

Teachers' self-efficacy in using ICT towards teaching and learning in mitigating Covid 19 Post pandemic era in Turkana central sub-county secondary schools

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ABSTRACT: *ICT play roles towards achieving Kenyan educational goals through supporting teaching and learning. There was closure of schools following a directive from ministry of education. The pandemic affected teaching and learning in all schools paralyzing education sector. There was need carrying out a study investigating ICT implementation determinants in public schools in Turkana County in mitigating Covid 19. The purpose of the study was to investigate Teachers' self-efficacy in using ICT towards teaching and learning in mitigating Covid 19 Post pandemic era in Turkana central sub-county secondary schools. Study objective was to investigate the Teachers' self-efficacy in using ICT towards academic achievement. The study utilizes a conception framework showing relationships between variables. The study adopted Descriptive survey research design. The target were Secondary school teachers and learners from 20 schools. Saturated sampling was used to sample 20 head teachers and 20 teachers in public schools in Turkana County. Krejcie and Morgan (1970) sample table was used to select learners in checking their progress during the period of Covid 19 through simple random sampling. Data collection was done through questionnaires and interviews schedules. The experts from pedagogy area ascertained validity of the instruments. A pilot study comprising of 10 percent of schools to ascertain the instruments reliability. Data was analyzed through descriptive statistics that include tables, percentages. Findings revealed that the teachers agreed more, that portable ICT forms like iPad, tablets and phone helps their class stay organized and behaved in teaching and learning about COVID-19. ICT has not helped teachers and learners to attain attitude of self-confidence towards teaching and learning during post Covid -19. Furthermore, it has not helped manage situations confidently and effectively about teacher's efficacy in classroom dynamics. The findings conclude that ICT affect the classroom dynamic in teaching and learning about COVID-19, Some do not use them appropriately for learning purpose, It lowers the class dynamics and participation, draws learners attention and Interference with other lessons. The study recommend that Teachers have to undergo extensive ICT training to ensure effective use of the technology in class. The findings will help the ministry of education to improve on the appropriate use of ICT during any pandemic outbreak.*

KEY WORDS: *Self-efficacy, Teaching, Learning, mitigation, covid-19 post pandemic*

INTRODUCTION

In every education system, the use of ICT components plays a crucial role in achieving educational goals globally. Ihurreel (2005) argues that education reform is occurring throughout the world and one of its tenets is the introduction and integration of ICTs in education system. The successful integration of ICTs into the classroom warrants careful planning and depends largely on how well policy makers understand and appreciate the dynamics of such integration as stated in education policy in Kenya. Julie (2012) observes that according to the University of Missouri, Columbia, there are thirteen ways that should be considered when choosing instructional media. Among them is that the identifier is advised to think over the topic rendered by the aid of the relevant media. In addition, the tool should correspond with the students' characteristics

In Spain, Marta & Antoni, (2015) their study focused on exploring the use of educational technology in primary education: Teachers' perception of mobile technology learning impacts and applications' use in the classroom their findings suggest that facilitating access to information and increasing engagement to learning are the two main impacts of mobile technology in the classroom. While there were, glitches associated with learning the new technology, children persisted without becoming frustrated and they were motivated to participate, showed persistence and low frustration in interfacing with the technology. MOE (2020) in Kenya reports that because of the global situation caused by Covid-19 the implementation on Use of different ICT components needs to be researched on to establish the extent to which it can be used as an instructional media in controlling the spread of Covid 19 in Kenya.

Research has revealed that failure of teachers to involve technology in their preparation has negatively impacted its use leading to failure in exams hence illiteracy. The situation of Covid 19 has increased forcing the government to make learners and teachers revert to remote teaching and learning.

This therefore necessitates a research to be carried out on the Teachers' self-efficacy in using ICT towards teaching and learning in mitigating Covid 19 Post pandemic era in Turkana central sub-county secondary schools.

Purpose of the Study

The purpose of the study was to;

To investigate Teachers' self-efficacy in using ICT towards teaching and learning in mitigating Covid 19 Post pandemic era in Turkana central sub-county secondary schools.

Research Objectives

The study objectives was;

To find out the teachers' self-efficacy in using tablets in teaching and learning in mitigating Covid 19

Research Questions

This research was guided by the following question;

What are the teachers' self-efficacy in using ICT towards teaching and learning in mitigating Covid 19 in Turkana county secondary schools?

Significance of the Study

This research investigated Teachers' self-efficacy in using ICT towards teaching and learning in mitigating Covid 19 Post pandemic era in Turkana central sub-county secondary schools.

Findings of the study may provide valuable information for Ministry of education, curriculum developers, and technology companies for future. The syllabus could be improved to have current issues about present diseases in the 21st century and how to cope with them.

LITERATURE REVIEW

Teacher Self-Efficacy on use of ICT in teaching and learning

Researchers have demonstrated that technology integration is essential to meet this goal (Keengwe, Schnellert, & Mills, 2012); however, existing technology infrastructures are often insufficient to develop the desired outcomes of these implementations (Greaves, Hayes, Wilson, Gielniak, & Peterson, 2012). Many current classroom teachers have yet to incorporate technology into their teaching practices. Teachers often do not understand or have the time to spend learning about the functionality of the devices.

With the government of distributing of ICT components determinants of implementation of technology would benefit the government, schools, teachers, and students. It is therefore prudent to investigate the teachers' self-efficacy in using ICT towards teaching and learning in mitigating of Covid 19.

Conceptual Framework

The study utilized a conceptual framework showing the relationship between independent and dependent variables of the study as shown in the figure below;

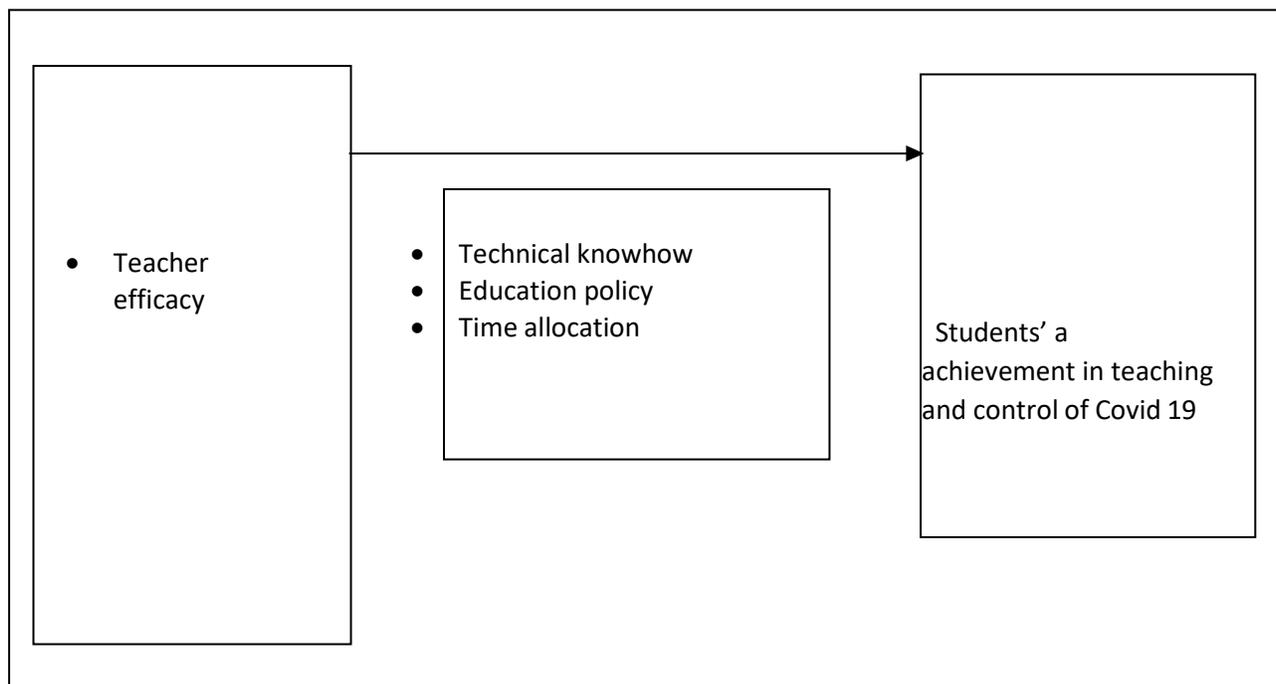


Figure 1; Conceptual Frame work

The above figure shows the relationship between independent variable(Teacher efficacy) and dependent variable (Students' achievement in Teaching and control of covid-19 in post pandemic.

RESEARCH METHODOLOGY

Research Design

The study adopted a descriptive research design. Mugenda & Mugenda (2010) views descriptive design as being concerned with describing, recording and reporting conditions as they exist. Descriptive design was chosen because it allowed in-depth research within a specified time and describe phenomena, as they exist (Cohen, Manion & Morrison, 2000).

Target Population

The target population of the study comprised of teachers of public secondary schools in Turkana central sub County in Kenya. Head teachers and classroom from 20 public secondary schools.

Sample size

Saturate random sampling was used to select a sample of 20 Schools from the country where by 20 public secondary school head teachers from the selected schools.

Although there are different opinions about the required number of samples, this research observed appropriate move to obtain the right sample that saw the entire population represented.

Instruments of Data Collection

Questionnaires

A questionnaire to the teachers who teach in public secondary in Kenya were used; they comprised both open and closed ended questions.

Interviews

Structured interview schedule was used to get information from Head teachers of the sampled public secondary schools will be interviewed to gather information and understand their diverse opinions on utilization of ICT in trying to control the spread of Covid 19.

Validity of Instruments

(Kothari (2019) define validity as the extent to which a test measures what it is supposed to measure. Face and content validity was ascertained for the research instruments. It involved asking research specialists about the nature of statements in the questionnaires

Reliability

Measuring of how consistent the results from a test is termed as reliability. A pilot study was done to ascertain reliability of instruments. Kothari (2019) recommend obtaining 10% of the population size of the study size.

FINDINGS OF THE STUDY

The study objectives was to find out the teachers' self-efficacy in using tablets in teaching and learning in mitigating Covid 19. The findings are presented below;

School Principals' responses

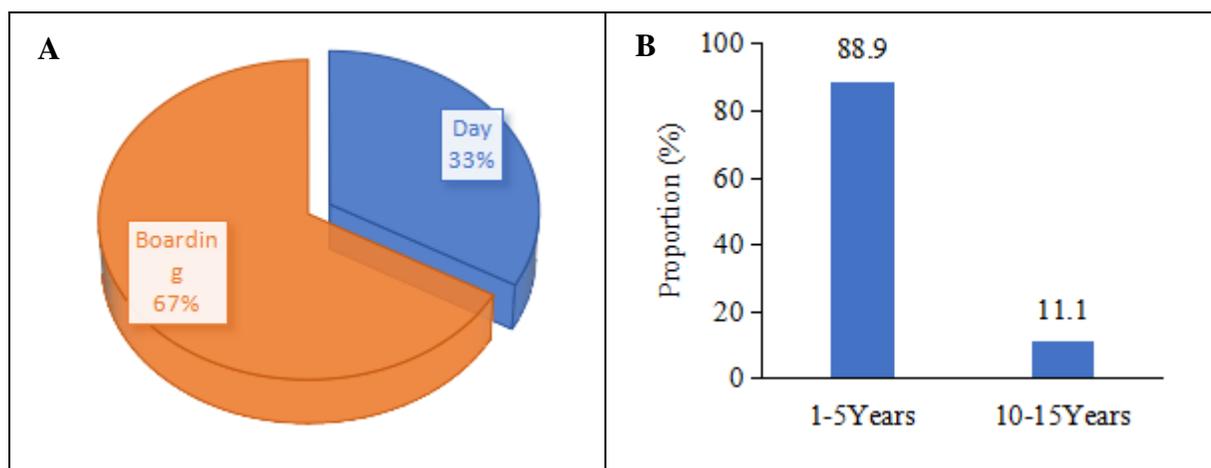
Respondents profile

Type of school and work experience as a principal

The data collected showed that the 67% of the respondents are principals in a boarding school while 33% were from Day schools (Figure 1A). In terms of the respondents' years of experience as a principal, majority of them (88.9%) had between 1-5 years while 11.1% had between 10-15 years of work experience (Figure 1B). All (100%) of the respondents had a Bachelor of Education degree as the highest education level.

Trained on ICT and training facilitator

In terms of ICT training, 41.7% of the principals had trained on ICT while 58.3% had no training on ICT (Figure 1C). Out of those with ICT training, most of them (60%) had individually planned for the training while 40% were trained through the ministry of education (Figure 1D).



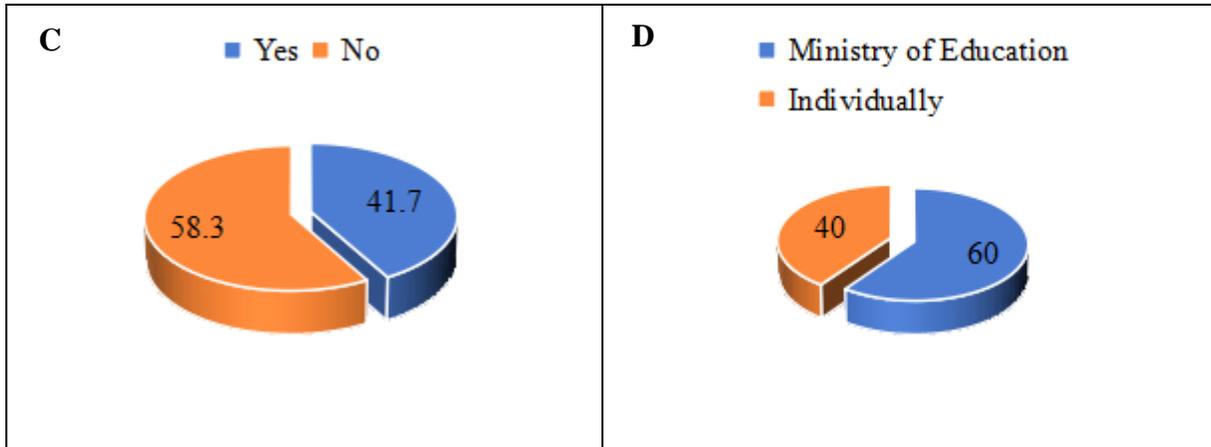


Figure 1: Type of school (A) and work experience (B), trained on ICT (C) and ICT training facilitator (D).

The school principals reported that since the introduction of ICT, they have noticed a positive attitude of the teachers towards teaching and the parents are willing to support their children education though it is expensive.

Internet connectivity and computer laboratory

Two-thirds of the school under this study reported that they have internet connectivity while one-third (33.3%) did not have internet connectivity (Figure 2A). Similarly, majority (83.3%) of the schools have a computer laboratory (Figure 2B).

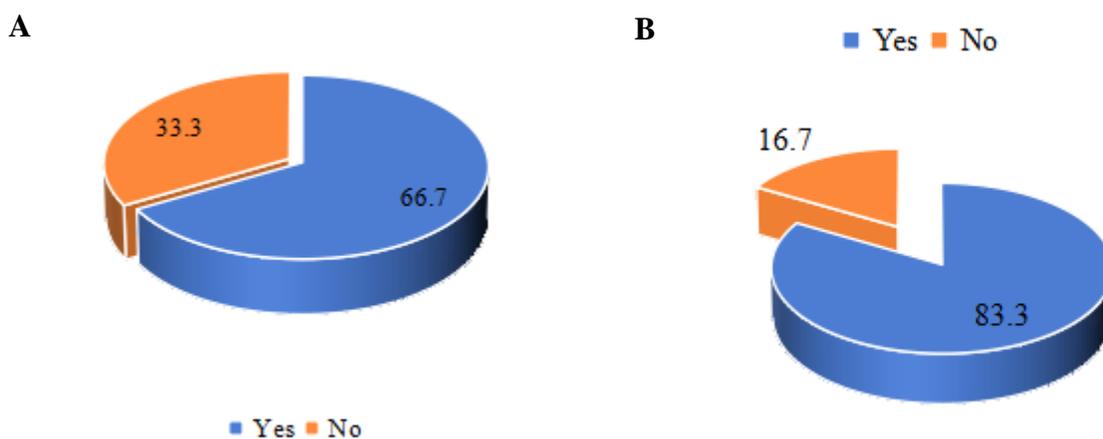


Figure 2: Internet connectivity (A) and computer laboratory (B).

How internet connectivity is benefitting learners

The school principals reported that internet connectivity benefited the students in the following ways;

- The learners use the internet for searching for their study relevant materials, assignment, quizzes, presentation and all study materials available on the internet.
- Helps them during research classes especially those undertaking computer studies
- Access to revision materials
- It develops learners to have more knowledge and skills of using ICT resources.
- Get information easily concerning learning and equip them with knowledge and skills on technology.

Teachers Responses

PART A: Demographic information

A smaller proportion (45%) of the teachers were trained on the use of ICT compared to 55% who were not ICT-literate (Figure 3A). Out of the teachers with ICT training, only 20% were facilitated for the training by the ministry of Education while the rest (80%) individually facilitated their ICT training (Figure 3B).

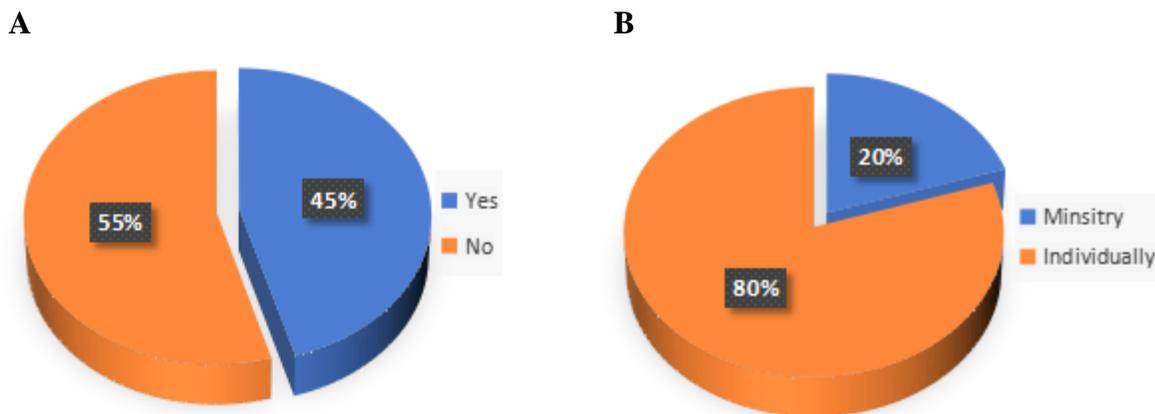


Figure 3: Trained on ICT (A) and facilitator (B)

PART B: How ICT is used

Grade 12 learners

The number of students in grade 12 ranged from 28 to 188 students with a mean of 70 students per school (Table 1).

Table 1: Grade 12 learners

	Minimum	Maximum	Mean	Std. Deviation
Grade 12 learners	28	188	70.50	52.433

Use ICT in teaching and learning COVID-19

Among the teachers surveyed in the schools, only 36% confirmed that they use ICT in teaching and learning COVID-19, while 64% did not (Figure 4).

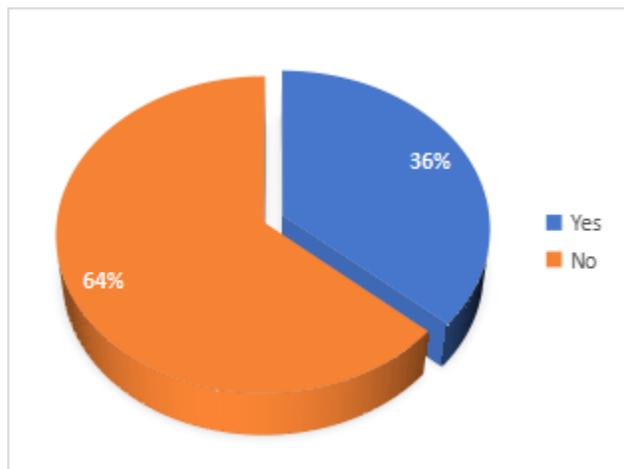


Figure 4: Use of ICT in teaching and learning about COVID-19

The ICT forms used included the following;

- Computers
- Projectors
- Mobile phone
- laptop

PART D: Teachers self-efficacy in using ICT in Teaching and Learning

Ways ICT affect the classroom dynamic in teaching and learning about COVID-19

- Some don't use them appropriately for learning purpose
- It lowers the class dynamics and participation
- Draws learners attention
- Interference with other lessons
- Created awareness
- Breaking class monotony
- Minimized concentration span due to less physical contact
- It minimizes contact hence control of COVID
- Learners always concentrate on other social media issues
- Consume study time
- It improves the effectiveness of education
- Gives more information on the COVID 19 causes and how to prevent it
- learners are able to use ICT to access information easily in their homes and in schools

ICT class participation

- They are more attentive
- Very low
- Poor class participation
- They are keen
- Active
- Below average
- Good
- Very good
- Students are active during ICT lessons, and they participate maximum

Do you believe ICT has affected your teaching and learning self-efficacy since start of COVID?

A significantly higher proportion (81%) of the teachers believed that ICT has affected their teaching and learning efficacy since the start of COVID-19 (Figure 8).

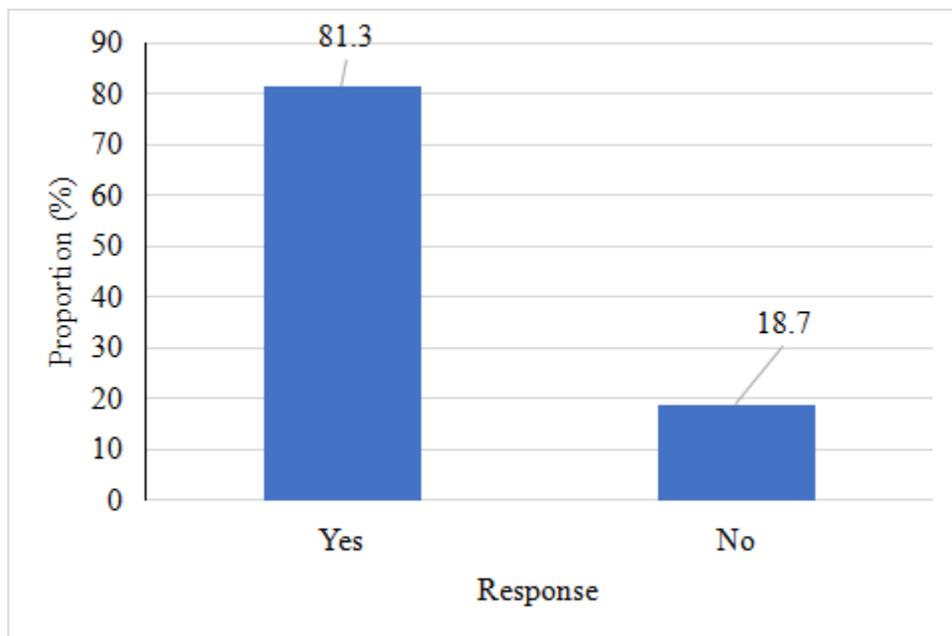


Figure 8: Do you believe ICT has affected your teaching and learning self-efficacy since start of COVID?

The teachers were asked to rate their self-efficacy in teaching and learning concerning the spread of COVID-19 using a scale of 1-5 with 1=strongly disagree and 5=strongly agree. Results show that teachers agreed more that portable ICT forms like iPad, tablets and phone helps their class stay organized and behaved in teaching and learning about COVID-19 (Table 4).

Table 4: Efficacy in teaching and learning concerning the spread of COVID 19

	Min	Max	Mean	S.D
ICT contain all the content I need to teach about COVID-19	1	5	3.0	1.465
Portable ICT forms like iPad, tablets and phone helps my class stay organized and behaved in teaching and learning about COVID-19	1	5	3.1	1.195
ICT has the capability to attain set goals by ministry of education concerning information about COVID	1	5	3.0	1.161
ICT has helped me and my learners have attitude of self-confidence towards teaching and learning of COVID-19	1	5	2.9	1.640
ICT helps manage situations confidently and effectively during the period of COVID spread	1	5	2.9	1.136
Use of ICT helps learners in their literacy achievement on various diseases like COVID and others	1	5	3.0	1.532

DISCUSSIONS

Access to ICT forms and connectivity

Findings from this study showed that the integration of ICT in learning at the schools is hindered by inadequate access to the ICT forms ranging from the computer hardware to internet connectivity. Previous studies have reported similar findings. For instance, according to Sicilia (2005), technical problems slow Internet, failing to connect to Internet, malfunctioning computers and printers as well as old and slow computers were found to be a major barrier for teachers. Breakdown of a computer causes interruptions and if there is lack of technical assistance, then it is likely that the regular repairs of the computer will not be carried out resulting in teachers not using computers in teaching. The effect is that teachers will be discouraged from using computers because of fear of equipment failure since no one would give them technical support in case there is technical problem (Buabeng-Andoh, 2012). This is bound to affect the smooth delivery of lessons as pointed out by Gomes (2005) who argues that if an ICT technician is not available to solve the issues, the teachers will be afraid of using the computers. Moreover, Kukali (2013) asserted that most rural and informal urban settings may have barriers such as; lack of electricity and internet connection, poor attitude towards its use as a result of lack of ICT skills, parental illiteracy and high cost of purchasing computers. Further, a study by Langat (2015) found out that, infrastructure and ICT equipment shortages were among the challenges facing the implementation of ICT in Kenyan schools.

Management support

Successful integration of ICT in the teaching and learning depends to a large extent on the support given by the school management to the teachers and students. Maithya and Ndebu, (2011) asserts that culture developed within an institution can act as a barrier to change. According to Kara (2008), management of ICT should involve continuously reviewing and putting in place the most appropriate ways of exploiting ICT, acquisition and utilising new ICT required by an organization. Menjo and Boit (2009) found out that the major challenges faced by the schools which have contributed to the limited use of ICT in school administration included lack of adequate training on ICT for teachers and administrators, limited computer hardware dedicated to administrative work, lack of time and absence of appropriate administrative software.

Lack of time to learn and use ICT in classroom teaching

From the present study, most teachers mentioned that they lacked enough time to teach and integrate ICT in their classroom teaching and therefore both teachers and students lack enough time to work on integrating ICT in their lessons. Similarly, Kozma et al., (2004) mentioned that lack of time available in classes, and in teachers' own schedules for planning is a major factor influencing ICT integration in teaching science subjects. Further, a study carried out in Saudi Arabia shows that time is an important factor affecting the application of new technologies in science education and is attributed to busy school schedules (Al-Alwani, 2005). In Kenya, teachers rated lack of time as one of the most problematic

factors to technology utilization in schools. They further said that mastering technology requires time (Kukali, 2013).

Teacher's inexperience and attitudes towards ICT

Teachers are key to the success of ICT integration in education. They must be equipped with basic ICT skills to meet their individual administration and teaching requirements. This study revealed that the teachers did not feel confident in using ICT during teaching. Wanjala et al. (2011) carried out a study in Bungoma, Kenya argued that to adopt any educational technology effectively; teachers must feel confident in its operation and their own ability to use it in classroom instruction. Studies have revealed that teachers who are inexperienced or not confident in using ICT will most likely avoid using it in the classroom for fear of failure (Bingimlas, 2009). Drent and Meelissen (2007) conducted a study on the use of ICT by teachers in classroom instruction in Netherlands and found that positive ICT attitude has direct positive influence on the innovative use of ICT by the teacher.

Teachers have to undergo ICT training to ensure effective use of the technology in class. Among the principals and teachers interviewed in this study, a proportion of them underwent the ICT training organized either by the ministry of Education or by themselves. However, previous studies indicated that the training did not equip the teachers well. For example, a study by Muinde and Mbataru (2019) in Machakos County, found that 85% of teachers had received ICT training from the ministry of education. However, 62.3% of the trained teachers felt that the training was not appropriate for teaching and learning. Similarly, Majumdar (2005) observed that most teachers who receive ICT training as part of the professional development programs still lacked the self-reliance needed to integrate ICT in teaching and learning because in most cases due to time limitations the training only focused on computer applications. A study conducted by Karsenti et al. (2012) revealed that various factors hindered the integration of ICT and included the perception of ICT by teachers as time-consuming and as an additional workload, technophobia by older teachers, and teachers' inadequate ICT expertise among others.

CONCLUSION AND RECOMMENDATIONS

The study findings conclude that that the integration of ICT in learning at the schools is hindered by inadequate access to the ICT forms ranging from the computer hardware to internet connectivity. In addition, the findings revealed that the teachers did not feel confident in using ICT during teaching. Less than 40% of principals and teachers interviewed in this study, a proportion of them underwent the ICT training either organized by the ministry of Education or by themselves.

Recommendations

Ministry of education have to put it mandatory for teachers to undergo ICT training to ensure effective use of the technology in class. This will enable teachers to cope with emerging trends in education system in Kenya.

Research for further study

A study should be carried out to investigate the influence of Government implementation of ICT on educational achievement for the vision 2030

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