

Journal of

Education and Practice

(JEP)

School Administrators' Possession of Digital Skills and Digital Literacy Content for Implementation of Digital Literacy Program in Public Primary Schools in Kitui County-Kenya



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School Administrators' Possession of Digital Skills and Digital Literacy Content for Implementation of Digital Literacy Program in Public Primary Schools in Kitui County-Kenya

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Accepted: 21st Oct 2023 Received in Revised Form: 9th Nov 2023 Published: 16th Nov 2023

ABSTRACT

Purpose: The purpose of this study was to find out school administrators' possession of digital skills and digital literacy content impact on the implementation of digital literacy program in public primary schools in Kitui county-Kenya.

Methodology: Descriptive survey research design was used to describe the characteristics of the respondents. Review of related literature was done in line with the objectives of the study. The target population comprised of 3280 school administrators, who comprised of both head teachers and deputy head teachers and 328 classroom teachers making a total of 3608 respondents. A sample of 10% of the total population was taken making a sample size of 361 respondents, comprising of 328 school administrators and 33 classroom teachers. Self-administered questionnaires were used for data collection. A test- retest was carried out in four public primary schools to establish the reliability of the research instrument. Data collected were analyzed descriptively with help of Statistical Packages of Social Sciences (SPSS) version 28.

Findings: The study established that school administrators' skills and competencies in digital technology were a good predictor of a smooth digital literacy implementation. On the overall the study found out that schools' administrators' possession and use of digital literacy skills was below average. The study further established that 145(88.48%) respondents could access digital literacy content in their school while 19(11.52%) could not access the content in school.

Unique Contribution to Theory, Policy and Practice: The findings of the study will guide the leadership in effective delivery of flagship programs like the digital literacy program through multi-agency approaches.

Keywords: *Digital literacy, Digital Literacy Program (DLP)*

Introduction

1.1 Background of the Study

Kenya's Vision 2030 program recognizes the value of Information Communication Technology (ICT) in its growth to its rapidly industrialized economy by the year 2030. One of the vision 2030 flagship projects for education and training was to establish a computer supply program that was to equip learners with modern IT skills and competencies for the 21st century. Implementation of the digital literacy into teaching and learning was very key in education system in Kenya. Digital literacy which simply refers to the ability to access, understand, manage, communicate, integrate, evaluate and create information appropriately and safely using digital technology was to be integrated in the education systems. With this in mind, the government of Kenya launched the Digital Literacy Program (DLP) for all its public primary schools.

The DLP was borne of the government of Kenya's vision 2030 to make sure every pupil was prepared for today's digital world and to transform learning in Kenya into a 21st century education system. Fast development and variances in technology in the 21st century has ushered in remarkable changes in daily life as well as the education system. This has necessitated the need to teach students the skills they require in this century. Learning institutions have been challenged to restructure their curriculum so as to close the digital divide gap in teaching and learning. Education is one of the most important tools for poverty alleviation and economic growth in developing countries (UNDP 2005; UNESCO 2005). The use of Information and Communication Technologies (ICT) for dissemination of education is believed to have huge potential for governments struggling to meet a growing demand for education while facing an escalating shortage of teachers equipped with the required digital skills and competencies. Digital literacy is considered an important competence for full participation of learners in knowledge-based education society (Samantha 2015). Many learning institutions have thus embraced and continued to reap the benefits of using various ICT technologies in the teaching and learning process.

Alvarez (2020), in a study conducted in Philippines found out that the pandemic caused turmoil as classes for the remaining days of the school calendar 2019-2020 were suspended as an initial action to curb the rise of the confirmed cases in the countries. Different countries in world introduced various solutions during the pandemic to continue the education process (Basilia&kvavade, 2020). Quo et al (2020) and Petronzi (2020) suggested that managers and school administrators had to cultivate a cultural change in their organizations brought about by digital transformation.

In South Africa, with its present digital literacy infrastructure and extra mature economic systems seems not to have met its digital literacy targets in phrases of potential attribute to implement its virtual technology in its education schedule. In terms of digital literacy content material development, the availability for virtual learning materials relevant to her curriculum has ended up being a greater urgent need as digital learning becomes integrated into the teaching methods across the education curriculum (Farell 2007). African countries have only begun to show the

macroeconomic stability needed for educational development thus needs to use ICT in their education systems, Nduati & Brownman (2005). The level of digital literacy in Africa is increasing day by day. This is an indication that there are new developments unfolding. Most African countries have prioritized formulation of ICT policies in schools but with different abilities to implement the digital literacies (Farrell & Isaac, 2007). The process of implementing digital literacies in leading institutions in Eastern Africa.

The government of Kenya initiated a digital learning program in public primary schools known as the Digital Literacy Project (DLP) and provided funds for ICT infrastructure to be put in place which included building of computer labs, distributing fiber optic cables, training of teachers in digital learning and connecting remote areas to the grid and internet. The policy's mission was to be a "prosperous ICT based society of Kenya" with ICT being the core of national development (Kashorda & Waema, 2014). This policy was intended to encourage the use of ICT technologies to promote the development and implementation of digital learning at all levels of education in Kenya, with the main objective of promoting digital literacy teaching and learning in public primary schools. (Fruth & Naeksu, 2015).

According to Kenya's Vision 2030, if schools provided access to digital technologies, the quality of education would improve and high performance will be enhanced. (MOEST, 2003). With the current implementation of the competency-based curriculum (CBC) which recognizes digital Literacy as a core competency, a comprehensive assessment of administration support implementation of Digital literacy program (DLP) is very key. However, most schools in the remote areas of Kenya and more so Kitui County did not have access to internet due to poor connectivity while others lacked internet access due to poor terrains. This caused a big digital divide and a curve in the digital literacy implementation process. The researcher therefore sought to find out the impact of school administrators' possession of digital skills and digital literacy content for implementation of digital literacy program in public primary schools in Kitui county.

1.2 Statement of the Problem

The Government of Kenya has used a lot of Money in purchasing and distributing digital literacy learning gadgets to public primary schools. If the devices were well utilized for the intended purpose, the desired results which include improved performance in the use of digital tools and technologies in schools would be realized. However, before these digital gadgets were purchased and delivered to schools, school administrators and teachers were supposed to have been taken for trainings for them to be equipped with the requisite skills and competencies to handle the digital literacy gadgets well in public primary schools. However, in Kitui County, the digital literacy program was rolled out in the schools before the administrators and teachers were trained. Then after the roll out, trainings started, and there has been strong feeling that it has not been done effectively. This gap occasioned this study to assess the impact of school administrators'

possession of digital skills and digital literacy content for implementation of digital literacy program in public primary schools in Kitui county.

1.3 Purpose of the Study

The purpose of this study was to assess the impact of school administrators' possession of digital skills and digital literacy content for implementation of digital literacy program in public primary schools in Kitui county.

1.4 Objectives of the Study

The study was guided by the following specific objectives;

- (i) To examine whether the school administrators possessed the relevant skills and competencies for implementation of digital literacy program in public primary schools in Kitui County.
- (ii) To assess school administrators, access to digital literacy content to support the digital literacy program in public primary schools in Kitui County.

1.5 Research Questions

- (i) How do the school administrators' digital skills and competencies influence implementation of the digital literacy program in public primary schools in Kitui County?
- (ii) Do school administrators have access to digital literacy content for implementation of the digital Literacy Program in public primary schools in Kitui County?

1.6 Limitations of the Study

The study had two major limitations which came in dimensions such as securing the precious available time of the respondents to respond to the self-administered questionnaires. To address this limitation, the researcher allowed the respondents two weeks to respond to the questions and encouraged the respondents on the benefits and the significance of the study. The findings of the study were based on respondent's responses on assessment of administrators' liaison with the relevant authorities for provision of digital literacy content for digital literacy program in Kitui County-Kenya.

1.7 Assumptions of the Study

The study had the following assumptions

- (i) That the school administrators possessed the relevant skills and competencies for implementation of digital literacy programs in their schools.
- (ii) That the school administrators liaised with the relevant authorities for provision of digital literacy content for digital literacy program.

1.8 Theoretical Framework

The study was guided by the connectivism theory advanced by George Siemens (2004). The theory was termed as a learning theory for the digital Age. Connectivism is a theoretical framework for understanding learning in the digital age. The theory emphasizes how digital internet technologies such as web browsers, search engines, online discussions and meeting, virtual learning and social networks contributed to new avenues of learning. Siemens (2004) emphasized the idea that knowledge is a series of interrelated webs from not only social interactions, but experiences, digital observation (commercial, websites), or even organizations' the end, the interconnectedness of all of the knowledge leads to learning.

The increasing use of technology as an educational tool has changed the learning landscape. With it came gaps in traditional ideas of teaching and the need for new methods to keep up. The theory of connectivism seeks to be the modern-day solution to those gaps. The connectivism theory gives teachers additional strategies to create a learning environment that sets students for digital success since it is a digital age connecting theory. In a connectivism view point, the new learning responsibilities shift from the teacher to the learner. Unlike traditional teaching methods and other theories like constructivism or cognitivism, the educator' job is to guide students to become effective agents for their own learning and personal development. Connectivism on the other hand relies heavily on technology, so the first step to creating a connectivism classroom is to introduce more opportunities for digital learning such as online courses, webinars, social networks and blogs.

Connectivism theory should be adopted as a theory for the digital age. Abik et al (2012). Research theory should be adopted as a theory of connectivism as it released administrators from the traditional practice of imparting knowledge through experience and connected them to digital revolution of receiving information and digital content online. Abik (2012). The researcher used this theory of Connectivism because it was very relevant to the study in question because it allowed administrators to incorporate electronic devices for the "off – site" storage of information, treating the role of memory differently from prior learning theories. While older learning theories had their place in the communication of knowledge, instruction must embrace connectivism theory to ensure that digital knowledge in the 21st century was properly conveyed. Abik et al (2012), before technology appeared to the pedagogical landscape, cognitive method was a delivery of instruction by a teacher – content-oriented method, where the students were only receivers of information. In the connectivism framework, learners were dynamic members in the development of them learning while teachers served as the facilitators.

Stravredes (2011) asserted that in connectivism, knowledge was distributed across networks where connections through online meetings and online courses were evident. School administrators did online meetings with their staff, boards of management and this made the framework very relevant to the study. Heavily grounded on technology, connectivism is a digital learning theory based on the acquisition of acknowledge focused on the future and not the past Siemens (2012). This theory was relevant to the study because it was a learning theory of the digital age which emphasized on how digital and internet technologies contributed to new avenues for the digital literacy programs.

Through connectivism, students and teachers are empowered as the theory shifts the responsibilities from the teachers to the learners thus making learning more enjoyable as it is learner centered. Connectivism supports individual perspectives and diversity of opinions, theoretically providing for no hierarchy in the value of knowledge.

1.9 Definition of Terms

School Administrator- Refers to a person who is in charge of the school. He/she is bestowed with duties and responsibilities involving: - teaching, Helping, organizing and supervising the function of the institution.

Computer Knowledge- Refers to how much digital information the school Administrator have, his attitude regarding computers and them use.

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

Digital Curriculum- Refers to any form of information that is stored digitally and Can be used through multiple choices including subscriptions, Free online services and other digital devices which may Include texts, graphics, videos, internet, Google meetings, Video conferencing, cloud computing, digital application And other technologies meant 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.

E-learning- Refers to any teaching and learning that is facilitated under Computer mediated environment.

Information Communication Technology- Refers to digital equipment that are used to support digital learning and use of technologies.

Digital Literacy- Refers to the ability of having the current skills and

competencies to handle and use technological devices. It involves the ability to locate, organize, understand, evaluate, and create information using digital technology.

Digital divide: Refers to “the gap” between those who can benefit for digital technology and those who cannot. In particular inequitable in devices and internet access especially for the competency-based curriculum users.

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

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

Competency Based Curriculum (CBC) - This refers to a learner centered and adaptive Curriculum that puts more emphasis on what learners are Expected to do rather than focusing on what they know.

Digital Literacy Program (DLP): A project set up by the government of Kenya with an aim to integrate ICT into the teaching and learning processes and management of education in primary schools.

ICT integration: Refers to the incorporation of technology in teaching and learning to support learners in the teaching and learning tasks in public primary schools.

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter presents the reviewed literature conducted on school administrators’ digital skills and competencies for digital literacy implementation and the digital literacy content for implementation of digital literacy program.

2.2 Administrators Digital Skills and Competencies for Digital Literacy Implementation

Digital competence is a quite complex and evolving concept, difficult to be defined using a single definition. The European Digital Competence Framework (DigiComp) provides a consistent framework to guide cross-country measurements of digital competence. Digital transformation

has a significant impact on people's lives. Technology has altered social interactions, communication, education, even consumer behaviour and leisure, while digital skills and competencies are becoming key components for a successful digital literacy implementation and therefore should be considered as a prerequisite in all professional domains (Pelaez et al.,2020).

Phuapan et al., (2016) argued that digital literacy and its related skills are essential in an excessively competitive work environment. Moreover, European Union policies for lifelong learning identify the need to equip school administrators with the advanced digital skills and competencies, since technology penetration creates new job requirements (Ala-Mukta et al., 2008), Ananiadou and Claro (2009) also perceived digital skills to be essential components for every professional domain. A Laar et al., 2019 further suggested that digital skills needed in educational institutions nowadays are becoming more knowledge-based and therefore, the relevant digital skills and competencies should not be limited to performing basic digital tasks. They should embrace a wider set of skills, such as communication beyond cultural and institutional barriers, the ability to work in remote groups and interpretation of knowledge in digital environments. In addition, Iordache et al., 2017 reviewed that people should acquire the necessary skills to confront the danger of being excluded from various domains of everyday life, due to the disruptive effects of digitization. This digital realm poses a great challenge to governments and institutions (i.e., EU, OECD, UNESCO) in their attempt to define the key digital competencies and skills that administrators and even other people should be equipped with to successfully operate digital technologies.

School Administrators skills and competences include the various attitudes and personal characteristics exhibited by the administrators, which include their flexibility, technical capabilities, ability to solve problems and the quality of interpersonal relationship (Kayoko, Seren, Mitsuo & Oyabu 2011) Further, the administrators skills include the professional technical and work skills that are exhibited by the educators and staff in an institution (Kwok, Adams,& Price,2011) Voogt, Erstad, Dede and Mishra(2013) indicated that inadequate digital competencies for teaching and learning in the 21st century digital era, insufficient preparation of teachers through digital trainings, attitudes and beliefs on Information Communication Technology(ICT) and lack of a systematic strategy for the digital literacy learning could be some of the limits to the implementation of digital literacy programs. Ozdama, and Koyle (2015) carried out a research study on the learning habits of distance learners and digital literacy competencies. The study focused on 20, 172 students at Anadolu University. The study utilized principal component factor analysis with its results indicating being skilled at project work and having the ability to use digital tools effectively enhanced the digital learning habits. The study indicated that the basic competencies of digital literacy and skills on the use of ICT were critical to the utilization of digital literacy programs. The research was conducted in Turkey, while the current study in question focused on the support offered by school administrators for the implementation of digital literacy programs in public primary schools in Kenya.

Teachers and school administrators are responsible for designing the teaching and learning processes using digital technologies, in which, in addition to transmitting knowledge, they must develop the student's skills and competencies through the use of ICT and digital educational resources. They should be employed as a means of transformation, allowing students to actively build knowledge via collaborative and authentic learning activities that enable exploration. These skills and competencies, essential in society today, as follows: collaboration, communication, digital literacy, citizenship, problem- solving and critical, creative and productive thinking. (Cabero, j.; Llorente, M.C 2008). Technologies offer a wide range of possibilities that are advancing rapidly and augmented reality is even being introduced into current educational contexts. While these steps forward may represent an educational quality differential, they are, in reality, generally implemented by teachers in classroom in a simple fashion; their full potential remains unexploited, to the concern of certain researchers. (Kopcha T.J.2012).

The world has witnessed a rapid digitalization of education in the past decade (European Union, 2013; Farrell et al., 2017). In particular, there is growing interest in the integration of digital technology in education. Such interest has often been premised on the assumption that digital technologies have great potential to improve the quality of education (Toit, 2015, UNESCO, 2009; Trucano, 2015). Digital competence requires a set of operational, informational and strategic skills (Van Dijk, 2005). Van Dijk defines digital skills as a collection of skills needed to operate digital technologies like computers and their networks; to search for and use information for one's own purposes. He divides the concept into three types of skills: Operational skills (Skills used to operate hardware and software) Information skills (skills needed to search, select, process and evaluate information from computer and network sources) and strategic skills (capabilities to use digital sources to achieve specific and general goals and objectives). Further, he acknowledged that the development of digital skills can occur through formal and informal approaches. Formal approaches in this context referred to organised a structured training system with learning objectives in a school setting or work place. On the other hand, informal approaches denote developing digital skills and competencies from daily experiences and interest to use the digital technologies. Consequently, the development of digital skills and competencies is often a matter of learning through practice, by trial and error, and with help from peers and colleagues. (Van Dijk, 2005).

The concept of digital competence has its origin in a new vision of learning in formal studies that starts from the need to classify those skills and competencies that the individual must acquire and consolidate as an essential means to advance his or her own academic career, and subsequently, throughout life. (Gisbert, Gonzaltz and Esteve, 2016). This type of learning called through the term key competence, is justified by the European Higher Education Area (EHEA) which advocates the need to promote in students compendium of basic skills that make them competent to meet the digital society of the 21st century. The European Commission (2006) understands digital competence as the safe critical use of ICT in the information society of work, leisure and

communication. It is based on basic ICT skills, the use of computers to obtain, evaluate, store, produce, present and exchange information, communication and participate in collaborative networks. According to Flores and Roig(2019),the concept of digital teaching competence is a type of multidimensional competence which can be defined as the ability to mobilize those skills and abilities that allow one to search, critically select, obtain and process relevant information using ICT to transform it into knowledge, while being able to communicate such information through the use of different technological and digital media, acting responsibly, respecting the socially established rules and regulations, taking advantage of the digital tools, to inform, learn, solve problems and communicate in different scenarios of interaction.

The concept of digital literacy skills appeared first in the works of (Lim and Newby, 2021), for whom it was considered an ability to identify, locate, and examine information. However, despite its novelty, the conceptions it encompasses have been changing drastically. Several efforts have been made to equip future teachers with digital competencies through different standards and frameworks to the level of learning acquired(Fraser et al.,2013;UNESCO 22018).However, how to work these digital competencies in initial trainings is still a hotly debated topic ,in which special attention is being should be paid to digital trainings, promotion of experiences of pedagogical and innovative nature to transform teaching practices, involving the integration of technologies in the digital classrooms as reported in the Horizon Report 2019 for the Higher Education.(Educause,2019;Le et al.,2022).If digital resources and digital devices are inescapable part of current and future teaching practice, then ,digital competency trainings for future teachers becomes extremely relevant, given that teachers need to acquire these digital competencies in their initial trainings to integrate them into their practices(Nikou and Aavakare,2021),which could range from basic digital literacy to the integration of technologies in their daily teaching practice(Gisbert et al.,2016;Alanoglu et al.,2022).Several studies have defined the different indicators that make up digital competencies(Siddiqi et al.,2018;Rodriguez-Garcia et al.,2019;Cabero-Almenara and Palacios-Rodriguez,2020).

There is need for future teachers to be digitally literate, in terms of application of active methodologies, digital competencies, and the use of innovative strategies, styles , and approaches(Garcia-Martin and Garcia-Sanchez,2017;Gomez-Garcia et al .,2021).Currently, literacy workshops for future professional are being carried out in a timely and precise manner from customized short trainings capsules to specific semester-long subjects in undergraduate or postgraduate studies in higher learning institution. In addition, there are just a few interactions with professional experts in such literacy (Ata and Yildirim,2019; Campbell and Kapp,2020; Domingo-Coscolla et al., 2020; Tomczyk et al.,2020 Vinokurova et al.,2020).

2.3 Digital Literacy Content for Implementation of Digital Literacy Program

Digital content is any content that exists in form of digital data. It is the information: the sum of fresh, readable, and useful information for readers. Digital content is stored on digital media or

analogue storage in specific formats. Forms of digital content include information that is digitally broadcast, streamed or contained in computer files. Digital content is entirely dependent on the individual. Not everyone will be receptive to emotionally charged content but others might be more susceptible to the hard-hitting stuff. Teaching digital literacy in public schools is all about understanding that today's children need different types of skill and technical knowledge in order to think critically, evaluate their work and engage with a global community

As students and teachers continue to have increased access to digital tools and resources, there is a shift in the traditional instructional practices that have been used for teaching and learning. Textbooks are no longer the primary source of information, and students can fact check their teachers with the devices in their pockets. Also, content has to be more than just digitized textbooks and documents. Students must interact well with the digital content and produce new ways to show what they have learned. (byotnetwork.com,2016) For teachers to effectively teach using digital content, they can use the following strategies; Develop a learning community.

According to Nicole Bixler (2021) Digital learning content allows educators to take students beyond the four walls of a classroom or at-home environment. Learning thus becomes a global experience. Digital online content also provides an equitable learning experience because students can access them anywhere. Teachers can use them for in-person or remote instruction and switch between the two without disruption. Plus, digital resources are often free and can be easily shared without need for physical copies. Digital content can supplement primary instructional materials or drive a unit or lesson. If the provided curriculum has gaps for certain standards, online learning materials can fill in those areas. Teachers can also use them to help learners who are not ready for grade-level standards or provide enrichment. Another benefit is that learners can view the digital content as many times as they want. They can re-watch videos, re-work a simulation or listen to podcast to help review concepts (Nicole Bixler,2021) Before using any type of digital content for digital literacy implementation, teachers must identify the digital resources that are suitable and add them to their lesson plans depending on the class or grade. Teachers should note where the digital content is free to use, and whether or not the learning resources are equitable. Secondly, the teacher should examine and vet the digital literacy content so finds out whether the information is accurate to avoid delivering wrong information to the learners. The Educators should as well explore the source of the digital content and ensure that there is no biasness. After reviewing the information, the teacher should make sure that all the links work. In cases where learners are supposed to create an online account either on google, WhatsApp or even in YouTube, data privacy should be taken care of, to ensure that the earners get the correct data. (Nicole Bixler, 2021).

Digital Literacy had been addressed by different scholarly and professional disciplines often from different perspectives or discovers (Bawden 2008, Lanksheer and Knobel 2008, Jones Hadner 2012, Eshnet- Akalai 2004, and Chaunt 2009). According to those scholars, digital Literacy represented a set of discrete abilities or behaviors expressed by the users of the digital content and information systems often needed in the process of digital inquiry. Those abilities were often

characterized as the skills and competences needed in the use of digital content of the 21st Century “Information Age.” (Eisenberg, Lowe and Spitzer 2004).

A study done by Gioko (2011) on digital literacy in secondary schools revealed that teachers and learners are the backbone of digital implementation. The work of the school administration was to liaise with the relevant authorities of technology using the desired digital content enhanced delivery of digital literacy lesson. Digital literacy content allowed for personalized learning for all learners. This meant that learners could work on different assignments and projects at the same time, completing them at their own pace.

According to Dr. Mary Kalantzis, Dean of Education at Illinois University, educators today need to harness the different modes of the digital revolution in order to be effective presenters of knowledge. “In this digital era, learners need to engage in all areas of digital media, making it core of teaching and learning” (Eduxcationcorner.com 2022). Voogt et al (2013), recommended for future direction for research on the availability of digital literacy in schools to be discussed further. This study focused on the extent to which the school administrators had liaised with Ministry of Education for provision of digital content through the Kenya Institute of Education (KICD). With the amount of digital educational content on the web, it was possible for the school administrators as well as the teachers to go without text books and rely solely on digital content through browsing the web and internet. However, this could not be realized fully in areas where the network is wanting. Kitui County being among such areas, school administrators and teachers seem to remain in the analogue era utilizing the textbooks more than the digital contents through visualized content, memes, comics/cartoons, digital events, e-books and embedded tweets and other search engines.

Availability and use of digital content material should therefore be very key to the implementation of digital literacy programs in public primary schools. To measure the extent to which school administrators have liaised with the ministry of education through KICD from provision of the current digital content per class, the researcher came up with self-administered questionnaire items that addressed the availability of digital literacy content. The responses that were provided revealed whether the school administrators liaised with the Ministry of Education through KICD for provision of digital literacy content in the implementation of digital literacy programs in public primary schools. The Information and Communication Technology (ICT) authority has been collaborating with Kenya Power and Lighting Company (KPLC), Ministry of Energy and Communication Authority (MECA) in the plan to boosting digital learning in schools. While Kenya, like most African countries, has an endless potential for solar energy. Most of the rural areas of the country remain without power, mainly due to the high cost of infrastructure and low power generation.

In one of the most ambitious rural electrification projects that tapped the use of solar energy as an alternative source of power, the Kenyan government has completed connection in some 4,100

primary schools to power using solar PV systems. The schools have been electrified as part of a determined digital literacy learning program that will see electricity from the panels to being used to power learning tablets currently being rolled out in public primary schools' country wide.

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents research methods applied in carrying out the research. The section is organized under the following sub sections: Research design, target population, sampling procedures and sample size, research instruments, validity and reliability of the research instrument, data collection procedures and data analysis.

3.2 Research Design

The study employed a descriptive survey research design which allowed description of the subjects without influencing them in anyway. Descriptive survey research design also called observational research was used for collecting data about people's attitudes and habits on educational or social issues thus made it very relevant to the study (shuttle worth, 2008). The research employed the descriptive research approaches because the researcher's main objectives was to asses school administrator's support digital literacy in terms of digital training maintenance of digital tools, digital content, storage of digital, beliefs altitude and power connectivity for implementation of digital literacy programs in public primary schools in Kitui County, Kenya.

The main respondents were school administrators who were the headteachers in public primary schools. The school administrators were directly involved in the study since they were the ones targeted by the researcher. The deputy headteachers were taken as key informants. Both categories of respondents were used by the researcher for information about support offered to the teachers for implementation of digital literacy programs in public primary schools in Kitui County Kenya.

3.3 Target Population

Target population in this study comprised 1,640 public primary school head teachers who were the school administrators and their 1,640 deputy head teachers who are also teachers, and 328 classroom teachers. The research used the school administrators as the main respondents and the classroom teachers as the key informants. The school administrators were targeted because they were the key decision makers and the deputy headteachers who were the key implementers of the digital literacy program. The target population of this study was 3280 respondents which comprised of 1640 administrators and 1640 deputy head teachers.

3.4 Sampling Procedure and Sample Size

From the target population of 3,280 respondents which comprised of 1640 school administrators and 1640 deputy headteachers, the researcher sampled 10% of the 1640 school administrators and 10% of the 1640 deputy headteachers. This gave a sample size of 328 respondents which was

considered as being adequate for the study. The researcher used simple random sampling technique to sample 164 schools from the target population (10% of the total number of schools which is 1640). Simple random sampling technique was used to select the schools, because it gave each school an opportunity to be selected in the study. From each of the 164 schools, the administrators also known as the headteachers and the deputy head teachers who were teachers were sampled. This gave a total of 328 respondents, which comprised of 164 school administrators and 164 deputy headteachers respectfully.

3.5 Research Instruments

The research instrument for data collection in this study was questionnaires. Self-administered questionnaires were used in collecting data from the school administrators who were the main respondents. Mugenda (2003) argued that a self-administered questionnaire is one in which respondents complete the questionnaires themselves. Questionnaires were used because they were effective means of measuring behaviors, attitude, preferences and opinions of the respondents. The researcher developed a questionnaire for both school administrators and classroom teachers. The questionnaires yielded both qualitative and quantitative data. A self-administered questionnaire was used to collect qualitative data from the headteachers as well as the deputy head teachers on administrators support to digital literacy programs in Kitui County- Kenya.

3.6 Validity of Research Instrument

Bryman (2007) defined validity as the degree to which a test measures or what it supports to measure. The three steps in establishing construct validity were applied as recommended by Bryman (2007). First the researcher identified variables from the research questions that had strong relationship with the assessed test. Second, the researcher established through pilot testing method the degree to which variables conveyed and finally the researcher interpreted the evidence about the validity of the particular variable of interest. Pilot testing of the questionnaires was conducted against prospective sample population. The researcher gave out sample questionnaires to the school administrators and classroom teachers and gave them a duration of two weeks to fill them. The researcher then collected them. The researcher gave out the research instrument and collected them again. The researcher then interpreted the validity of the research instrument.

3.7 Reliability of the Research Instrument

Ngechu (2004) asserts that reliability is the ability of a research instrument to yield consistent results or data after repeated trials. To establish the reliability of the research instrument, a pilot testing was carried out in four public primary schools in Kitui County. Cronbach's alpha was used to measure the internal consistency of participants. A threshold of 0.7 was accepted since it measured the consistency of participant's responses to one set of items. Any research item falling below 0.7 was eliminated to improve the reliability of the research instrument.

3.8 Data Collection Procedures

Data collection was done with the use of self-administered questionnaires. The raw data was collected and coded. Data was analyzed using descriptive analysis methods which was presented in measures of frequencies, central tendencies, dispersion and position and contingency tables. Measures of central tendencies were measured with the use of three averages, means, medians and modes. Measures of dispersion included ranges or standard deviations, while measures of position included percentages. The data was analyzed with the help of statistical package of social sciences (SPSS) Version 28.

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presents data analysis, presentation and interpretation. The purpose of this study was to assess the school administrator's support for implementation of Digital Literacy Program in Public Primary Schools. In this chapter, the study presented the findings of the study and their discussions. The chapter also presents the general information of the respondents and analysis of the independent, dependent, and moderating variables. Descriptive and inferential statistics were used to analyze the data.

4.2 Demographic Information

From the information shown on figure 1 below on the gender distribution of the respondents 86 out of 164 were female which was 86 (56.36%) while male respondents were 78 (43.64%). This showed that female teachers were more as compared to their male counterparts. This met the threshold of the current constitution of Kenya 2010 which stipulated that not more than two thirds of any public institution should be drawn from one gender. It also implied that regardless of the gender the respondents were able to give reliable information.

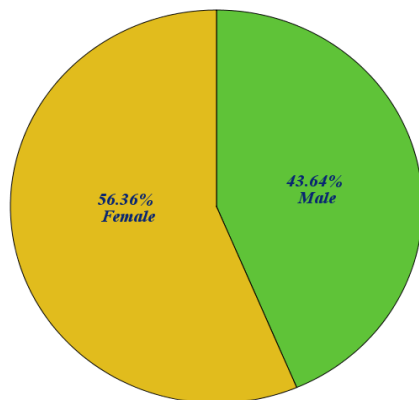


Figure 1 Demographic data in relation to gender

The respondents from the 20-29 years age bracket were 3(1.82%) of the total respondents. This showed that, of the total respondents this age bracket got the lowest number of respondents, as

shown in figure 2 below. Those respondents from the age bracket of 30-39 years were 37 (22.42%) followed by those from the age bracket of 40-49 years which had 91 respondents the highest percentage of 91 (55.76%) of the total respondents. Lastly were those respondents from the age bracket of 50 years and above which had 33 (20.00%). This showed that most respondents were those in the age bracket of 40-49 years, hence most of them were interested in digital literacy content. This implied that the young respondents in terms of age were more interested in digital literacy compared to those in the age bracket of 50 years.

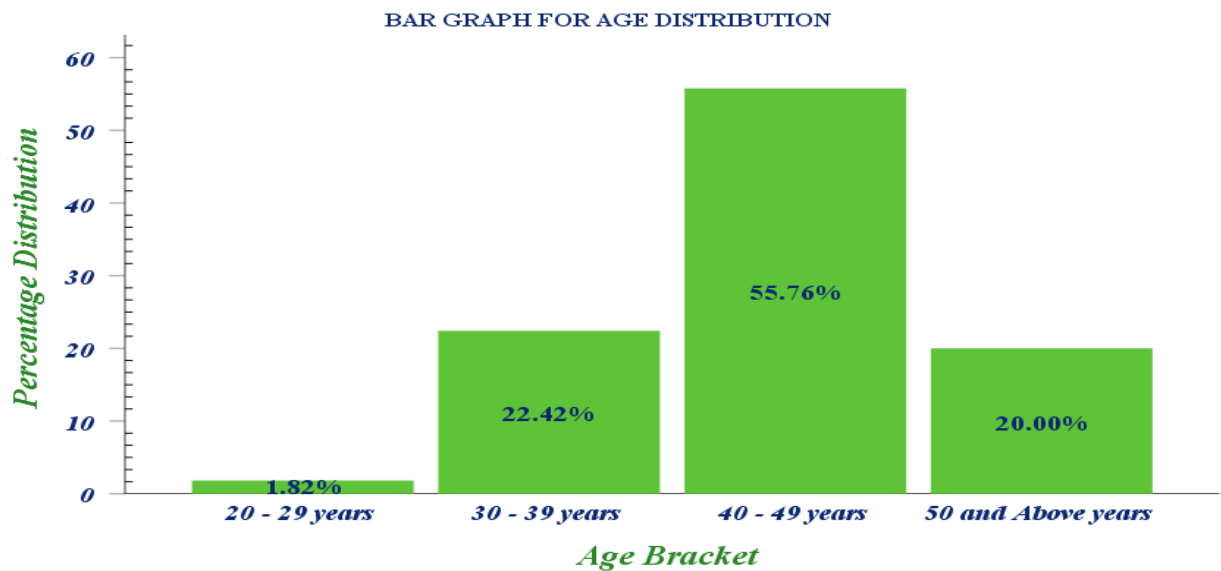


Figure 2 Age Bracket

4.3 Level of Education

The results in figure 3 indicated that the school administrators who had bachelor's degrees were the majority with 106 (64.74%) followed by those who had diplomas at 34 (20.61%) then those with master's degrees at 21 (12.73%), and those with Doctoral degrees were the least with 3 (2.42%). This showed that the school administrators had attained the minimum qualification of primary school teacher which is a certificate. Effective implementation of a digital literacy program requires a qualified teacher, this could assist them in successfully implement a digital literacy program.

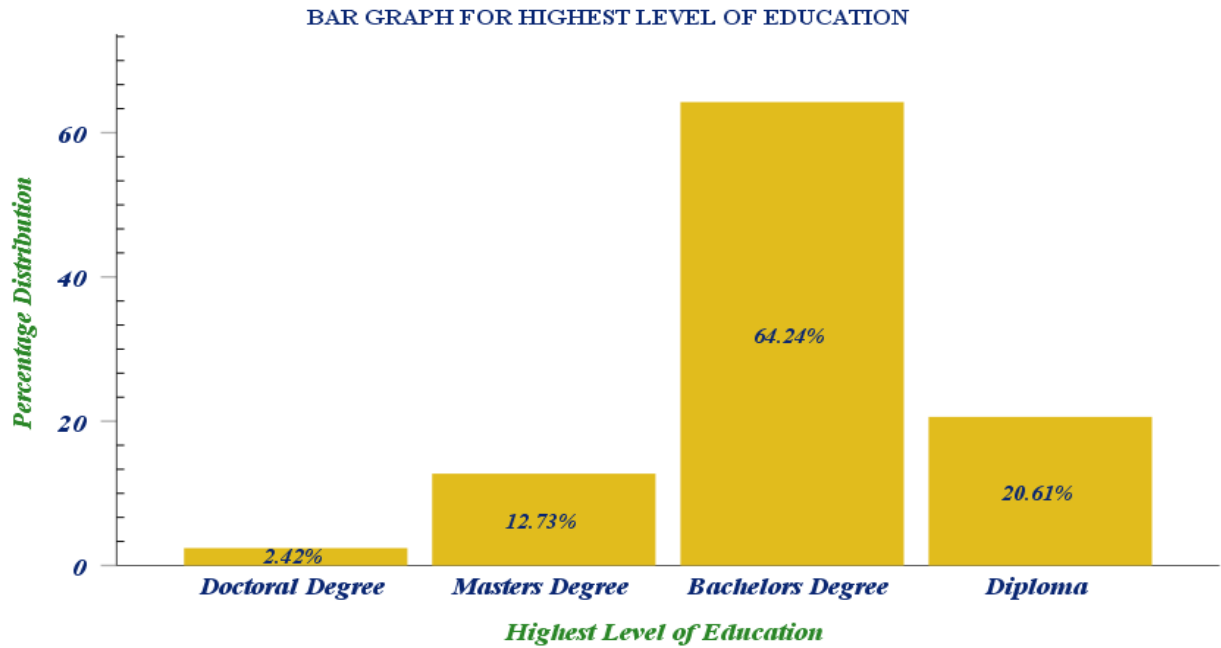


Figure 3 Highest level of Education

4.4 Years of Service

The results in figure 4 indicate the years of service in school by the school administrators. Those who had served in the service in the bracket of 0-4 years were 25 (15.15%) followed by those in the bracket of 5-8 years were 40 (24.45%), those in the bracket 41(9-12) years were 24.85%, those in the bracket of 13-16 year were 33 (20.00%), those in the bracket of 17-20 years were 18(11.30%), lastly those in the bracket of over 20 years were 7 (4.24%). This showed that the respondents had enough required experience to initiate and run the digital literacy program in the public primary school in the study area.

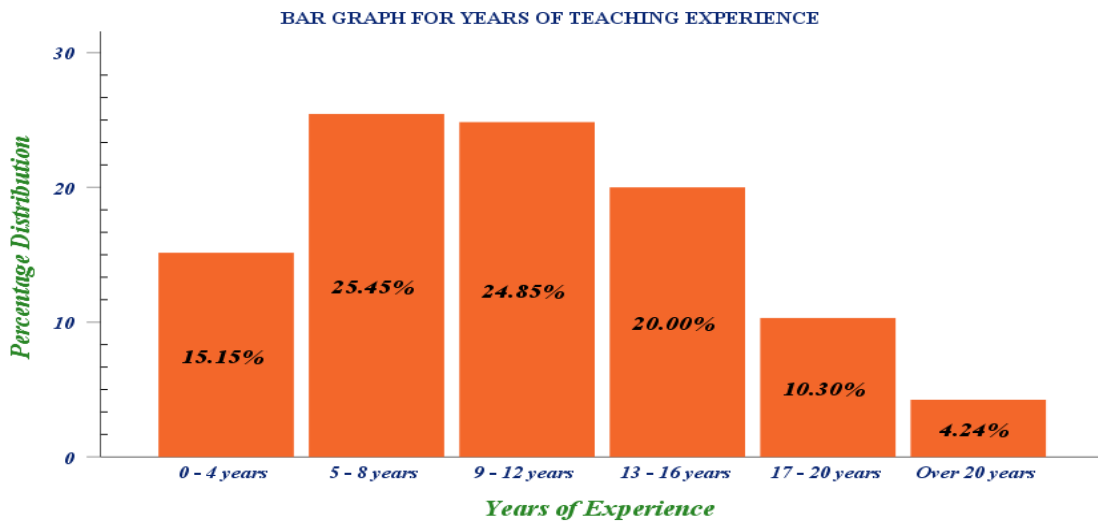


Figure 4: Years of Experience

4.5 Administrators Skills and Competences for Implementation of Digital Literacy

The first objective sought to examine whether the school administrators had the relevant skills and competencies for implementation of digital literacy programs. It was investigated and found that very few respondents 36(22.0%) used computers on a daily basis during the implementation of digital literacy while 128(77.91%) did not use computers on a daily basis during the implementation of digital literacy. This showed that measures should be put in place to ensure proper and frequent use of the computer on a daily basis to ensure it boosts the delivery of the digital literacy content. Figure 5 presents the percentages.

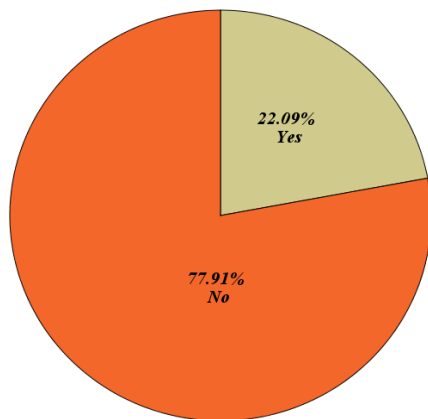


Figure 5: Daily usages of Digital literacy devices

The respondents were asked whether they utilized the digital literacy devices in the following functions, utilizing the device in pupil’s computer laboratory. Table 1 shows that 43(26.2%) utilized the devices in the pupil’s laboratory while 121(73.8%) did not utilize this function.154 (93.9%) utilized this function in filling monthly returns while 10(6.1%) did not utilize in the filling monthly returns. For teacher’s appraisal 15(90.9%) utilized this function while 15(9.1%) did not utilize the function. 40(24.5%) utilized the function of consultation with parents while 125(75.5%) did not utilize this function. Table 1 presents the summary.

Table 1. Utilization of Digital Literacy Devices

	Yes		95.0% Lower CL for Row N		95.0% Upper CL for Row N		No		95.0% Lower CL for Row N		95.0% Upper CL for Row N	
	Number	Percentage	%	%	%	%	Number	Percentage	%	%		
For pupil's computer lab	43	26.2%	19.9%	33.3%	121	73.8%	66.7%	80.1%				
For filling monthly return	154	93.9%	89.5%	96.8%	10	6.1%	3.2%	10.5%				
For teacher's appraisal	149	90.9%	85.7%	94.6%	15	9.1%	5.4%	14.3%				
For consultation with parents	40	24.5%	18.4%	31.6%	123	75.5%	68.4%	81.6%				

The findings showed that 14(8.5%) could use Microsoft word very competently, 135(82.3%) of the respondents competently used the Microsoft word, lastly, 15(9.1%) of the respondents were not very competent in using the Microsoft word. This showed that most people were able to use the Microsoft word thus there would be an easy rollout of the program in the public primary schools.

Findings on whether the respondents could use Microsoft excel, showed that 7(4.3%) could very competently use the Microsoft excel, 135(82.3%) could competently use Microsoft excel, 21(12.8%) were not very competent in the use of Microsoft excel lastly 1(0.6%) were not able to use the computer package. It was evident that most respondents could use the skill of Microsoft excel.

The extent to which the respondents could use computer packages to implement the digital literacy in public primary schools, findings revealed that, 4(2.4%) could use Microsoft PowerPoint very competently, 101(61.6%) of the respondents competently used the Microsoft PowerPoint, 51(31.1%) of the respondents were not very competent in using the Microsoft PowerPoint and lastly 8(4.9%) could not use the package. This showed that most people were above average in the use of Microsoft PowerPoint thus making it easy for the rollout of the program in the public primary schools.

Table 2: Competence on Digital Literacy Packages

	Very Competent	Competent	Not competent	very Can't Use					
	No.	Perce ntage	No.	Percenta ge	No.	ge	No.	ge	Percenta ge
23. Microsoft Word	14	8.5%	135	82.3%	15	9.1%	0	0.0%	
23. Microsoft Excel	7	4.3%	135	82.3%	21	12.8%	1	0.6%	
23. Microsoft PowerPoint	4	2.4%	101	61.6%	51	31.1%	8	4.9%	
23. Microsoft Access	5	3.0%	73	44.5%	69	42.1%	17	10.4%	
23. Microsoft Publisher	8	4.9%	55	33.5%	77	47.0%	24	14.6%	
23. Email and Internet	5	3.0%	51	31.1%	75	45.7%	33	20.1%	
23. Quick Books	2	1.2%	37	22.6%	80	48.8%	45	27.4%	
23. Photoshop	2	1.2%	34	20.7%	74	45.1%	54	32.9%	
23. Page Makers	2	1.2%	37	22.7%	66	40.5%	58	35.6%	
23. Others	2	2.8%	14	19.7%	28	39.4%	27	38.0%	

Table 2 shows whether the respondents could use Microsoft access, 5(3.0%) could very competently use the Microsoft access, 73(44.5%) could competently use Microsoft access, 69(42.1%) are not very competent in the use of Microsoft access lastly 17(10.4%) were not able to use the computer package. It is evident that this package should be included in the training content when training teachers on matters digital literacy.

Study findings on whether the respondents could comfortably use email and internet, showed that 5(3.0%) could very competently use email and internet, 51(31.1%) could competently use email and internet, 75(45.7%) were not very competent in the use of email and internet then lastly 33(20.1%) could not use this package. This showed that competency in the use of email and internet was still low, measures should be put in place so that teachers could effectively and efficiently grasp the content in this package for effective delivery of knowledge to learners.

Findings whether the respondents could use Quick book, as showed that 4.6, 2(1.2%) could very competently use the quick books, 37(22.7%) could competently use quick books, 66(40.5%) were not very competent in the use of quick books lastly 45(27.4%) were not able to use the computer package. Measures need to be taken to get the teachers to understand this package since the competency level is below average.

Table 2 shows whether the respondents can use photoshop as a computer package, 2(1.2%) could very competently use Photoshop, 34(20.7%) could competently use Photoshop, 74(45.1%) were not very competent in the use of Photoshop lastly 54(32.9%) were not able to use the computer package. Also, for effective delivery and smooth rollout of the program, measures should be put in place to ensure that teachers get proper training on this computer package.

Findings on whether the respondents could use Page Makers, showed that, 2(1.2%) could very competently use the quick books, 37(22.7%) could competently use Page Makers, 66(40.5%) were not very competent in the use of Page Makers, lastly 58(35.6%) were not able to use the computer package.

From the findings of the study, it was established that school administrators' competencies in digital technology were a good predictor of a smooth digital literacy implementation. Broadler (2010) reported that school administrators who possessed the relevant digital skills and competencies could implement the digital literacy programs in a smooth way as compared to those who did not have.

4.6 Digital Literacy Content for Implementation of Digital Literacy Programs.

The second 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 programs. It was investigated and found that there was digital content.

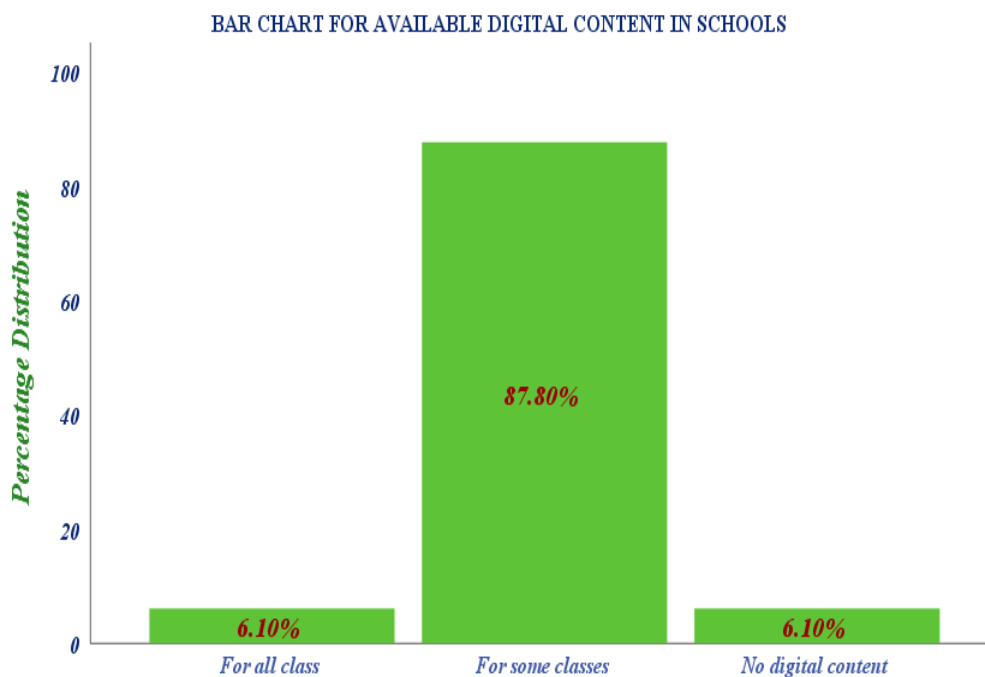


Figure 6 Amount of digital content available

In some classes 144 (87.80%) and very little content was reported in all classes 10(6.10%) and lastly respondents with no digital content showed a percentage of 10(6.10%) as was shown in figure 6. From the results findings have been on provision of digital content for all the classes before the implementation of the digital literacy programs. This could have made the implementations process more effective.

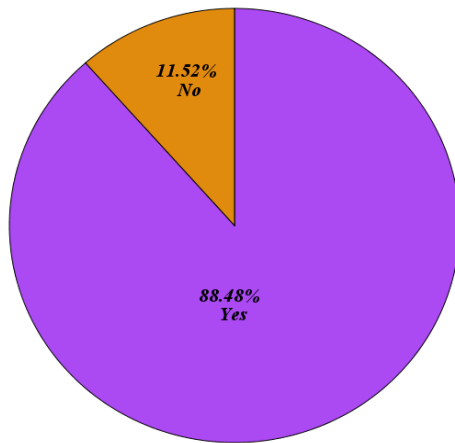


Figure 7 Access of digital literacy content

Findings on whether respondents accessed digital literacy content in their respective schools, showed that 145(88.48%) responded that they could access digital literacy content in their school while 19(11.52%) could not access the content in school. This showed that when the program was rolled out, implementation would be smooth. Since most schools could access digital literacy content in their respective schools, the respondents were asked where they accessed the digital content from. The findings revealed that, 149 (97.4%) got the content from the internet while 4(2.6%) got it from other sources.

Table 3 Level on uses of Digital Content

	Yes		95.0% Lower CL for Row N		95.0% Upper CL for Row N		No		95.0% Lower CL for Row N		95.0% Upper CL for Row N	
	Number	Percent age	%	N	%	N	Number	Percent age	%	N	%	N
Internet	149	97.4%	93.9%		99.1%		4	2.6%	0.9%		6.1%	
Email	40	55.6%	44.0%		66.6%		32	44.4%	33.4%		56.0%	
Word Processing	31	43.7%	32.6%		55.3%		40	56.3%	44.7%		67.4%	
Spreadsheet	28	39.4%	28.7%		51.0%		43	60.6%	49.0%		71.3%	
Microsoft Excel	26	36.6%	26.1%		48.2%		45	63.4%	51.8%		73.9%	
Data Base	23	32.4%	22.4%		43.8%		48	67.6%	56.2%		77.6%	
Microsoft PowerPoint	25	35.2%	24.9%		46.7%		46	64.8%	53.3%		75.1%	
Publishing Software	25	35.2%	24.9%		46.7%		46	64.8%	53.3%		75.1%	

From table 3, 40(55.6%) got the digital literacy content from email while 32(44.4%) got it from other sources. Whether the teachers got the digital content from word processing, 31(43.7%) got the content from word processing while 40(56.3%) got it from other means or sources. 28(39.4%) got their digital content from spreadsheets while 43(60.6%) got the content from other sources.

This showed that the percentage proportion reported was significantly different for those who said Yes and No from the different sources of digital content. According to table 3 26(36.6%) got the content from Microsoft excel while 45(63.4%) got it from other sources. 23(32.4%) got their digital content from Data Base while 48(67.6%) got the content from another sources, 25(35.2%) got their digital content from Microsoft PowerPoint while 46(64.8%) got their content from other sources. Lastly, 25(35.2%) got their digital content from publishing software while 46(64.8%) got it from other sources.

CONCLUSIONS AND RECOMMENDATION

5.1 Introduction

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

5.2 Administrators Skills and Competencies for Implementation of Digital Literacy program

Findings on Administrators skills and competencies for digital implementation of Literacy Programs established that very few respondents said that they used computers daily in their digital literacy learning implementation. This was seen in figure 4.6 where 128 (77.91%) of the respondents said that they did not use computers on daily basis followed by only 36 (22.0%) who said that they used computers on daily basis during the implementation of digital literacy programs.

5.3 Digital Content for Digital Literacy Learning

Findings on digital content and power connectivity for digital literacy programs revealed that some school administrators and teachers in public primary schools lacked the prerequisite degree of digital literacy knowledge. The findings showed that 144(87.80%) of the respondents said that digital content materials were only available for certain classes, followed by 10 (6.10%) who agreed that they had content for all classes and 10 (6.10%) reported that they had no content available.

Most rooms in public primary schools were connected to electricity and had charging points. The study findings revealed that 144(87.73%) got electricity and charging points with only 20(12.37%) not being connected to electricity.

5.4 Conclusions

Based on the findings of this study, it was determined that the majority of public primary schools were uncertain regarding Support provided by school Administrators and attending any Digital Literacy Training, the level of content available for learners in Public Primary Schools, and the type of maintenance and storage of digital devices in the Implementation of the Digital Literacy Program. This was shown by the results of the frequency tables utilized for data analysis in this research.

The research drew the following conclusions: first, some primary school instructors encourage and attended digital literacy training; and second, many primary school students lacked digital material while executing the digital program. Third, the majority of respondents saved digital material throughout the deployment of digital programs on hard drives.

Finally, most public primary schools were connected into power grid. This was shown by the results on the pie chart on the level of power supply in public primary schools.

5.5 Recommendations on Administrators Skills and Competencies

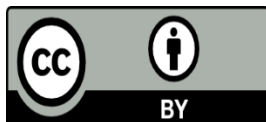
The school administrators needed prior trainings for acquisition of the required prerequisite skills and competencies to handle the digital literacy technologies during the implementation of digital learning. A high percentage of respondents showed that the school administrators did not use computers daily during the implementation of digital literacy measures should have been put in place to ensure proper and frequent usage of the digital devices on a daily basis for this could have boosted the digital implementation in the schools.

5.6 Recommendations on Digital Content for Digital Literacy Learning

Before implementing the digital literacy program fully, the government should have guaranteed that each school had at least one technician. Teachers who provided digital help could not have guaranteed that all learners had access to digital content material needed by the digital literacy program since they had several responsibilities. Therefore, the educators should have been permitted to fulfill first their responsibilities. To supply the needed level of digital content materials to the learners, the digital support needed should consist of ICT-trained experts with at least a certificate level training. All schools without a continuous power supply should be connected to other sources of power such as the solar powered panels in order to support and facilitate any digital literacy learning. Internet access should be made available to the teachers so that they may access other learning resources beyond those offered by KICD. This would allow them to participate in online trainings, online content searching and browsing and enhance their pedagogical abilities.

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