tools and resources become increasingly accessible to both students and instructors. Since students now have the capability to corroborate the assertions of their professors through the portable electronic devices that are easily accessible, textbooks have ceased to be the primary repository of knowledge. Moreover, it is critical that the course materials encompass a broader scope than mere electronic textbooks and papers. Effective student engagement with digital information and the development of innovative methods to showcase acquired knowledge are both critical components. As stated on the website byotnetwork.com in 2016, educators may employ various

strategies to promote effective instruction utilizing digital materials. Among these is the establishment of a learning community, which is an essential element of any digital learning environment. Both learners and educators desire to experience a deep sense of belonging and inclusion in academic establishments and their individual learning environments. Educators have an obligation to maintain rigorous criteria for the behavior and scholastic accomplishments of their students, thereby inspiring learners to strive towards attaining these benchmarks. The attainment of digital literacy requires the cultivation of cognitive abilities and technological expertise.

Digital materials of superior quality provide an extensive array of information that holds significant value in the realm of education. It is credible and is available for use by students, faculty, and library staff. Moreover, by actively engaging students in critical and analytical thought processes, it possesses the capacity to offer a comprehensive and immersive educational experience. Maintaining the currency and pertinence of digital content is of the utmost importance (en.m.wikipedia.org). The three distinct categories that Spires and Bartlett (2012) delineate comprise the various cognitive processes associated with digital literacy: the production and distribution of digital content, the retrieval and consumption of digital material (Spires & Bartlett, 2012; Paul & Kerkhoff, 2018).

As previously stated, it is critical for individuals to develop and evaluate their own perspectives when interacting with digital information. In order to locate and gain access to digital content in accordance with the necessary criteria, it is vital to develop the requisite skills. By setting a good example and offering guidance on

digital citizenship, educators can aid students in developing a profound comprehension and integration of responsible technology usage. As individuals participate in collective endeavors to tackle authentic challenges and distribute their distinctive works to a broader audience, they proactively strive to recognize, comprehend, and employ digital resources accessible via the internet. In the context of digital literacy instruction, the strategic pursuance of information and the critical evaluation of its accuracy and relevance are critical components in attaining proficiency in internet usage (Leu et al., 2008). Developing adept online search skills is crucial for attaining academic excellence in a society that is technologically advanced. An important resource that supports this undertaking is the Teaching Internet Comprehension to Adolescents (TICA) manual. Leu et al. (2008) suggest that the implementation of criteria could be a viable method for determining whether or not students possess the fundamental online search skills that are mandatory.

As stated by Moraveji et al. (2011), individuals are required to possess a specific collection of fundamental abilities in order to locate and utilize digital content efficiently. The aforementioned capabilities encompass specialized knowledge in the field and a practical comprehension of the operations of search engines, in addition to fundamental literacy skills and a broad understanding of the online resources available.

Digital literacy techniques encompass the ability to locate and interact with digital content proficiently, in addition to producing and communicating such material with a critical evaluation mindset (Spires & Bartlett, 2012).

Bhattacharya and Sharma (2007) define digital learning as the process of receiving informational materials electronically. Electronic materials encompass a variety of learning modalities, including online, remote, and open learning, which involve the implementation of modern technology in academic environments. According to Voogt and Knezek (2008), there has been a growing emphasis among educational establishments (including secondary schools, tertiary institutions, and colleges) on digital learning as a strategy to augment the learning experience. Olatokun and Opesade (2008) posit that the predominant factor motivating instructors in public primary schools to embrace digital literacy learning is the perceived benefits that computer-assisted learning offers as an instructional methodology.

Digital literacy content denoted the academic digital resources utilized by instructors and administrators in the implementation of digital literacy programs. Online, instructional administrators and educators have unrestricted access to an abundance of digital educational resources encompassing various subject areas and grade levels. A wide array of materials are accessible for usage without any limitations, whereas educational establishments may exercise judgment when it comes to acquiring essential resources like digital textbooks. Educators possess the capability to integrate digital learning materials into the methodologies of their lessons. Simulations and interactive models possess the capacity to augment the profundity of learning and offer notable benefits when applied to scientific and mathematical education. Furthermore, the incorporation of visual aids, such as photographs and artwork in the public domain, charts, and diagrams, could potentially enhance students' understanding of diverse concepts.

Videos and animations obtained from online platforms, including YouTube, are extremely beneficial resources for clarifying a wide range of topics. Students may be able to acquire knowledge about animals in the fields of integrated science and social studies as part of a competency-based curriculum using YouTube as a secure learning environment. Digital textbooks possess the benefit of being easily accessible across various platforms and demonstrate a greater frequency of timely updates in comparison to traditional textbooks. Online assignments, which encompass both formative and summative assessments, furnish educators and educational authorities with timely data. Furthermore, these pedagogical instruments possess the capability to engage and engross students. Podcasts and audio materials, such as music, possess the capacity to augment student engagement and accommodate a wide range of learning requirements. Digital learning resources, including literature and online news articles, serve as prime examples of readily available and easily shareable materials. Digitized primary source materials function as invaluable assets for educators seeking to enrich their curricula, thereby eliminating the necessity for physical copies.

The utilization of graphing calculators empowers pupils to gain mathematical knowledge without the necessity of procuring an actual calculator, whereas interactive maps afford students a pragmatic digital encounter. According to Hermann, Van Braak, and Valcke (2008), the inclusion of digital resources in academic establishments motivates instructors to have a stronger tendency towards integrating digital information into the curriculum in order to improve student learning outcomes. As stated by Nicole in 2021,

According to Nicole (2021), digital learning materials afford instructors the chance to expand the educational experiences of their pupils beyond the limitations imposed by conventional classroom environments or residential settings. Education, within this particular framework, undergoes a metamorphosis into an all-encompassing and holistic encounter that surpasses geographical limitations. The accessibility of digital internet content facilitates an inclusive learning environment by permitting students to interact with educational materials from any geographical location. These tools possess the capability to facilitate a smooth transition between remote and in-person instruction, allowing instructors to switch between the two modalities without any disruption. In addition, it is frequently possible to distribute digital materials without incurring any expenses, and they do not require physical copies.

Digital information possesses the capacity to augment primary educational resources or function as an integral element of a lesson or course. Should the provided curriculum fail to fulfill specific criteria, online learning resources can be utilized as supplementary materials to compensate for and rectify these deficiencies. Educators may also employ these tools to assist students who have not yet achieved the anticipated standards for their grade level or to present further difficulties for proficient learners. An additional benefit resides in the learners' capacity to routinely access and examine digital information without encountering any restrictions. An approach that individuals could employ to strengthen their comprehension of subject matter involves participating in activities that require revision, such as revisiting films, re-establishing simulations, or listening to recordings (Bixler, 2021).

Before integrating digital content into digital literacy lessons, instructors must identify and incorporate suitable digital resources into their lesson plans in accordance with the particular class or grade level. It is imperative for educators to consider both the accessibility of readily available digital information and the impartiality of the learning instruments offered. Additionally, it is critical that the educator conducts a comprehensive assessment and verification of the digital literacy materials in order to determine their precision. This will prevent the spread of inaccurate information to the students (Makori & Mauti, 2016). It is imperative that educators conduct thorough investigations into the provenance of digital information and ensure that no biases are present. After conducting a thorough analysis of the supplied content, it is imperative that the instructor verify the operational status of every hyperlink. When prompted to create an online account on platforms such as Google, WhatsApp, or YouTube, individuals must give utmost importance to data privacy to ensure that the information they receive is accurate. As stated by Nicole in 2021,

The topic of digital literacy has been the subject of thorough investigation in numerous academic and professional domains, often with a range of perspectives or discoveries (Bawden, 2008; Lanksheer & Knobel, 2008; Jones Hadner, 2012; Eshnet-Akalai, 2004; Chaunt, 2009). According to the claims put forth by scholars, digital literacy comprises a compilation of discrete proficiencies or behaviors exhibited by individuals who interact with digital content and information systems, frequently necessary for digital inquiry. The abilities and skills enumerated above were frequently characterized as the aptitudes and proficiencies necessary to utilize digital content efficiently in the "Information Age" of the twenty-first century, according to a study by Eisenberg et al. (2004).

Instructors and students both have a significant impact on the implementation of digital technologies, according to a study on digital literacy in secondary institutions conducted by Gioko (2011). In order to facilitate the delivery of digital literacy courses through the use of desired digital resources, the principal obligation of the school administration was to establish efficient channels of communication with the relevant technological authorities. The incorporation of digital literacy resources has enabled the successful execution of personalized learning approaches for students with varying abilities and circumstances. This facilitated the simultaneous participation of learners in numerous initiatives and duties, enabling them to finish them at their preferable pace.

Kalantzis, the Dean of Education at the University of Illinois, asserts that in order to improve their efficacy as information presenters, modern educators must employ a variety of digital revolution-related technologies. Since digital media has become an integral part of the teaching and learning process, it is crucial that students actively engage with numerous facets of it, according to Eduxcationcorner.com (2022). Further investigation and discourse regarding the accessible nature of digital literacy within academic establishments are the subject of further scrutiny and deliberation, according to Voogt et al. (2013). The principal objective of this study was to examine the degree of cooperation between school administrators and relevant authorities, including the Ministry of Education, regarding the provision of digital resources through the Kenya Institute of Education (KICD). The research results suggested that educational administrators established channels of communication with the appropriate authorities tasked with supervising the implementation of digital resources designed for educational objectives. In light of

the profusion of digital educational resources accessible through the internet and web browsing, school administrators and instructors have been able to dispense with the need for conventional textbooks in favor of exclusively utilizing digital information. Nevertheless, regions lacking sufficient network coverage will be unable to fully accomplish this objective. School administrators and educators in Kitui County, akin to other geographical areas, frequently employ conventional pedagogical approaches. This entails placing a higher priority on traditional textbooks as opposed to employing digital resources like parodies, comics/cartoons, visualized content, digital events, e-books, embedded tweets, and other search engines (Cao et al., 2017).

Hence, it is imperative that public elementary schools recognize the significance of incorporating and utilizing digital content material for the effective execution of digital literacy initiatives. In recent years, the proliferation and utilization of electronic devices, including computers, smartphones, and tablets, have increased considerably. Blumberg and Fisch (2013) have underscored the ongoing growth of the market for digital educational resources as a result. To evaluate the degree of cooperation between educational institutions' administration and the ministry of education regarding the provision of digital materials for individual classes through the Kenya Institute of Curriculum Development (KICD), the researcher devised a series of self-administered survey inquiries. The purpose of these pieces was to examine the accessibility of digital literacy materials. Based on the responses, it was evident that the school administrators collaborated with the Kenya Institute of Curriculum Development (KICD), an entity under the Ministry of Education, in order to procure digital literacy materials for the purpose of establishing digital

literacy initiatives in public primary schools. Furthermore, to improve digital learning in schools, the Information and Communication Technology (ICT) authority has collaborated with the Ministry of Energy, Kenya Power and Lighting Company (KPLC), and the Communication Authority (MECA).

Similar to numerous other African countries, Kenya possesses substantial latent capacity in the domain of solar energy. A considerable portion of the country's rural areas still do not have access to electricity, primarily due to the considerable costs linked to infrastructure development and the constrained capability for power generation.

Including the installment of solar photovoltaic (PV) systems in approximately 4,100 primary schools, the Kenyan government has effectively executed a vast rural electrification initiative. This endeavor sought to generate an alternative energy source by converting solar rays into electricity. As part of an initiative devoted to digital literacy education, the schools have been electrified; the energy produced by the solar panels will be utilized to power learning devices that are presently being distributed in public primary schools across the country.

2.6 Theoretical Framework

Siemens (2004) introduced the connectivism theory as the theoretical basis for the present study. The idea was regarded as a learning theory suitable for the digital era. Connectivism is a theoretical framework that offers a conceptual understanding of learning in the context of the digital era. The idea emphasizes the impact of digital internet technologies on the development of new educational

possibilities, including various tools such as web browsers, search engines, online conversations and meetings, virtual learning, and social networks, among others. Siemens (2004) posits that a network of linked webs is formed by several elements such as social connections, experiences, digital observation (commercial, websites), and organizations. The acquisition of information is ultimately derived from the interconnectedness of several fields of study.

The modification of the learning environment refers to the increasingly prevalent use of technology as a tool for training. The emergence of holes in traditional teaching conceptions has prompted the need for the creation of innovative ways in order to stay up-to-date. The connectivist idea seeks to provide a modern remedy to these shortcomings. Connectivism serves as a theoretical framework that offers educators supplementary strategies for cultivating a learning environment that effectively equips students for success in the digital age. From a connectivist standpoint, the student takes on the newfound obligations of learning that were previously held by the instructor. In contrast to competing theoretical frameworks such as cognitivism and constructivism, which endorse traditional pedagogical methods, the primary objective of the educator is to facilitate the development of students' autonomy in their learning process and personal development. In contrast, it is important to note that connectivism relies heavily on technology. Consequently, the primary step in implementing a connectivism-based classroom involves broadening the scope of digital learning avenues, such as including blogs, online courses, webinars, and social networks.

Siemens (2004) posits that connectivism is a theoretical construct that is grounded on the fundamental notion that information operates as a dynamic network, subject to continual updates and acquisition. The concept of web-based or internet-based education refers to the use of online platforms and digital technologies to provide educational content and facilitate learning experiences. Administrators have the capacity to access regularly updated digital material, evaluate credible sources for such content, and build associative links between conflicting pieces, all of which are integral aspects of connectivism theory. This framework has the potential to support school administrators in effectively integrating digital learning with the existing competency-based curriculum, which requires a sufficient level of digital capabilities.

According to Abik (2020), educators have the option to use many learning theories, such as cognition, connectivism, and behaviorism. The fundamental principle behind connectivism is the belief that digital technology promotes social integration and creates innovative educational opportunities. Although connectivism is a relatively new learning theory, it is already exerting a substantial influence on training methodologies in both professional and educational settings. With the growing prevalence of remote or digital learning in modern education, administrators might use connectivism as a conceptual framework to evaluate existing processes and digital training methods. Connectivism recognizes the substantial impact of technology on human learning processes. This theory proposes that the facilitation of learning can be effectively achieved through the utilization of digital platforms, including blogs, social media, forums, and videos. Consequently, this theory has a high degree of applicability to the present investigation.

Connectivism, as defined by Siemens and Downes (2005), is initiated when a person utilizes digital technology as a method for resolving problems. This may include the process of seeking relevant social media material, communicating with an acquaintance via text message, or doing a search on Google to get specific information. Based on the Connectivism Learning Theory, the use of digital technology enables the process of problem-solving, hence leading to an improvement in the understanding of the subject matter. The concept of connectivism has potential in theory, since the widespread use of digital technology makes it reasonable to integrate it into educational contexts. This hypothesis has the potential to be shown in many practical scenarios, given that learning takes place via digital and social channels. To exemplify, the use of gamification introduces interaction to monotonous educational activities, such as the completion of a training module or the perusal of an article, via the provision of incentives to the participant. This adds to the development of connectivism.

Additionally, this approach serves as a means to cultivate cooperation, provide immediate feedback, and acknowledge the achievements of educators. Mentorship programs implemented inside an organization promote the concept of connectivism by encouraging the gathering of individuals at different stages of their careers. These programs provide a platform for the sharing of internal information, discussions on business culture and values, and the opportunity to solve difficulties that are specific to their unique responsibilities.

Numerous studies have shown that kids who participate in mentoring programs have enhanced development and higher academic achievement. Additionally, these

students display a stronger inclination towards attaining academic greatness. The term "Four Sigma" refers to a statistical concept that measures the deviation from the mean in a data set. In the year 2004, By incorporating the connectivism idea into the learning process, students are afforded a heightened level of autonomy in determining the pace and content of their education. Connectivism presents potential opportunities for individualized training that correspond to the unique needs and abilities of each learner, making it very relevant to the realm of academia. The study done by Abik et al. (2020) proposed that the emergence of novel e-learning modalities, such as online and remote learning, made the traditional learning theories outdated.

The use of connectivism as a theoretical framework is imperative in the context of the digital age. The authors are Abik et al. (2012). Adopting research theory as a connectivist theory will release administrators from the old way of knowledge transmission via experiential methods and link them to the digital age, where they may access information and digital material via the Internet (Abik, 2012). The researcher utilized the Connectivist theory owing of its great application to the study subject. Specifically, the theory permitted administrators to incorporate technological devices for the "off-site" storage of knowledge, hence redefining the function of memory in contrast to prior learning theories. Although earlier learning theories had a part in knowledge transmission, in order to successfully transfer digital information in the twenty-first century, teaching must integrate the connectivism paradigm. According to Abik et al. (2012), prior to the emergence of technology in education, the cognitive approach entailed professors offering content-oriented teaching in which students only acquired knowledge. Within the

connectivism paradigm, learners actively engaged in the process of their own learning growth, with instructors playing the role of facilitators.

Connectivism, according to Stravredes (2011), included the transmission of information across networks, with unambiguous linkages formed via online courses and online gatherings. Due to the fact that school administrators performed online meetings with their boards of management and staff, the framework was extremely important to the study. Siemens (2012) describes connectivism as a digital learning philosophy that is strongly founded in technology and stresses the necessity of obtaining information in the future rather than focusing on the past.

This theory was significant to the study as it represented a learning theory of the digital age that underlined the ways in which internet and digital technology have permitted innovative techniques for digital literacy efforts. Students and instructors are equally empowered by connectivism, since the idea shifts responsibility from instructors to learners, hence generating a more engaging learning environment that emphasizes the needs and interests of the learners. Connectivism argues for the acceptance of multiple opinions and individual perspectives, presumably removing any hierarchical system about the usefulness of information.

2.7 Conceptual Framework

A conceptual framework is a comprehensive set of fundamental concepts and principles derived from relevant fields of study. It is employed to structure and facilitate subsequent discussions or presentations (Biklem, 2003). The study's independent variable was the level of support from school administrators for activities aimed at enhancing students' digital literacy. The dependent variable was the measurement of digital literacy factors. The subsequent graphic illustrates the relationship between the independent and dependent variables.

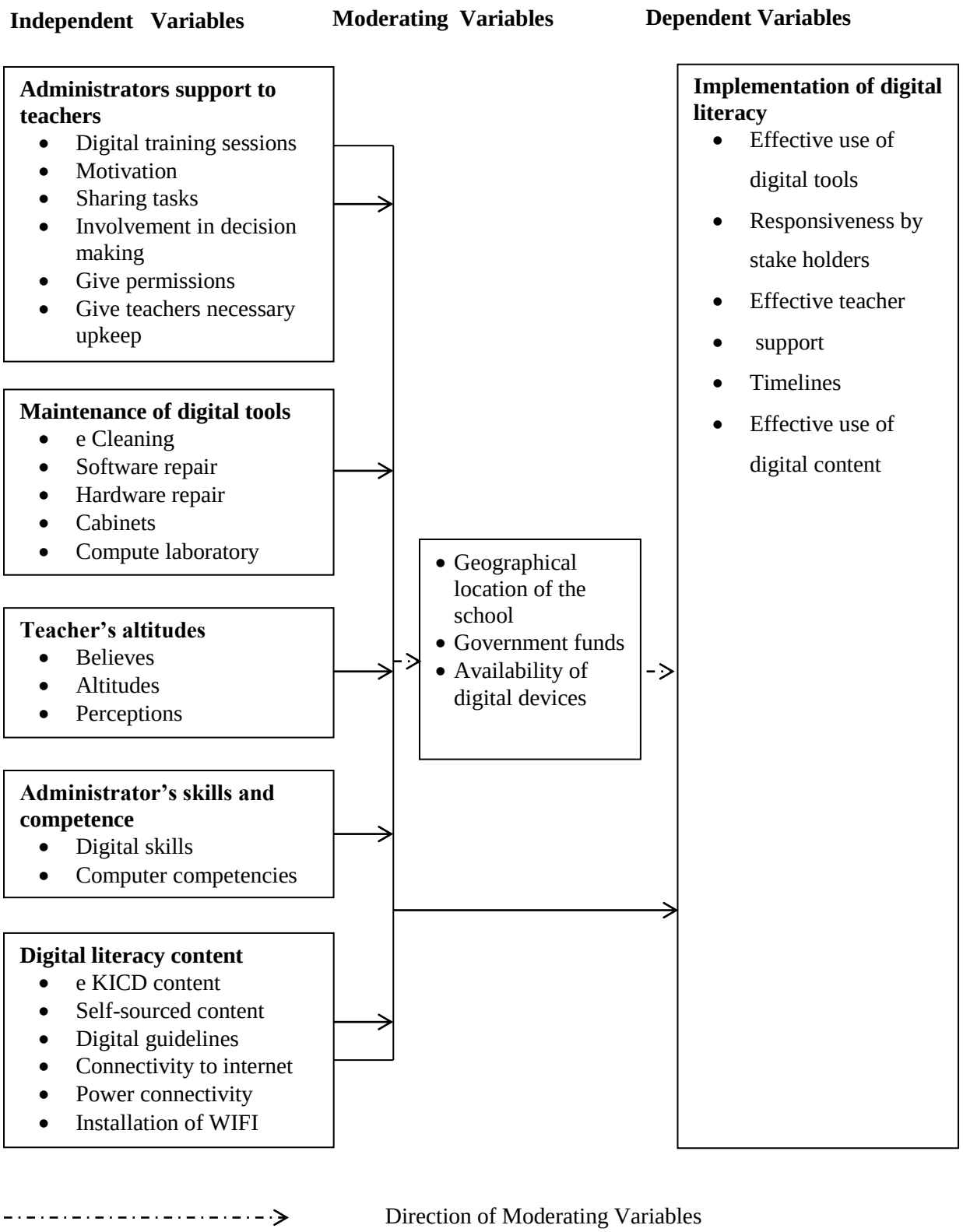


Figure 1: Conceptual Framework

The conceptual framework postulated that the adoption of digital literacy would function as the dependent variable. School administrators support the implementation of digital literacy by providing financial resources and organizing training sessions for teachers, managing digital tools and storage facilities, promoting positive attitudes, enhancing their own skills and competencies, ensuring access to digital literacy content, and facilitating power connectivity. This study identified many key factors that had a major role in mitigating the development of the Covid-19 pandemic. These factors include the use of digital technology, the reaction of stakeholders, support from teachers, timely actions, and the usage of digital materials.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

This chapter outlines the methods used for conducting the study. It covers aspects such as the research tools used, the size of the sample and how it was chosen, the reliability and validity of the research tools, how data was gathered, analyzed, and the overall structure of the research

3.1 Research Design

Researchers used a descriptive survey approach, which allowed them to watch and describe the participants unobtrusively. Since it allowed for the collecting of data regarding individuals' knowledge and activities relating to educational or societal issues (Shuttleworth, 2008), this non-intrusive approach, also known as observational research, proved very relevant to the study.

The study's primary goal required the researcher to employ descriptive research methods so that they could evaluate the level of support for digital literacy initiatives among school administrators in Kitui County, Kenya, in terms of digital training, digital tool and content maintenance, digital material storage, beliefs, attitudes, and power connectivity.

Public primary school principals, assistant principals, and teachers participated in the survey as primary responders. Researchers were able to collect useful data thanks to the participation of school officials, who were also the study's intended participants. Key informants, including classroom teachers, shed light on the resources available to them to execute digital literacy programs at Kenya's public primary schools in Kitui County.

3.2 Target population

The research utilized primary sources, such as classroom teachers and school authorities, in order to gather data. The primary intended recipients of the digital literacy program were the school administrators, who held the responsibility of making ultimate choices and ensuring its implementation. The study consisted of a sample size of 3280 individuals, comprising 1640 principals and an equal number of assistant principals.

3.3 Sampling Procedure and Sample Size

The sample consisted of 3,280 respondents, including 1,640 school administrators serving as head teachers, 1,640 serving as deputy head teachers, and 4,280 serving as classroom teachers. The researcher conducted a sampling procedure wherein 10% of the total population of 1640 head teachers, 10% of the total population of 1640 deputy head teachers, and 10% of the total population of classroom teachers were selected for the study. The study utilized a sample size of 328 school administrators and 428 classroom teachers, which was deemed sufficient for the purposes of the research.

Mugenda and Mugenda (2003) argue that a sample size ranging from 10% to 30% is statistically significant when dealing with populations of relatively modest size. The researcher employed a simple random sampling procedure to select a sample of 164 schools from the target population, representing 10% of the total number of schools (1640). Additionally, a sample of 428 teachers was selected from the overall population of 4280 teachers. The researchers employed a simple random sampling procedure in order to ensure that each school had an equal chance of

being picked for inclusion in the study. A sample was taken from each of the 164 schools, consisting of the administrators, commonly referred to as head teachers, deputy head teachers, and teachers. A total of 328 school administrators and 428 class instructors were included in the sample, resulting in a total of 756 respondents.

3.4 Research Instruments

In this investigation, a questionnaire served as the instrument of research for data collection. Data collection for this study involved the use of self-administered questionnaires administered to classroom instructors, who served as key informants, and school administrators, who constituted the primary respondents. The researcher opted to employ a questionnaire subsequent to conducting a comprehensive literature review that centered on the subject matter of the investigation. The choice of this research instrument was thus determined by the characteristics of the data to be gathered and the aims of the investigation. Assessing the support of school administrators for the implementation of a digital literacy program in public primary schools was the overall objective of the study.

According to Mugenda (2003), a self-administered questionnaire is defined as one that is filled out by the respondents themselves. Questionnaires were employed as they proved to be efficacious instruments for gauging the attitudes, behaviors, preferences, and opinions of the participants. As a means of gathering the necessary data, the researcher employed a questionnaire as the instrument of examination. Through administering the instrument, the researcher was able to establish rapport, clarify the meaning of questionnaire items, and provide an

explanation of the study's objectives. Two questionnaires were devised by the researcher. The researcher devised a specific set of questionnaires for the purpose of gathering data from school administrators. The first set was to gather data from the instructors (see Appendix II).

Questionnaire for school administrators: The survey instrument was developed by the researcher specifically for the purpose of gathering data from school administrators, which encompassed both head teachers and deputy headteachers. The survey comprised of two sections and encompassed a total of twenty-five inquiries. Participants were obligated to furnish personal information and indicate their tenure by choosing the right response or completing the empty fields in Section A, which encompassed a total of five inquiries.

Section B consisted of a combination of twenty Likert-type items and open-ended queries. To obtain individual viewpoints or perspectives regarding the integration of digital literacy in public primary schools, the researcher instructed school administrators to indicate their level of agreement by selecting the appropriate checkbox corresponding to the descriptive items of the selected digital literacy program.

Questionnaire for teachers

The researcher devised an additional questionnaire for teachers. The research questionnaire comprised of two distinct components. Section A comprised of five questions that necessitated the respondent to provide information regarding their personal details and educational attainment by selecting the proper option. In Section B, there were three questions that necessitated responders to select the

accurate answer or provide the appropriate response in the provided blank spots.

3.5 Validity of Research Instrument

According to Bryman (2007), validity is characterized as the extent to which a test accurately measures or aligns with what it purports to measure. In accordance with Bryman's (2007) guidance, we adhered to the three stages of establishing construct validity. The researcher began the process by ascertaining the variables of the study question that exhibited the highest degree of correlation with the assessment instrument. The researcher then evaluated the information pertaining to the validity of the particular variable under investigation, and ultimately ascertained the degree to which variables were communicated, all via the use of pilot testing. The surveys underwent field testing using a subset of the target population of respondents. The researchers sent questionnaires to a sample of administrators and instructors, providing them with a two-week window to complete the surveys. Subsequently, the researcher collected all of them. The researcher administered and collected the research instruments. Upon establishing the trustworthiness of the survey, the researcher proceeded to assess the findings.

3.6 Reliability of the Research Instrument

Dependability, as defined by Ngechu (2004), refers to the extent to which a research instrument consistently yields consistent outcomes or data across multiple instances of testing. To assess the validity of the research instrument, a pilot test was conducted at four public elementary schools located in Kitui County. In order to evaluate the dependability of the participants, Cronbach's alpha was used. The

rationale for accepting a 0.7 cutoff was grounded in the consideration that it served as an indicator of the participants' ability to consistently respond to a certain set of questions. To enhance the robustness of the research instrument, we eliminated any questionnaire item that exhibited a reliability score below 0.7.

3.7 Data Collection Procedures

In order to gather information, we used questionnaires that respondents filled out on their own time. It was necessary to acquire and code the raw data. Descriptive statistics were used to examine the data, and the results were shown in a variety of tables, graphs, and charts. Means, medians, and modes were calculated to get a sense of the overall patterns present in the data. Positional measurements contained percentages, whereas dispersion measures included ranges or standard deviations. For this study, we used version 28 of the SPSS statistical software for the social sciences to analyze the data.

3.8 Data Analysis

The questionnaires were thoroughly examined by the researcher to ensure their completeness, accuracy, and internal consistency subsequent to the data gathering process. In this research, we used a combination of descriptive and inferential statistics to analyze the qualitative and quantitative data that was collected. The acquisition and coding of the raw data were deemed essential. The data was analyzed using descriptive statistics, and the findings were presented via a diverse range of tables, graphs, and charts. The measures of central tendency, namely the mean, median, and mode, were computed in order to ascertain the underlying patterns inherent in the dataset. Positional measurements included percentages,

whereas dispersion measures encompassed ranges or standard deviations. In this research, the data was analyzed using version 28 of the SPSS statistical program for the social sciences.

3.9 Ethical Considerations

The completion of the questionnaires was voluntary, with no instances of coercion observed. The protection of participants' rights and the secrecy of their respective institutions were ensured throughout the study. Multiple measures were used to ensure this result. The information that was gathered was mostly maintained in a confidential manner. Additionally, data coding was used. Data collection began only once the participants provided their consent and demonstrated a comprehensive understanding of the study's objectives. The researcher made a solemn commitment to ensure the privacy and confidentiality of the respondents' information, which was reinforced by an oath. Consequently, the respondents willingly consented to take part in the study.

CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSIONS

4.0 Introduction

This chapter presents the general information of the respondents, research findings and discussions.

4.1 Demographic information of School administrators.

Table 1 : Demographic information of School administrators by gender

Gender	frequency	percentage
Female	86	56.36%
Male	78	43.64%
Total	164	100.00

Findings from data concerned with gender of the school administrators revealed that the population sample of the administrators (N=164) was composed of 86(56.36) who were female while 78(43.64) indicated a higher representation of female administrators compared to their male counterparts.

Table 2 : Demographic Data in relation to Age

Age bracket in years	Frequency	Percentage
20-29years	3	1.80%
30-39 years	37	22.42%
40-49 years	91	55.76%
50 and above years	33	20.02%
Totals	164	164

Data indicated that 3(1.8%) of the school administrators was between the age bracket of between 20-29 years which constitutes the lowest percentage. Table 4.2 shows that the respondents between the age bracket of 30-39 years 37(22.56) was

relatively low. This could be attributed to new appointments of school administrators the TSC depending on the vacancies currently available. Data indicated that 91(55.76) of the respondents were Head teachers and deputy head teachers and that they made the highest percentage. This could be attributed to those school administrators who were appointed to head or deputise schools before the CBC was introduced. Currently, any person who wishes to become a school administrator must pass through an interview.

The school administrators were further asked to indicate their level of education the data was presented in Table 3

Table 3: Level of Education of School Administrators

Level	Frequency	Percentage
P1	99	60.36%
DIPLOMA	34	20.73%
DEGREE	19	11.60%
MASTERS	11	6.70%
DOCTORATE	1	0.61%
TOTAL	**164**	**100%**

Data in Table 4.3 revealed that 99(60.36%) of the school administrators had PI Certificates. It was evident that school administrators were going back to school to advance in their education because 34(20.73%) had gone ahead to get Diplomas and 19(11.60%) had attained Degrees and 1(0.61%) had Doctoral degrees though they registered very low percentage.

This could be attributed to a policy by the employer, SC that promotions to administrative positions would require a minimum qualification of a degree. The

study further sought to establish the school administrators" years of service. The findings were presented in Table 4

Table 4: Years of service

Years of service	Frequency	Percentage
0-4 years	25	15.15
5-8 years	40	24.45%
9-12 years	41	24.45%
13-16 years	23	20.00%
17-20 years	18	11.%
Over 30 years	07	4.24%
Total	164	100

Findings of the study revealed that as of the time of administering the instrument to the respondents of the sampled schools, majority of the school administrators 41(24.85) had a teaching service of a minimum of 9 years. This demonstrated that majority of the head teachers or school administrators and their deputies were experienced teachers. Only7(4.24%) of the school administrators had over thirty years in service. This demonstrated that majority of the school administrators were experienced.

4.1.1 Demographic information of Teachers

Table 5: Demographic information of teachers.

Gender	Frequency	Percentage
Female	290	67.76%
Male	138	32.24%
Total	428	100

Findings from data concerned with the gender of the teachers revealed that there were 290(67.76%) females compared to 138(32.24%) males which reflects a slight

difference of the female teachers compared to their male counterparts in the sampled population of teachers in Kitui County. Table 6 presents the ages of the teachers.

Table 6: Age of teachers.

Age bracket in years	Frequency	Percentage
20-29 years	100	23.36%
30-39 years	220	51.40%
40-49 years	106	24.78%
50 and above years	02	0.46%
Total	428	100

The analysis of the gathered data reveals that a majority of educators, namely 220 individuals, accounting for 51.40% of the whole sample, fell between the age range of 30 to 39. A total of one hundred individuals, accounting for 23.36% of the sample, fell between the age range of twenty to twenty-nine. The younger demographic constituted the bulk of the workforce, which may be attributed to the extensive recruitment efforts of TSC in underfunded public elementary schools. This includes schools recently established by the county government or the national government via the Constituency Development Fund (CDF), where TSC placed new teachers. A mere 0.46 percent of the instructors included in the sample were aged fifty or above. This phenomenon has promising implications for the dissemination of digital literacy, as it demonstrates the rapid acquisition of new technological skills among contemporary youth. The data pertaining to the educational background of the instructors are shown in Table 7.

Table 7: Level of Education of Teachers

Education Level	Frequency	Percentage
P1 certificate	298	69.62%
Diploma	90	21.02%
Degree	30	7.00%
Masters	08	1.8%
Doctorate	02	0.46%

The data set concerning the qualifications held by educators revealed that 298 people, or 69.62% of the entire sample, were in possession of P1 certificates. The survey findings revealed that a proportion of 90 educators (21.02%) had resumed their academic pursuits and achieved Diplomas. Furthermore, an additional thirty educators (7.0%) possessed doctorates, whereas an additional thirty educators (7.0%) held master's degrees. An indeterminate percentage of the 02 instructors (0.46%) possessed an unspecified level of academic credentials. However, only a small percentage of educators (0.46%) self-reported holding doctoral degrees.1. The observed occurrence can be ascribed to the course of action taken by their employer, TSC, which increased the entry prerequisite for the teaching profession from a P1 Certificate to a Diploma in Education. Furthermore, the educators were instructed to provide the duration of their tenure; the resultant information was subsequently presented in Table 8

Table 8 : Teacher's years of service

Years of Service	Frequency	Percentage
0-4 Years	48	
5-8 Years	152	
9-12 Years	128	
13-16 Years	42	
16-20 Years	48	
Over 20 Years	10	
Total	**428**	

The findings shown in Table 4.8 demonstrate that a considerable percentage of the 152 educators (35.5%) have a minimum of five years of instructional background. Only 48 individuals, accounting for 11.21% of the total, had an educational experience of fewer than five years. The potential explanation for the influx of new teachers in schools might be attributed to their fulfillment of the necessary qualifications, as indicated by the minimum six-month experience required for deployment in Kenya, which commences from the issuance of the deployment letter by the employer (TSC).A supplementary group of 128 educators (29.90%) reported having a professional experience of nine years or more. Out of the whole sample, it was found that 42 instructors, accounting for 9.8% of the total, reported having held their current employment for a duration of sixteen years or more.

Additionally, a smaller subset of 10 teachers, constituting 2.33% of the sample, said that they had amassed more than twenty years of service. This finding suggests that a notable percentage of instructors in public elementary schools have extensive professional backgrounds.

The study sought to elucidate its aims via the analysis of the demographic data of the participants. The findings on the level of assistance offered by administrators for digital learning are shown in Table 9.

4.1.2 Administrators support for teachers' digital training.

The first objective of the study sought to establish whether the school administrators had facilitated teachers to receive digital training. Table 4.9 presents the findings.

Table 9: Administrators support for teachers digital training

Response	Number	Percentage
Supported digital training	99	60.37%
Did not support digital training	65	39.63%

The school administrators were asked to clarify if they offered assistance for their teachers' participation in digital literacy training. A conducted analysis revealed that a portion of school administrators, namely 65 individuals, equivalent to 39.53% of the total, did not provide assistance for their instructors' digital training. Nevertheless, a significant majority of administrators, namely 99 individuals accounting for 60.37% of the total respondents, expressed their support of providing digital training to instructors. Based on the findings of the research, it can be concluded that a significant proportion of the educators who were included in the sample had sufficient assistance in order to get digital training.

The aforementioned observation is consistent with the research conducted by Yuen Law and Chan (2008), whose study conducted in Hong Kong provided evidence that school administrators played a crucial role in facilitating the implementation of the catalytic integration model via their demonstration of visionary leadership. The promotion of staff development, provision of digital training, and encouragement of involvement in the implementation of digital literacy. According to Anderson and Dexler (2005), effective administrative practices and constructive teacher assistance were found to have a significant impact on the successful implementation of information and communication technologies (ICTs) and the smooth execution of the digital literacy program.

In order to ensure the successful implementation of the digital literacy program, it was imperative for school administrators to fulfill their responsibility of providing enough and consistent support to teachers in their participation in digital training courses and seminars. This assistance aimed to provide educators with the essential digital competences required for effective instruction. The research suggests that it would be beneficial to implement regular follow-up sessions with untrained instructors and to enhance the frequency of digital training. This is because a significant number of trained teachers are affected by transfers, promotions, and natural attrition. Declares et al. (2011) conducted a study. Table 10 provides a comprehensive account of the extent to which school administrators actively promoted the engagement of teachers in digital training.

Table 10: Frequency of School Administrators' support to teacher's digital training

	Always		Sometimes		Rarely		Never	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
How often do you support your teachers to attend digital raining?	42	25.5%	114	69.1%	8	4.8%	1	0.6%
How often do your teachers use computer while teaching?	34	20.6%	99	60.0%	29	17.6%	3	1.8%
How often your teachers access digital literacy content?	34	20.6%	99	60.0%	31	18.8%	1	0.6%
Do your teachers give their learners online home assignments?	38	23.0%	108	65.5%	14	8.5%	5	3.0%
Do your teachers use digital literacy skills for digital content search?	29	17.6%	83	50.3%	41	224.8%	12	7.3%

Based on the research results pertaining to the frequency of digital training, it was observed that merely 1% of participants, who were identified as school administrators, reported never providing support to their teachers for attending digital training. Conversely, 25.5% of administrators consistently offered support for their teachers to partake in digital training, while 69.1% indicated occasional support in this regard. A minority of 8.6% of administrators reported infrequent support for their teachers to engage in digital training.

The findings indicated that a majority of educators have a certain level of familiarity with digital training, implying that they possessed the necessary

knowledge and skills to include digital literacy into their teaching practices. This finding aligns with the outcomes of a study conducted by Buckworth (2017), whereby it was shown that educators who undergo digital training see a notable improvement in their competence pertaining to the use of digital resources within the educational setting. The findings indicate that there is a need for school administrators to enhance their support for teachers and promote the broad and effective use of digital resources in education.

According to the data provided by school administrators, it was found that a total of 34 teachers, accounting for 20.6% of the sample, consistently accessed digital literacy resources. Additionally, 90 teachers, constituting 60.0% of the sample, accessed such materials sometimes. Furthermore, 3 teachers, representing 18.8% of the sample, accessed digital literacy materials seldom. Lastly, only 1 teacher, making up 0.6% of the sample, reported never accessing digital literacy materials. One possible explanation for this phenomenon might be the reluctance of school administrators to collaborate with relevant authorities in order to facilitate the installation of digital content on digital devices. This hesitancy may stem from their personal prejudices and misunderstandings about the advantages of digital learning.

The findings of this study indicate that a portion of teachers, specifically 23.6%, consistently provided the necessary support to their students in completing online homework. Additionally, 65.5% of teachers reported occasionally assisting learners with their online assignments. A smaller percentage, 8.5% of teachers, stated that they rarely assigned online homework. Furthermore, 3.0% of school administrators

reported that their teachers never assigned online homework. According to Voogt and Knezek (2008), this phenomenon may be attributed to instructors who have adopted digital literacy only as a teaching tool, notwithstanding their little experience with online work.

According to the school administrators' report, a total of 29 individuals (equivalent to 17.6% of the respondents) indicated that their teachers consistently utilized digital libraries for the purpose of searching for digital content. Additionally, 8 individuals (50.3%) reported that their teachers occasionally employed digital libraries for this purpose. Furthermore, 42 individuals (24.8%) stated that their teachers seldom made use of digital libraries to search for digital content, while 11 individuals (7.3%) claimed that their teachers never utilized digital libraries for this purpose. One possible explanation for this situation is the lack of coordination between school authorities and organizations such as KICD, which has resulted in a failure to guarantee that digital learners' devices are equipped with suitable content for use in virtual classrooms and libraries.

According to the findings of Van Braak and Valcke (2008), educators had a greater inclination to integrate digital literacy education into their teaching practices when they had readily available access to relevant instructional resources. The research discovered that despite the presence of valuable digital literacy materials on students' devices, teachers usually encountered constraints in terms of time and resources while attempting to locate the required items in digital libraries. According to Bixler (2021), an investigation was conducted to determine the optimal strategies for creating digital educational materials. The study revealed that students derived the most advantages from three specific approaches: guided

autonomous exploration, collaborative group work, and teacher-led study. These methods were shown to be particularly effective in enhancing students' comprehension of intricate subject matter. This requires effective collaboration between educational administrators and relevant authorities to ensure that students' digital devices are equipped with the requisite content for use in digital libraries. The principals were interrogated on the maintenance of the technological equipment inside the schools. The findings of the data collection are shown in Table 11.

4.1.3 Maintenance of Digital Literacy Devices

The second objective sought to determine whether the school administrators had provided facilitation for maintenance of digital literacy learning devices. Table 12 presents the findings.

Table 11: Maintenance of Digital Literacy Devices

	Always		Sometimes		Rarely		Never	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
How often do you facilitate for repair of the broken parts of your computer?	16	9.8%	8.5	51.8%	47	28.7%	16	9.8%
How often do you facilitate for cleaning of the digital literacy devices?	18	11.0%	84	51.2%	45	27.4%	17	10.4%
How often do you ensure that the relevant digital literacy content is well installed?	32	19.5%	95	57.9%	28	17.7%	9	5.5%

The school administrators were asked to indicate how often they facilitated for maintenance of the digital literacy devices. Findings of the study revealed that 16(9.8%) of the school administrators reported that they always facilitated for the repair of the broken parts of the digital devices,85(51.8) of the school administrators indicated that they sometimes facilitated for the repair of the broken parts, 47(28.7%) of the school administrators reported that they rarely facilitated for the repair of the digital devices and 16(9.8%) indicated that they never facilitated for the repair of the broken parts of the digital devices. This agreed with Aboelmaged (2015) who reported that digital maintenance services were very crucial as they exhibited a variety of functionalities to every adopting institution. This could be attributed to lack of adequate funds to facilitate for the repairs and maintenance of the digital devices.

School administrators should therefore ensure that they improve on their frequency of facilitation towards maintenance of the digital devices. Study findings on the frequency of cleaning of the hard discs of the digital devices, it was indicated that 18(11.0%%) of the school administrators reported that they always facilitated the cleaning of the hard discs of the digital devices,84(51.2%) indicated that they sometimes facilitated the cleaning of the hard drives of the digital devices, 45(27.4%)of the school administrators indicated that they rarely facilitated for cleaning of the hard discs of the digital devices and lastly 17(10.4%) of the school administrators reported that they never facilitated for the cleaning of the hard discs of the digital learning devices.

This indicated that some of the digital learners' devices had failed to operate because of poor maintenance. The school administrators should come up with

modalities of ensuring that the digital devices are well maintained so as to prolong their life span and service to the digital. Learning process Findings on whether the school administrators ensured that the digital content was well installed showed that 32(19.5%) indicated that they always ensured that the relevant digital content was installed in the learners digital devices, 95(57.9%) of the school administrators reported that they sometimes ensured that the digital literacy content was installed in the learners digital devices. However,9(5.5%) of the school administrators reported that they never ensured that the digital content was installed in the learners digital devices. Those school administrators who reported to having rarely or never installed the digital literacy content in the learners' digital devices could have been attributed to negative attitudes about digital learning. Since it is the duty of the ministry of education to ensure that the digital content is installed and updated into the digital literacy devices through KICD, the school administrators should be encouraged to liaise with the Government ICT officers and ensure that the content is installed and updated frequently.

Study findings on storage of the digital literacy content revealed was investigated. Results obtained were presented in table 12

Table 12 Secondary Storage of Digital Literacy content

	YES		**NO**	
	Number	**Percentage**	**Number**	**Percentage**
Optical discs	16	9.7%	148	90.3%
Flash discs	99	60.48%	65	39.52%
Floppy discs	27	16.50%	137	83.5%
Hard discs	22	13.40%	142	86.6%

The school administrators were asked to indicate where they stored the digital content. Results from table 4.12 showed the preference of the school administrators

on the secondary storage of digital content. It was investigated and found that 16(9.7%) of the school administrators reported that they used optical discs to store their digital literacy content, 99(60.48%) of the school administrators reported that they used flash discs, 27 (16.50%) of the school administrators reported that they used floppy discs to store the digital literacy content and lastly22(13.40%) reported that they used hard discs to store their digital literacy content. Findings revealed most of the school administrators were only able to store the digital content in flash discs but were not very well conversant with the other secondary storage devices.

The confidence level or the agreement level of those school administrators who said Yes and those who said No did not overlap all the secondary storage devices. This showed that the percentage proportion was significantly different for those who had used secondary storage devices and those who didn't use or have the secondary storage devices. From the findings of the study, there is need for the school administrators to be exposed to advanced digital trainings for them to acquire knowledge on how to use secondary storage devices in their schools and to preserve that digital information for purposes of digital learning programmes. This will minimize cases of online insecurities and cybercrimes if the digital content is exposed.

School administrators were asked to indicate whether they had rooms well maintained for storage of the digital devices. Results obtained were presented in figure 2.

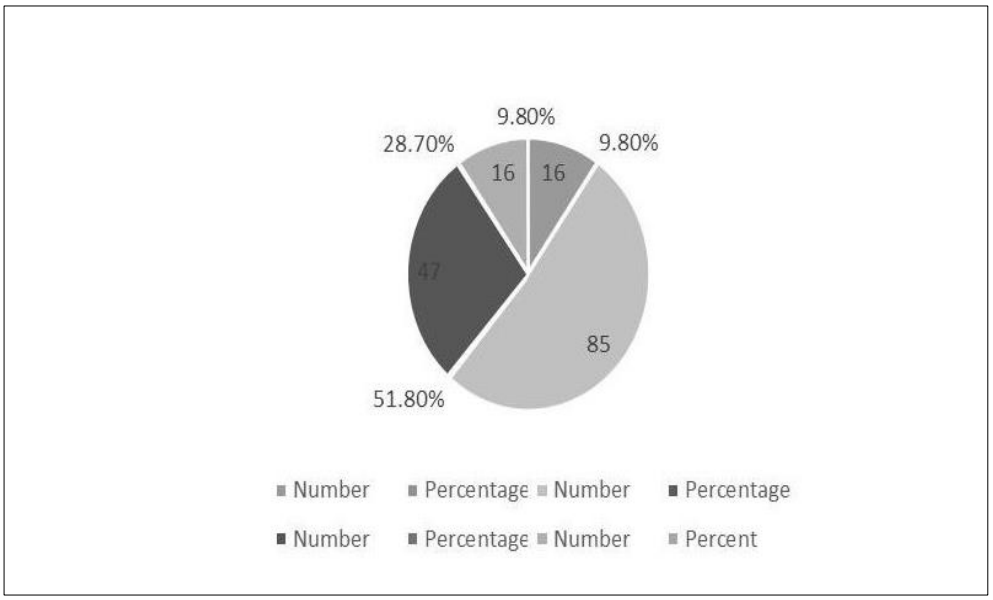


Figure 2 : Maintained Rooms for Storage of Digital Devices

In contrast to the 167 (83.64%) public primary schools, which reported having no rooms for storing the digital literacy devices intended for program implementation, 27 (16.6%) school administrators said their schools did not have any rooms for storing the digital literacy devices. A substantial percentage of responders said that the administrators of public elementary schools were qualified to teach digital literacy. A different inquiry inquired about the availability of digitally equipped storage areas for the devices from the heads of the schools. Figure 3 shows the obtained outcomes.

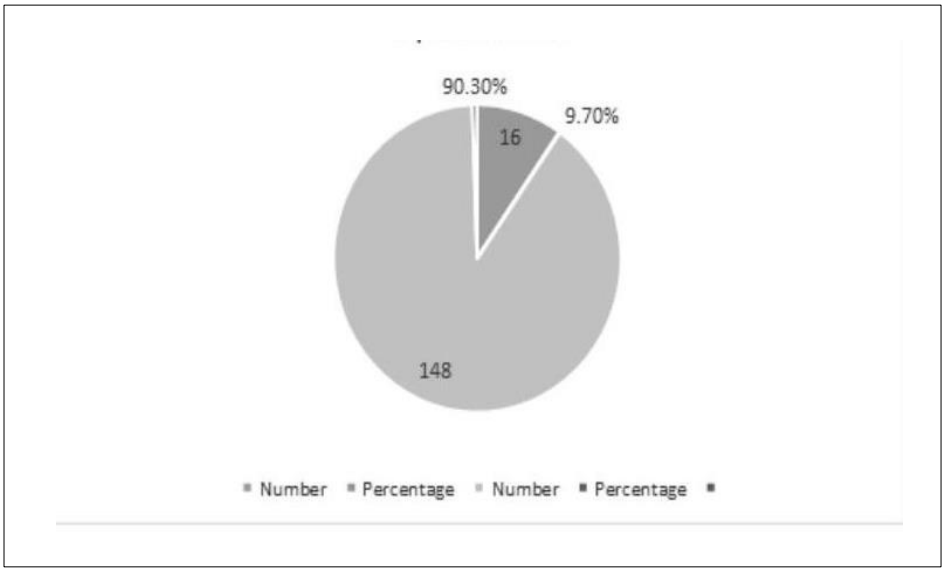


Figure 3 : Storage of Digitized Devices

Regarding the storage of digital devices in digitally equipped and well maintained spaces, a majority of 74% out of a total of 123 school administrators who participated in a study said that they store their digital devices in well-managed computer rooms. These rooms are equipped with storage boards, projectors with outlets, Wi-Fi connectivity, and extra security measures. The potential cause of this issue might be attributed to the inadequate implementation of security measures in the computer facilities.

According to the study's results, it is recommended that school administrators engage in collaboration with community members and school stakeholders to build secure storage areas for digital devices, which are particularly vulnerable to theft. Swarts and Wachira (2009) believe that the successful integration of digital devices and information and communication technologies (ICTs) into educational institutions necessitates three fundamental conditions: the availability of teachers who possess proficiency in ICT, the implementation of sufficient security measures, and the provision of a reliable electrical supply. Therefore, it is crucial

for administrators to derive insights from this research and guarantee the security of digital chambers as storage spaces for digital devices.

4.2 Teachers Beliefs and Attitudes towards Digital Literacy

The third objective sought to assess whether teachers" beliefs and attitudes in digital literacy had affected their implementation of the propane: Table 13 presented the findings,

Table 13: Teachers beliefs and attitudes towards digital literacy

	Strongly Agree		Neutral		Disagree		Strongly disagree		Never	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
I enjoy using computers	140	32.71%	229	53.56%	39	9.11%	16	3.73%	04	0.9%
I fell confortable using computers	109	32.71%	271	63.31%	30	7.00%	15	3.50%	03	0.69%
I belief that digital literacy learning enhances a smooth roll out of digital literacy programme	157	36.70%	262	61.21%	4	0.93%	13	0.70%	02	0.46%
I feel comfortable creating basic Microsoft word documents	49	11.44%	294	68.70%	07	1.63%	50	11.70%	28	6.54%
I enjoy searching digital content using web search engines	49	11.44%	101	23.59%	50	11.68%	226	53.0%	02	0.49%

The results of the survey indicated that a significant proportion of educators, specifically 229 respondents (53.56% of the total sample), indicated a predilection for incorporating computers into the classroom as an instructional instrument.A substantial majority of the 140 educators who participated in the survey, accounting for 37.71% of the total sample, expressed a pronounced propensity for deriving pleasure from utilizing computers. However, among the respondents, 39 educators (or 9.11% of the total) were unsure of their position on this subject, and only four educators (or 0.9% of the sample) held a strong aversion towards computer use.

A possible deficiency in digital training and a restricted understanding of digital learning instruments could have contributed to the current state of affairs. This is consistent with the findings of Zogheib's (2006) study, which identified the attitudes and perspectives of educators as internal determinants influencing their implementation of digital technology in academic environments. The results of the research suggest that incentives that promote educators' participation in digital trainings and facilitate their attainment of expertise in digital technologies could be advantageous. Intefjord et al. (2005) conducted a study that investigated the digital competencies of educators in Norway. The researchers identified a noteworthy correlation between the efficacy of computer utilization in educational environments and the digital beliefs, attitudes, abilities, and competencies of the instructors themselves.

The results of the survey revealed that 109 educators, constituting 25.50% of the participants, indicated a high level of ease in employing computers. Conversely,

with respect to their experience of enjoying computer usage, 271 educators, or 63.31% of the total sample, expressed ambiguity. Furthermore, a mere three educators (0.69%) conveyed a severe degree of unease in relation to digital devices, whereas fifteen educators (3.50%) articulated unease when utilizing computers. The pervasive adoption of computers by educators for use in digital learning and instruction may provide insight into the factors contributing to their ease of use in the classroom. Regarding the utilization of digital literacy tools in the classroom, educators are optimistic.

Aduwa-Ogiegbaen (2009) investigated the relationship between teaching experience and faculty affiliation and its effect on internet usage. The researcher noted that the degree of instructors' acquaintance with digital tools and their availability of technology could potentially be a factor in their self-reported discomfort with computer usage. It is critical to promote active participation of educators in digital training sessions and provide them with opportunities to gain practical experience with computers. This methodology promotes the development of an authentic curiosity and a strong understanding of digital literacy tools. A possible approach to encouraging educators to incorporate technology into their lessons is to allocate them responsibilities and positions within the information and communication technology (ICT) division, with the support and coordination of the school administration. This will aid educators in cultivating an enhanced degree of proficiency and fervor regarding the utilization of digital resources for pedagogical objectives.

A proportion of 36.60% of the entire sample, or 167 educators, expressed agreement with the assertion that the integration of digital literacy instruction was pivotal in facilitating a seamless program launch. Among the 428 instructors comprising the sample as a whole, 262 instructors (61.21%) indicated agreement with the given statement. Four instructors (0.93%) remained uncertain, and none of the instructors (0.45% of the total) vehemently rejected it. 61.21% or 262 instructors, according to the data, are in favor of incorporating digital literacy training into the curriculum at public primary institutions.

A total of 49 educators, constituting 11.44% of the entire sample, responded affirmatively and without reservation when asked about their proficiency with Microsoft Word. Based on the data, a substantial proportion of educators, precisely 294 individuals or 68.70% of the sample, reported having confidence in their ability to create basic Microsoft Word documents. This discovery functions as evidence of their proficiency in employing computer technology and their ability to facilitate the progress of digital literacy education for children. A minority of the 7 instructors who took part in the survey (1.63%) indicated uncertainty regarding their proficiency in generating rudimentary Microsoft Word documents. A greater proportion of the instructors, specifically 50 (11.70%), were in disagreement with this particular skill. Furthermore, 28 instructors (6.54%) vehemently opposed it. The educators' notable competence in producing Microsoft Word documents conferred a benefit to the digital literacy instruction program. Educators possess the capacity to perform online investigations and generate annotations in order to support the digital literacy education of their students.

results of an inquiry into the efficacy of online search engines for retrieving digital content revealed that while a smaller percentage of educators (11.44%, n=49) exhibited a strong propensity to utilize these tools, a larger segment (23.59%, n=101) concurred with the assertion that they frequently depend on them. Concerning their response to the statement, fifty educators, or 11.68 percent of the sample, indicated uncertainty. Moreover, a proportion of 52.8% of the participants, or 226 educators, expressed dissent towards the concept of utilizing online search engines for the purpose of locating digital information. Finally, a small proportion of two educators, comprising 0.49% of the total respondents, vehemently opposed the notion.

In line with this conclusion, Chai (2007) determined that the beliefs of individuals have a substantial impact on their perspectives regarding computer technology, based on an examination of the perceptions of preservice teachers regarding computers. The findings of this inquiry offered corroboration for the prior deductions. The probable reason behind a significant fraction of instructors professing their disinterest in using search engines for accessing digital material might be ascribed to their perceived inadequacy in navigating the internet proficiently. Advocate for the involvement of instructors in digital training programs among educational administrators; doing so may cultivate favorable attitudes toward computer and internet usage.

4.3 Administrators' Skills and Competences for implementation of Digital Literacy Programme

The fourth objective sought to examine whether the school administrators had relevant skills and competencies for implementation of digital literacy programme in public primary schools in Kitui County, Kenya. Findings obtained were presented on Figure 4.3

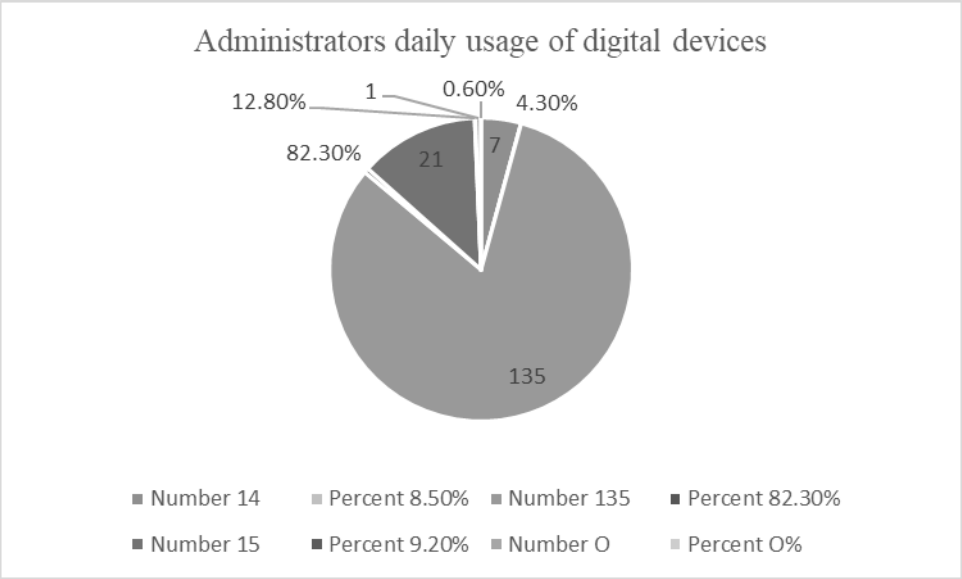


Figure 4.3: School Administrators daily Use of Digital devices

We inquired with the school officials regarding their consistent utilization of digital literacy gadgets. Based on a conducted investigation, it was found that a majority of school administrators, namely 77.91% or 128 individuals reported not utilizing computers on a daily basis. Conversely, a smaller proportion of administrators, 22.0% or 33 individuals, stated that they employed digital devices for administrative tasks in the implementation of the digital literacy program. It is conceivable that certain headteachers appointed teachers who have expertise in digital literacy as ICT teachers inside the educational institution, hence explaining the notable prevalence of school administrators who did not engage with computers

on a daily basis. I recommend and promote the utilization of computer technology for administrative purposes within educational institutions through the provision of comprehensive digital training to school administrators. Based on the findings of Van Dijk's (2005) study, it is imperative for educational administrators to acquire adequate proficiency in the implementation of digital literacy. This can be achieved by actively engaging in practical experiences and learning from mistakes while utilizing digital devices. The subsequent inquiry posed to the participants inquired about their utilization of digital literacy tools. The obtained findings are presented in Table 14.

Table 14: Utilization of Digital Literacy Devices.

	YES		**NO**	
	Number	**Percentage**	**Number**	**Percentage**
Do you utilize computers for pupils' computer lab?	43	26.2%	121	73.8%
Do you utilize computers for filling monthly returns?	154	93.9%	10	6.1%
Do you utilize computers for doing teachers appraisals	149	90.9%	15	9.1%
Do you utilize computers for consultation with parents?	40	24.5%	13	75.1%

The data collected from the utilization of digital devices by educational administrators revealed that a mere 43 individuals, constituting 26.2% of the sample, reported employing the accessible devices in the computer lab for student usage. Conversely, a majority of 121 respondents, accounting for 73.8%, said that they did not utilize these devices. When queried about their utilization of computers for the administrative duty of completing monthly returns, a majority of school administrators, namely 154 individuals (constituting 93.9% of the respondents), confirmed their reliance on this technology. Conversely, a minority of 10 administrators (equivalent to 6.1% of the participants) stated that they did not employ computers for this purpose. According to the findings of the research study, a significant majority of school administrators, specifically 145 out of 160 respondents (90.90%), reported utilizing computers as a means of conducting teacher evaluations. Conversely, a smaller proportion of administrators, specifically 15 out of 160 respondents (9.1%), said that they did not employ computers for this purpose. A total of 40 school administrators, accounting for 24.5% of the respondents, reported utilizing computers for the purpose of consulting with parents. Conversely, 124 administrators, constituting 75.6% of the sample, said that they did not employ computers for this particular task.

The findings of this study align with the research conducted by Voogt and Mishira (2013), which demonstrated that insufficient digital competences for instructional and educational purposes in the 21st century digital era, along with inadequate training opportunities for teachers and administrators in digital skills, serve as obstacles to the successful implementation of digital literacy initiatives. The overwhelming majority of participants in this survey have unequivocally expressed

their lack of engagement with their parents through computer-mediated means. An inquiry has been conducted to ascertain whether school administrators utilized computer applications to cultivate digital literacy, aiming to enhance communication between the educational institution and its parental community. The findings of the investigation on the computer literacy of school administrators are presented in Table 4.15.

Table 15 Administrators use of Computer Packages

	Very competent		Competent		Not very competent		Can't use	
Computer package	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Microsoft word	14	8.5%	135	82.3%	15	9.2%	0	0%
Microsoft excel	7	4.3%	135	82.3%	21	12.8%	1	0.6%
Microsoft PowerPoint	4	2.4%	101	61.6%	51	31.1%	8	4.9%
Microsoft Publisher	8	4.9%	55	33.5%	78	47.0%	24	14.6%
Quick books	2	1.2%	37	22.7%	66	40.5%	45	27.4%
Email and internet	5	3.0%	51	31.1%	75	45.7%	32	20.1%
Photoshop	2	1.2%	37	20.7%	74	45.1%	54	32.9%
Page maker	2	1.2 %	37	22.7%	76	40.5%	58	35.6%

The managers of the digital literacy learning program were requested to disclose their utilization of computer software packages. Based on the findings, a total of 14 school administrators (8.5%) indicated a high level of proficiency in utilizing Microsoft Word. Additionally, 135 administrators (83.3%) reported having a satisfactory level of competence in utilizing the software package. Conversely, 15 administrators (9.2%) expressed a lack of proficiency in using Microsoft Word. This finding indicates that a significant proportion of school administrators possess the capability to utilize this software package for various administrative and instructional functions.

Out of the total number of administrators, 7 individuals (4.3%) demonstrated a high level of proficiency in utilizing Microsoft Excel. A majority of 135 administrators (82.3%) possessed competence in using Microsoft Excel. Conversely, 21 administrators (12.8%) lacked proficiency in utilizing Microsoft Excel. Additionally, a single administrator (0.6%) reported complete inability to utilize the computer package. The findings of the study support the assertions made by Ozdama and Kyle (2005), which state that possessing knowledge and skill in utilizing information and communication technology (ICT) is essential for effectively utilizing digital technologies. The findings indicate that a majority of school administrators demonstrated a proficient understanding of Microsoft Excel and effectively employed it to fulfill various administrative responsibilities.

The findings from a poll assessing the proficiency and capabilities of school administrators in utilizing PowerPoint revealed that a mere 4 individuals, constituting a mere 2.4% of the overall sample, were deemed to possess a high level of competence in this domain. Among the sample of school administrators who participated in the survey, a majority of 61.6% (n = 101) reported being able to utilize the software effortlessly. A significant proportion of 31.1% (n = 55) indicated a lack of proficiency in Microsoft PowerPoint, while a small minority of 4.9% (n = 8) expressed an inability to use the software altogether. The findings indicate that the majority of school administrators demonstrated a level of competence in utilizing the program that was comparable to the average proficiency.

This implies that additional training sessions focusing on digital devices are necessary in order to equip program administrators with the requisite skills to effectively execute the digital literacy curriculum. The results of the study examining the level of competency among school administrators in utilizing Microsoft Publisher indicated that a little 4% of participants demonstrated expertise in its usage. Furthermore, 35% were deemed capable, while a majority of 47% were found to lack proficiency. Additionally, a small proportion of 4.6% were identified as possessing limited competence in operating the software. Furthermore, a notable proportion of school administrators, specifically 24%, indicated a lack of skill in utilizing the software. This finding indicated that the school administrator's competence in utilizing this software was insufficient. Consequently, it is imperative to incorporate this package into the training programs in order to equip administrators with the necessary skills and competencies for utilizing computer packages.

Out of the surveyed school administrators, a mere 5 individuals, constituting 3.0% of the total respondents, expressed their confidence in utilizing email and the internet for administrative tasks. A total of seventy-five school administrators, accounting for 45.7% of the respondents, reported a lack of proficiency in utilizing emails and the internet. Additionally, twenty-three administrators, representing 20.1% of the sample, expressed complete inability in effectively utilizing the aforementioned technological tools. This exemplified the administrator's constrained and arduous acquisition of expertise in electronic communication. It is recommended that the Ministry of Education, in collaboration with the employer TSC and relevant ICT authorities, implement measures to provide school

administrators with retraining opportunities for the effective utilization of software applications.

A total of 2% of the administrators indicated proficiency in utilizing the computer package offered by Photoshop. Conversely, 20.7% reported a lack of competence in using the package, while 45.1% expressed a limited level of proficiency. Additionally, 32.9% reported an inability to use the package altogether. The findings of the study revealed that certain software systems exhibited a high level of sophistication, hence requiring the involvement of ICT-qualified personnel to support school administrators.

The findings of a survey conducted among school administrators regarding their proficiency in utilizing page makers indicated that a mere 2 individuals (1.2% of the total respondents) demonstrated a high level of competence in operating this particular computer software. Additionally, 37 individuals (22.7%) were deemed competent, while a majority of 66 respondents (40.5%) displayed a limited level of proficiency in using this computer package. Furthermore, 58 participants (35.6%) reported an inability to utilize this computer software altogether. The findings of the study revealed a significant correlation between the level of digital learning competencies among school administrators and the successful implementation of the digital literacy curriculum. According to the findings of Broadler(2010), school administrators who possess a high level ot proficiency in digital technologies are likely to encounter less difficulty in successfully administering a digital literacy program, as compared to their counterparts who lack such proficiency. The implementation of the digital literacy initiative necessitated that school

administrators identify the specific authorities with whom they engaged in discussions pertaining to the provision of digital content and access to energy. The obtained findings are presented in Table 16.

4.4 School Administrators Liaison with relevant Authorities for provision of Digital Literacy Content for implementation of the Programme

The fifth objective sought to determine whether the school administrators had liaised with the relevant authorities for provision of digital content and power connectivity for digital literacy implementation in public primary schools in Kitui County. Table 16 presented the findings.

Table 16: Administrators Liaison with relevant Authorities for provision of Digital Content for Implementation of Digital literacy programme.

Authority	Number	Percentage
Kenya Institute of Curriculum Development	75	45.73%
Information Communication Technology Authority	36	21.60%
Ministry of Energy and communication Authority	7	4.30%
Kenya Power and Lighting Company	46	28.37%

Study findings revealed that 75(45.73%) Of the school administrators reported that they liaised with the Kenya Institute for Curriculum Development for provision of the digital literacy content,36(21.60%) liaised with the ICT Authority for provision of the content. 7(4.30%) of the school administrators liaised with the Ministry of Energy and Communication in boosting the digital content in the public primary

schools. The study also revealed that 46(28.37%) of the school administrators reported that they liaised with the Kenya Power and Lighting Company for power connectivity in the schools for the digital learning implementation programme. The low percentage of the school administrators who reported to have liaised with the KPLC for power connectivity could have attributed to poor terrains or alternative souces of power for the digital literacy implementation programme. The ministry of education through TSC should come up with better ways of ensuring that the school administrators liaise with a common relevant authority for provision of the digital content. This is in agreement with (Pedro,2012),who reported that having the correct and uniform framework for digital content and other related technologies improves students 'digital literacy knowledge. The school Administrators were asked to indicate where they accessed their digital content from. Data obtained was presented in table 17.

Table 17 Accessibility of the digital literacy content

	YES		NO	
	Number	**Percentage**	**Number**	**Percentage**
Internet	149	90.85%	15	9.15%
Email	40	24.39%	124	75.61%
Word processing	31	18.90%	133	81.1%
Spread sheets	28	17.07%	136	82.93%
Microsoft excel	31	18.90%	133	81.1%
Data base	23	14.02%	141	85.98%
Microsoft PowerPoint	21	12.80%	143	87.2%
Publishing soft ware	25	15.24%	139	84.76%

Findings of the study revealed that, 149(90.85%) of the school administrators reported that they got their digital content from the internet while 15(9.1%) got it from other sources.

From Table 4.17, 40(24.39%) got digital literacy content from emails while 124(75.61%) got it from elsewhere. Whether teachers got the digital content from word processing, the results obtained indicated that31(18.90%) administrators reported that they accessed the digital content from word processing while a high percentage 133(81.1%) reported that they accessed their digital content from elsewhere. This finding agreed with Spires and Barlett(2012) who reported that administrators and teachers should develop, evaluate depositions as they navigate digital content. School administrators should cultivate and develop effective Web search skills to ensure that they access different websites for digital content search. Findings on where the teachers accessed digital content showed that21(12.80%) of the administrators reported that their teachers got their digital content from Microsoft Power Point while 143(87.6%) reported that they accessed the digital content from other sources. Lastly 25(15.24%) indicated that they got their digital content from publishing software while others 139(84.76%) reported that they accessed their digital content from other sources. Figure 3 represented the findings.

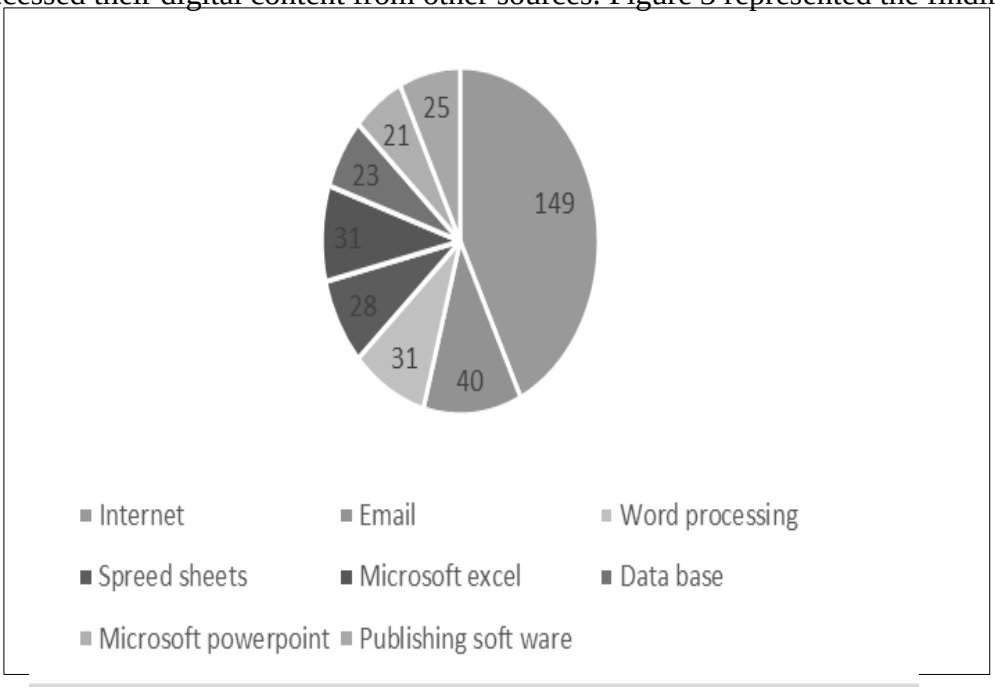


Figure 4: Accessibility of digital literacy content.

According to the results obtained regarding the extent of collaboration between school administrators and relevant authorities to ensure access to electricity and sufficient charging facilities, it was found that out of the total sample of respondents (n=144), a majority of 87.73 percent reported that most classrooms in the institution were equipped with electrical outlets and the ability to charge devices. On the other hand, a total of twenty participants, accounting for 12.37 percent of the sample, reported that electricity was not accessible within their respective accommodations. The presence of electricity in all public elementary schools indicates that the initiative has likely achieved its intended outcomes, as indicated by this observation. To address the issue of limited power connectivity in a select number of schools, administrators may explore potential solutions such as forming a collaborative alliance with Kenya Power and Lighting Company (KPLC) or conducting a thorough examination of alternative power options. In order to ensure the effective implementation of the digital literacy program in public elementary schools, the following factors are necessary.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATION

5.0 Introduction

This chapter presents the summary, conclusions, recommendations as well as suggestions for further studies based on the purpose and objectives of the study

Summary

According to the results obtained regarding the extent of collaboration between school administrators and relevant authorities to ensure access to electricity and sufficient charging facilities, it was found that out of the total sample of respondents (n=144), a majority of 87.73 percent reported that most classrooms in the institution were equipped with electrical outlets and the ability to charge devices. On the other hand, a total of twenty participants, accounting for 12.37 percent of the sample, reported that electricity was not accessible within their respective accommodations. The presence of electricity in all public elementary schools indicates that the initiative has likely achieved its intended outcomes, as indicated by this observation. To address the issue of limited power connectivity in a select number of schools, administrators may explore potential solutions such as forming a collaborative alliance with Kenya Power and Lighting Company (KPLC) or conducting a thorough examination of alternative power options. In order to ensure the effective implementation of the digital literacy program in public elementary schools, the following factors are necessary.

5.1 Administrators' Support to Teachers to Attend Digital Literacy Training

A study investigating the sufficiency of digital literacy training for teachers revealed that a majority of school administrators, namely 99 individuals accounting for 60.37% of the sample, actively encouraged instructors to engage in digital training. Furthermore, the study indicated that the teachers had indeed received satisfactory instruction in digital literacy. To provide visual representation, please refer to Figure 4.1. The rate of adequacy among non- participants was 65, which corresponds to 39.63%. This finding suggests that a majority of instructors in the sample were adequately trained in digital literacy by their school administrators, specifically the headteachers. The research revealed that a significant number of educators at the elementary school level derived advantages from attending the seminars, with their involvement being actively endorsed by their respective administrators.Lim et al. (2011) assert that prior to initiating a digital literacy program, educational institutions must allocate resources towards providing comprehensive digital training for their teaching staff.

5.2 Maintenance of Digital Literacy Learning Devices

The findings of the study indicated that a mere 16 respondents, constituting 9.8% of the whole sample, reported that school administrators consistently facilitated the repair of faulty computer components. In contrast, a majority of 85 respondents, accounting for 51.8% of the sample, stated that administrators occasionally supported the repair of such components. An additional 47 respondents, constituting 28.7% of the sample, said that school administration provided occasional assistance in repairing computers when they malfunctioned, but 16 respondents, accounting for 9.8% of the sample, indicated that such assistance was

never provided. According to Table 4.10, it can be observed that this assertion holds true. When queried about the storage location of their digital devices, a significant majority of respondents indicated a lack of implementation of any form of backup solution. The majority of schools had allocated areas specifically designed or renovated for the purpose of securely storing electronic equipment. However, a notable proportion of schools, specifically 27 schools (equivalent to 16.36% of the total), did not possess any defined spaces for the storage of electronic equipment. According to Figure 4.2, the majority of respondents, specifically 122 individuals (74.55%), reported storing their digitalized devices in classrooms.

Conversely, 42 respondents (25.45%) stated that they did not store their digitalized devices in rooms. This occurrence could potentially be attributed to the inadequate security conditions prevalent within their respective localities. One potential solution might involve the collaboration between the school administration and parents to employ a security personnel tasked with conducting regular patrols on the premises, hence enhancing vigilance and detection of any potentially illicit behavior.

5.3 Teachers Beliefs and Attitudes towards Digital literacy Learning.

According to the data presented in Table 4.12, a majority of respondents, specifically 63.31%, expressed feeling comfortable when utilizing computers. Additionally, 229 respondents, accounting for 53.56% of the total, reported enjoying the use of computers. Among this group, 140 respondents (37.56%) indicated a high level of enjoyment, while 39 respondents (9.11%) expressed

uncertainty regarding their level of enjoyment. A smaller proportion of respondents, specifically 16 individuals (3.73%), definitively stated that they did not enjoy using computers.Participants who expressed a positive attitude towards computer usage emphasized the significance of digital literacy, which suggests a favorable outlook for the successful execution of the program.

5.4 Administrators Skills and Competencies for implementation of Digital Literacy programme

The study examining the competencies and proficiencies of administrators in relation to the digital execution of literacy initiatives unveiled that a minority of respondents acknowledged regularly employing computers to execute digital literacy courses. The results illustrated in Figure 4.4 suggest that a significant proportion of the participants, specifically 128 people (77.91 percent), indicated that they did not use computers on a daily routine. On the contrary, a reduced percentage of participants, precisely 36 individuals (22.0%), indicated that they utilized computers on a daily basis while digital literacy initiatives were in effect.

5.5 School administrators liaison with relevant authorities for provision of digital content for implementation of the programme

The research findings pertaining to digital content and power connectivity in the context of digital literacy programs have indicated that a number of school administrators and instructors in public primary schools exhibit a deficiency in the fundamental level of digital literacy understanding. The results of the study indicated that a majority of the participants, specifically 144 individuals (equivalent to 87.80% of the sample), expressed that digital content materials were

limited to specific classes. Additionally, a smaller proportion of respondents, consisting of 10 individuals (equivalent to 6.10% of the sample), acknowledged having access to digital content materials for all classes. Similarly, another 10 participants (equivalent to 6.10% of the sample) claimed not having any digital content materials available. It is imperative for school administrators to establish communication and collaboration with the appropriate authorities in order to ensure the availability of suitable digital content for the effective execution of digital literacy initiatives.

The majority of rooms within public primary schools were equipped with electrical connections and charging facilities. The results of the study indicated that a majority of participants, specifically 144 individuals (equivalent to 87.73% of the sample), had access to electricity and charging outlets. Conversely, a minority of participants, specifically 20 individuals (equivalent to 12.37% of the sample), did not have access to electricity. It is imperative for the Government to guarantee the provision of electricity connectivity to all public primary schools. The school administration should establish communication and coordination with the appropriate authorities, such as KPLC, in order to facilitate power connectivity. Additionally, they should engage in consultations with various school stakeholders to explore alternative methods of obtaining power.

5.6 Conclusion

Based on the results obtained from this study, it was concluded that a significant proportion of public primary schools exhibited uncertainty regarding the support offered by school administrators and their participation in digital literacy training.

Furthermore, there was ambiguity surrounding the adequacy of content accessible to learners in public primary schools, as well as the methods employed for maintaining and storing digital devices during the implementation of the digital literacy program. The findings of this study were demonstrated through the utilization of frequency tables for data analysis.

The study yielded the following findings: firstly, a number of primary school educators actively promoted and participated in digital literacy training; and secondly, a significant proportion of primary school pupils faced a shortage of digital resources during the implementation of the digital program. Furthermore, it was observed that a significant proportion of participants opted to save digital content on hard drives during the implementation of digital initiatives. Ultimately, the majority of public elementary schools have been successfully integrated into the electrical grid. The degree of power supply in public elementary schools was demonstrated through the findings presented in the pie chart.

5.7 Recommendations

5.7.1 Administrators' Support for Teachers to Digital Literacy Trainings.

Based on the results obtained from this study, it was concluded that a significant proportion of public primary schools exhibited uncertainty regarding the support offered by school administrators and their participation in digital literacy training. Furthermore, there was ambiguity surrounding the adequacy of content accessible to learners in public primary schools, as well as the methods employed for maintaining and storing digital devices during the implementation of the digital literacy program. The findings of this study were demonstrated through the utilization of frequency tables for data analysis.

The study yielded the following findings: firstly, a number of primary school educators actively promoted and participated in digital literacy training; and secondly, a significant proportion of primary school pupils faced a shortage of digital resources during the implementation of the digital program. Furthermore, it was observed that a significant proportion of participants opted to save digital content on hard drives during the implementation of digital initiatives.

Ultimately, the majority of public elementary schools have been successfully integrated into the electrical grid. The degree of power supply in public elementary schools was demonstrated through the findings presented in the pie chart.

5.7.2 Maintenance of Digital Literacy Learning Devices

In order to enhance the efficacy of the digital literacy project, it would have been advantageous for the government to provide funds towards the establishment and equipping of school computer laboratories accessible to all public primary school educators. For the effective refurbishment of rooms designated for the storage of electronic equipment, it is essential that school administration engage in coordination with parents and other relevant stakeholders. To ensure the long-term preservation of digital materials, it is imperative for the government to ensure that public elementary schools are equipped with optimal secondary storage capabilities. The hard disk exhibited superiority over other options for information storage by virtue of its substantial digital storage capacity and convenient accessibility. To guarantee the availability of backup storage for digital literacy devices, it is essential for school administrators to establish effective coordination with pertinent stakeholders.

5.7.3 Teachers Beliefs and Attitudes towards digital literacy

The majority of classroom educators had a positive sentiment towards the use of computers. In order to address the limited number of individuals who were either neutral or opposed to cultivating a genuine interest in computer usage, it would have been advisable to implement strategies aimed at providing them with comprehensive exposure to digital technologies. This lack of exposure may have contributed to their unfavorable disposition towards digital learning. The substantial proportion of individuals who express ease in using computers may be attributed to their recognition of the significance of digital learning. It is imperative for the government to have taken measures to guarantee that teachers received appropriate training in digital literacy, enabling them to cultivate a favorable mindset while acquiring the necessary skills to effectively use digital devices in their everyday educational endeavors within their particular school settings.

Administrators Skills and Competencies for implementation of Digital Literacy programme.

Prior training is imperative for school administrators to attain the essential competencies and proficiencies required to utilize digital literacy technologies efficiently during the implementation of digital learning. A considerable percentage of respondents stated that school administrators abstained from regular computer usage during the implementation of digital literacy programs. Assuring the consistent and suitable utilization of digital devices on a daily basis might have improved the integration of digital technologies in educational environments, as suggested.

5.7.4 School Administrators Liason with Relevant Authorities for Provision of Digital Content for implementation of the Programme

To enable the successful implementation of the digital literacy effort, it is essential for the government to guarantee the presence of a dedicated technician in each educational institution. Teachers who were burdened with several responsibilities were unable to guarantee that every student had access to the necessary digital content resources as mandated by the digital literacy program, despite their efforts to provide digital support.

Therefore, it is essential that attention be given to instructors in order to ensure the completion of their jobs. Professionals in the field of information and communication technology (ICT) who possess a certificate or higher qualification are responsible for delivering the required digital support to ensure learners have access to suitable digital content resources. In the event that a school lacks access to a dependable power supply, the installation of solar panels would enable pupils to engage in digital literacy education even during power outages. It is recommended that teachers be granted internet connection in order to use supplementary learning resources beyond those provided by the Kenya Institute of Curriculum Development (KICD). By engaging in online training sessions, doing thorough research, and exploring relevant literature, educators have the potential to enhance their teaching abilities.

5.7.5 Recommendation for Further Research

Further investigation into public primary schools in other counties might be conducted to compare the findings of this study with those of other public primary

schools in Kenya, given the limitations of evaluating all primary schools nationwide. Further study might be conducted to investigate the potential effects of the Digital Learning Programme (DLP) on students' academic achievement.

REFERENCES

Abik M Ajhoun, R &Ensias, L (2012) Impact of technological advancement on pedagogy.*Turkesh online journal of distance Education, 13* (1). 224 – 237.

Agnew, D. W. (2011). Administrative Obstacles to technology use if West Virginia public schools. A survey of West Virginia Principals (unpublished doctoral dissertation). *West Virginia University, Morgantown. WV.*

Alboelmaged.M.2015. "E-Maintennance research:A Multifaceted *perspective''Journal of manufacturing Technology Management.*

Al-Najjar, B. H.Algaboun and M.Jonsson(2018) "Maintenance 4.0 to fulfil the demands of industry 4.0 anfd factory of the *future''Internationajournal of Enginering Research and Applications.*

Ashburn (Eds). Leadership for meaningful learning with technology.*New York: Teachers College Press.*

Barron, B., Cayton – Hodges, G., Bofferding, L. Copple, C., Darling – Hammond, L., & Levine, M. (2011). Take a giant step: A blue print for teaching young children in a digital age. *New York: the Joan Ganz Cooney Center at Sesame Workshop and Stanfold C. A. Stanford University.*

Boche and Bejamin(2014) "Muiltiiteracies in the classroom;Emerging conceptions of first year teachers''.J.Lang.Lit.Educ vol 10 pgs114-135.

Brat, C. J (2010).Perception of two educational technology standards. A case study of an *Olio Urban K – 12 school District Dissertation Abstracts International Section A*: Humanities and social sciences, 7 (12 – A) 536.

Carr, T. (2011). An examination of leadership styles in implementing instructional technology: a case study to examine the elementary school administrator perspective (Doctoral dissertation) *North central university* (online institution).

Cates. W., Prince B., &Bodzin, A. M. (2003). Implementing technology rich curricular materials. Finding from the exploring life project. *Computers in the school,* 20 (1/2) 153 – 159.

Chapman, L., &Pedulla. J. (2010). Do digital divisions still persist in schools? Access to technology and technical skills of teachers in high needs schools in the *United States of America.* Journal *of Education for Teaching,* 36(2), 239 – 249.

Cheung, a. C. &Slavin; R. E. (2011). The effectiveness of education technology applications for enhancing mathematics achievement in K-12 classrooms. A meta-analysis *Baltomore: Center for Research and Reform in Education.*

Dean, V., & Martineau, J. (2012). A state perspective on enhancing assessment and accountability systems through systematic implementation of technology. In R. W. Lissit& H. Jogo (Eds.), computers and their impact on state assessments: recent history and predictions for the future (pp. 55 – 77) *Scttsdale, AZ. Information Age Publishing.*

Dzidovu (2010) The role of ICTs to achieving the millennium Development Goals in Education, Retrieved from *unpal/ Un.org/introdoc/groups/public documents/ dpadm/unpan039076.pdf*

Flore .A . (2017, August 17) How can a theory guide or inform practice? (Web log post) Retrieved December 21. 2018, from *http://annemarieflore.com/connectivism/:*

G.O.K (2006) The National Information and communication technology Policy.

Gray: L: Thomas, N., & Lewis L. (2010). Educational technology in U.S Public Schools: Fall 2008. *Washington DC. U.S Department of Education*. National Center for Education Statistics.

H. Cahyani and B.Y Cahyono(2012) Teacher attitudes and Technology use in Indonesian classrooms.

H.A. Spires.C.Medlock Paul and S.N.Kerkhoff(2017) "Digital Literacy for the 21st Century'' Encyl. Int.Sc.technol-Fourth Ed.No.January (2017).

Hall. G. E., & Hord, S. M. (2010). *Implementing change. Patterns, principles and potholes (3rd Ed.)* Boston: Allyn and Bacon.

Hur, J., Cullen, T., & Brush, T. (2010). Teaching for applications a model for assisting preservice teachers with technology integration.*Journal of technology and teacher education* 18 (1), 161 – 182.

Kitui County Education Office (2021). Education Management Information System (EMIS), *Kitui County Education Office.*

Lebaron, J. (2001). Curriculum planning for technology rich instruction. In J. Lebaron& C. Collier (Eds). *Technology in its space: Successful infusion in schools* (pp. 17 – 29) San Francisco Jossey – Bass.

Lesisko, L., Wright, R., &O'ttem, B. (2010) February Technology integration. A best practice perspective [*resented at educational research; Savannah*. G. A.

M.Ozden(2018) "Digital Literacy Perceptions of the students in the department of computer Technologies Teaching and Turkish Language Teaching''International Journal of Progressive Education.

Ministry of Education. Kenya (2012). ICT integration in Education; Ministry of Education. Nairobi, *Government Printers.*

Morrison, G. R., & Lowther, D. L (2010). *Integration computer technology into the classroom (4th Edition).* Upper saddle river. NJ. Pearson, Merrill Prentice Hall.

N.Kurnia and S.I.Astuti(2017).”Map of the Digital Literacy movement in Indonesia’’:Studies on actors,various activities,target groups and partners conducted by Japaledi(In Bahasa) Informas vol 47.

November A. (2010). *Empowering students with technology (2nd edition).* Thousand Oaks CA. Corwin Press.

O.Alice(2012) “Challenges facing teachers and students in the use of instructional technologies.A case study of selected secondary schools in Kisii County’’.(Master dissertation),Kenyatta university, Kenya

Oulo I. O. (20130. Preparedness of the Head Teachers in the Use of Information Communication Technology in public Primary Schools in Bondo District. *Kenya Unpublished Research Report), University of Nairobi.*

Retrieved from http://files.eric.ed.gov/fulltext/ej976961.pdf

Samatha Shannon McCord(2015)”Digital Literacy in the classroom:Teachers’ attitudes towards technology and the language curriculum.”A research paper submitted in conformity with the requirements for the award of a degree of Master of Teaching ,Department of Curriculum Teaching and Learning.Ontario Institute for Studies in Education of the University of Toronto

Stavreds. T. (2011). Effective online teaching. Foundations and Strategies for student success. San *Francisco, CA Jossey – Bass.*

Terpstra, M. (2010).Developing technological content knowledge.Pre – services teachers’ persecutions of how they learn to use educational technology in their teaching. *Dissertation Abstracts international section A,* (70 (10) (UMINO AAT 33814010).

U. S. department of Education (2010). Transforming American Education. Learning powered by technology. A national educational technology plan 2010. *Washington DC: Office of Education Technology.*

Y.Eshet-Alkali(2004) “Digital Literacy; A conceptual Framework for survival skills in digital era’’.*Journal of educational multimedia and Hypermedia;* 2004.

APPENDICES

APPENDIX I: TRANSMITTAL LETTER TO THE RESPONDENTS

Dear sir/madam,

RE: ASSESSMENT OF SCHOOL ADMINISTRATORS SUPPORT IN IMPLEMENTATION OF DIGITAL LITERACY PROGRAMME IN KITUICOUNTY, KENYA.

I am a postgraduate student pursuing a degree of Doctor of Philosophy and registered in the department of Educational Management and Administrational Maasai Mara University — Narok, Kenya.

I am carrying out a research study on "Assessment of school administrators' Supporting Implementation of Digital Literacy Programme in Public Primary Schools in Kitui County, Kenya'.

It is with this regard that I humbly request you to participate in the study by answering the questions in the questionnaire.

Kindly do not leave any option unanswered.

Any information you will provide shall be used for academic purposes only and tus will be very confidential.

Do not write your name or that of your school on the questionnaire.

Thank you in advance.

Esther Wambua.

PHD Student

APPENDIX II: SCHOOL ADMINISTRATORS QUESTIONNAIRE

Instruction: Kindly read and answer the question below by ticking the appropriate or filling in the blank spaces. Information provided will be only used for the purpose of this study.

Please do not write your name or that of your school.

SECTION A: Background Information

Please provide the demographic information below

1. What is your gender

Male ☐ Female ☐

2. What is your age bracket?

20-29 years ☐

30-39 years ☐

40-49 years ☐

Above 50 years ☐

3. Your level of education

Doctor degree ☐

Master degree ☐

Bachelor degree ☐

Diploma ☐

PI Certificate ☐

Others specify…….

4. Kindly indicate your position in the school.

Head administrator ☐

Deputy Head teacher ☐

5. Including the current year, how many years have you been teaching in this school?

0-4 years ☐

5-8 years ☐

9-12 years ☐

13-16years ☐

17-20 years ☐

Over 20 years ☐

School Administrators Support for Teachers in Implementation of Digital Literacy

Program (Please tick where applicable)

a) Always Sometimes	**Rarely**	**Never**
6. How often do you support your teachers to attend digital training? 7. How often do your teachers use computers while teaching 8. How often do your teachers have access to digital literacy content? 9. Do your teachers give their learners home assignments?		

10. Do your teachers use digital literacy libraries for digital content search?		

Maintenance of the digital literacy devices

b) Question Options Always Sometimes | Rarely Never

Question Options	**Always**	**Sometimes**	**Rarely**	**Never**
11. How often do you repair the broken parts of your computers? 12. How often do you clean the hard discs of the literacy devices? 13. Do you ensure that the digital content is well installed?				

Storage Facilities

14. Do you have rooms built or renovated for implementation of the digital literacy?

Yes ☐

No ☐

15. If yes, are the rooms installed with electricity and charging points?

Yes ☐

No ☐

16. If no what are your plans for putting computer rooms in your school? Briefly explain.

……

….

17. Do you have digitized device stored in these classes?

Yes ☐

No ☐

Others specify…….

18. School Administrators Digital skills and Competencies

The following is a list of skills required in the administrative functions of school administrators. To what extent can you use the skills in four administrative purposes.

Tick where applicable.

To what extend are you able to use the following computer packages in implementing Digital Literacy in your school?

COMPUTER PACKAGES	**Extent of skill use**			
	Very Competent	**Competent**	**Not Very Competent**	**Cant use**
Microsoft Word				
Microsoft excel				
Microsoft PowerPoint				
Microsoft Access				
Microsoft Publisher				
Email and Internet				
Quick Books				
Photoshop				
Page Maker				
Others				

19. what challenges do you face when using digital technologies while teaching in your school?

---

20. (a) Do you access Digital Literacy Content in your school?

Yes ☐ **No** ☐

(b) If yes, from where do you access the Digital Content?

Internet	**Yes** ☐	**No** ☐
Email	**Yes** ☐	**No** ☐
Word Processing	**Yes** ☐	**No** ☐
Spreadsheets	**Yes** ☐	**No** ☐
Microsoft Excel	**Yes** ☐	**No** ☐
Data Base	**Yes** ☐	**No** ☐
Microsoft PowerPoint	**Yes** ☐	**No** ☐
Publishing software	**Yes** ☐	**No** ☐

21. (a) Do you use computers daily in your Digital Literacy Implementation?

Yes ☐ **No** ☐

(b) Do you utilize digital literacy devices in the following functions?

i) For pupil's computer lab **Yes** ☐ **No** ☐

ii) For filling monthly returns **Yes** ☐ **No** ☐

iii) For teacher's appraisal **Yes** ☐ **No** ☐

iv) For consultation with parents **Yes** ☐ **No** ☐

Thank you very much for participating in filling the questionnaire.

God bless you

APPENDIX III: QUESTIONNAIRE FOR TEACHERS

Instructions: Kindly read and answer the questions below by ticking the appropriate or

filling in the blank spaces. Information provided will be only used for the purposes of this

study. Please do not write your name or that of your school.

Section A: Background information

1. Your gender. Male ☐ Female ☐

2. Your age bracket.

20 — 29 years ☐ 30 — 39 years ☐

40 — 49 years ☐ 50 and above ☐

3. Level of education

Doctorate Degree ☐

Masters Degree ☐

Bachelors Degree ☐

☐

Diploma

P1 Certificate 

Others specify----------

Indicate yours years of service including the current year.

0 — 4 years 

5 — 8 years 

9 — 12 years 

13-16 years 

Over 16 years 

Section B: Teachers Digital Literacy Trainings

Please tick the option that best reflect your option on each of the following statements on

digital preparedness

Have you ever been supported by your Headteacher to attend any digital literacy trainings?

4. Yes ☐ No ☐

a) If yes, what packages were you taught:

b) If yes, how is the training relevant to your current Digital Literacy Implementation

in your current school?

b) If No, then how are you implementing the Digital Literacy Program in your school?

Teachers believes and attitudes towards implementation of digital literacy

a) Answer options	Strongly	Agree	Uncertain	Disagree	Strong Disagree
22. I enjoy using computers 23. I feel comfortable using computers 24. I believe that supporting teachers for digital trainings enhances a smooth roll out of the implementation process 25. I feel comfortable creating basic Microsoft word documents. 26. I enjoy searching digital content using web search engines.					

Digital Literacy Content

5. What amount of digital content for implementation of digital literacy do you have in your

school?

For all class

For some classes

No digital content

Others specify…….

6. What type of secondary storage media do you use for storage of digital content if available?

Optical disks

Flash memory

Floppy disks

Hard disks

Others specify……

Thank you very much for participating in filling the questionnaire.

God bless you

APPENDIX IV : INTRODUCTION LETTER FROM MAASAI MARA UNIVERSITY

Maasai Mara University

BOARD OF POSTGRADUATE STUDIES

OFFICE OF THE DIRECTOR

P.O. BOX 861 – 20500
Narok, Kenya www.mmarau.ac.ke

Tel: +254 – 20 -2066042
+254 – 20 - 8081874

26th May,2022

RESEARCH PERMITS SECTION
NACOSTI
UTALII HOUSE

REF: ESTHER WAMBUA – DE01/4001/2015

We wish to confirm that the above named is a bona fide PhD student at Maasai Mara University pursuing PhD in Education Administration in the School of Education. Her proposed research is '***Assessment of School Administrators' Support to Digital Implementation in Teaching and Learning Process in Public Primary Schools in Kitui County-Kenya.***' She would like to apply for a research permit from NACOSTI before she can proceed for field work and data collection.

We further confirm that the candidate has adhered to all research protocol requirements of Maasai Mara University and the proposed research has been rated as having no known adverse impacts on the environment and does not pose any ethical concerns.

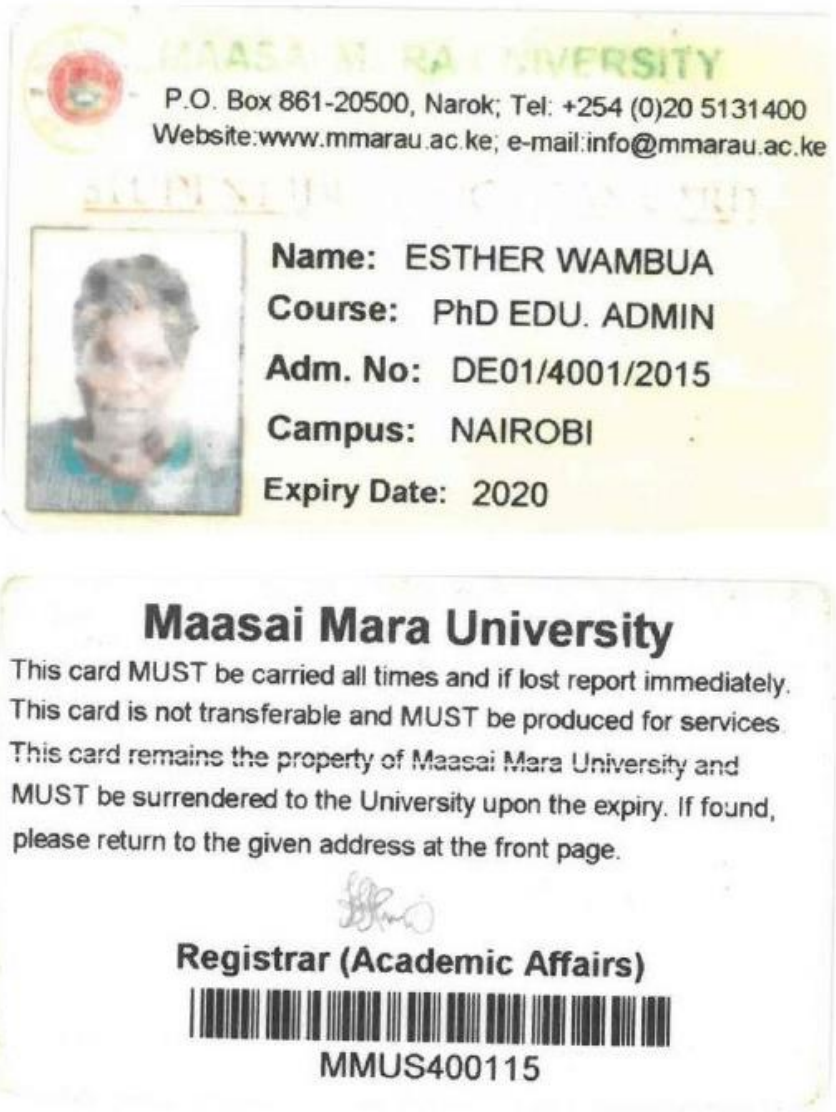
This is therefore to request your office to issue her with a research permit.

Yours faithfully,

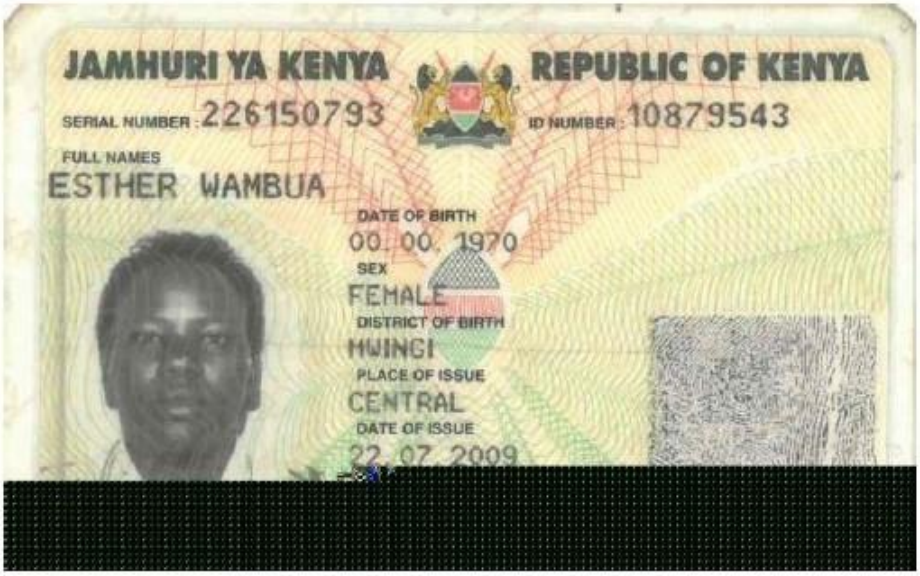
MAASAI MARA UNIVERSITY
P.O Box 861 - 20500
NAROK
26 MAY 2022
DIRECTOR
BOARD OF POSTGRADUATE STUDIES

Prof. Romulus Abila, PhD.
Director, Board of Postgraduate Studies
abila@mmarau.ac.ke, https://orcid.org/0000-0001-8762-7153

APPENDIX V: STUDENTS IDENTIFICATION CARD



APPENDIX VI: NATIONAL IDENTIFICATION CARD



APPENDIX VII : RESEARCH PERMIT FROM NACOSTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR
SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **544955**

Date of Issue: **17/August/2022**

RESEARCH LICENSE

This is to Certify that Ms.. ESTHER WAMBUA of Maasai Mara University, has been licensed to conduct research in Kitui on the topic: ASSESSMENT OF THE SCHOOL ADMINISTRATORS' SUPPORT FOR IMPLEMENTATION OF DIGITAL LITERACY PROGRAMME IN PUBLIC PRIMARY SCHOOLS IN KITUI COUNTY- KENYA for the period ending : 17/August/2023.

License No: **NACOSTI/P/22/19669**

544955

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.

APPENDIX VIII: PERMISSION FROM COUNTY DIRECTOR TSC-KITUI

TEACHERS SERVICE COMMISSION

Telephone: 0735431105
Email: cdirkitui@tsc.go.ke
Web: www.tsc.go.ke

When replying please quote;

Ref No: **TSC/424061/19**

KITUI COUNTY
NZAMBANI PARK BUILDING
2ND FLOOR
PO BOX 1541-90200
KITUI

Date: 24th August, 2022

Esther Wambua
TSC No. 424061

Thro'

The TSC Sub County Director
Kitui Central

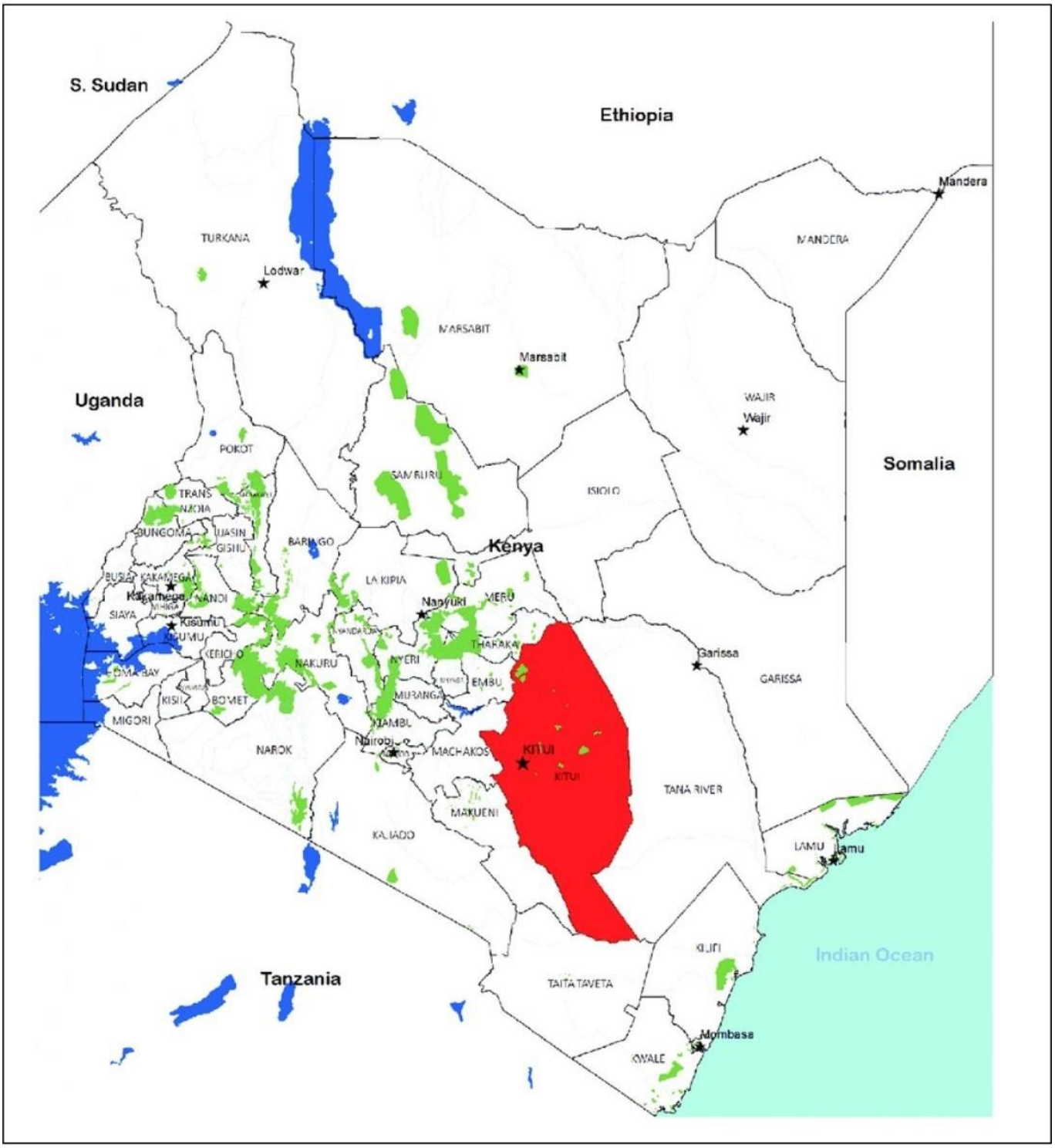
RE: PERMISSION TO CARRY OUT RESEARCH STUDY IN PUBLIC PRIMARY SCHOOLS IN KITUI COUNTY

Your letter on the above-mentioned dated 18/08/2022 refers.

Permission is hereby granted to carry out research study in Public Primary Schools in Kitui County on condition that you obtain permission from your TSC Sub County Director to be out of school in case you need to work on a school day.

Jayne Mwaniki
TSC County Director
Kitui

APPENDIX IX : MAP OF KENYA SHOWING KITUI COUNTY



APPENDIX X : MAP OF KITUI COUNTY SHOWING THE SUB COUNTIES