



Evaluating the Availability of Information and Communication Technology in Primary Schools in Kikuyu and Kabete Sub-county, Kiambu County, Kenya

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Abstract: *The introduction of technology in the management of learning has improved many schools in Kenya. The study sought to evaluate the availability of Information and Communication Technology in primary schools in Kikuyu and Kabete Sub-county, Kiambu County, Kenya. The study used concurrent triangulation research design. The target population was 5549 people that work in Primary school with a sample of 240 respondents selected from 20 schools using stratified and random sampling. The analyzed data revealed that several learning and teaching related processes like those that involve responding mechanisms, attention, perception, application of learning and understanding are favored by the use of ICT. Also, some of the proposed processes like interaction processes and expression and communication skills were poorly valued as they were not held in high regard by the teachers because they have considered ICT as being commonly used in a one-way mode. The government should provide the necessary equipment for ICT to the primary schools in order to enhance the implementation in the primary schools with a focus on evaluating classrooms.*

Keywords: Technology, Learning values, Preparedness, Management, Schools

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1. Introduction

Educational institutions world over has revolutionized the way they manage their data in which processing computer based information systems have been adopted as a tool to support managers in their duties (Ghavifekr et al., 2013). Ghavifekr et al. (2013) points out that despite the success registered in the use of information technology in other sectors of economy, educational institutions have lagged in the integration of computers for school's management purpose and can be evaluated

in classrooms. Information and Communication Technology under pins the use of modern science and developed innovations of both hardware and software that relate to such devices as installation of general computers, mobile pads and any computer related extensions. This gives an opportunity to take up leadership roles in developing innovation of technology for children in a school (Career Communication Group, 2021). Studies conducted in developed countries in USA, the United Kingdom, France and Canada indicate that Information and Community Technology (ICT) has the potential of improving the efficiency and

effectiveness of school management of administrative duties (Fu, 2013).

Such studies have been carried out on the ICT and education sector by (Fu, 2013; Murithi & Yoo, 2021; Verónica Alderete & Marta Formichella, 2016) have been general or have failed to give detailed insights on the use of technology management in Institutions of learning. Although these studies, among others, attained their objectives, they did not delve into the use of technology management on schools or in classrooms. There is a paucity of published work on use of technology management on academic performance of students, particularly in the context of developing countries in the dynamic African region and specifically in Kenya. Teachers with adequate and professional skills in ICT utilization might definitely have their students perform better in classroom learning.

Information and Communication Technology has the potential to be used to support new pedagogical methods; as tools enabling students' learning by doing and could make it possible for teachers to engage students in constructivism learning experiences, and also test students learning in new, interactive, ways that may better assess deep understanding of content and processes. Improved assessment tools can also be developed using ICT (Hennessy et al., 2010). Such assessment could engage students in tasks that require data manipulation, simulation or other interactive acts of knowledge constructivism.

The introduction of technology in the management of learning has improved the management of many schools in Kenya. According to the Ministry of Education (2008), prior to the introduction of technology, teaching in schools involved a lot of paper work which was a slow and tedious process. Technology in education gives students opportunities to collaborate with their peers which facilitates learning among students. A combination of these factors has led to a positive impact on student learning and integration (Darling-Hammond et al., 2020).

Globally, education has been recognized as an important means for promoting economic and social development both at individual and national levels. The growth of the global economy and the information-based society has pressurized education systems around the world to use technology to inculcate knowledge and skills among students (UNESCO, 2013).

The use of technology provides communication facilities such as text messages that enables learners to exchange ideas and views and get clarification of any topic from with different experts, practitioners so as to broaden their information base (Jesse et al., 2016). In education, technology assists teachers to provide a variety of presentations which improve the learners' ability to concentrate, and long-term retention and application of knowledge.

Adeoluwa et al. (2013) states that ICT encompasses the broad fields of information and communications by means of computer and telecommunication; tools that are being increasingly used for organization or personal

information processing in all sectors of economy and the society as a whole.

The field of education has been influenced by technology, which has undoubtedly influenced teaching, learning, and research (Al-Ansari et al., 2014). ICT has the potential to innovate, accelerate, enrich, and deepen skills, to motivate and engage students, to help relate school experience to work practices, create economic viability for tomorrow's workers, as well as strengthening teaching and helping schools to change (Oyedemi, n.d.). According to Dzakpasu & Adom, (2017), much has been said and reported about the impact of technology, especially computers for management, learning in education. (Hepp, 2004) emphasize that ICT has been utilized in education ever since its inception, but they have not always been massively present.

According to Youssef & Dahmani (2008) there is no standard definition for student performance. The standard approach focuses on achievements and curricula, how students understand the courses and obtain their grades or their marks. The narrow definition allows the observation of the outcomes of any change in education, while the more extensive definition needs a more complex strategy of observation and a focus on the labour market. The outcomes of education are mainly validated in the labour market (Rockoff, 2004).

The use of ICT in the education sector is currently the lowest in Africa, and dire in Sub Saharan Africa (SSA), where it lagged behind most of the countries in the developed world. Attempts to assess the utilization of ICT in Africa have been hampered by insufficient empirical data to indicate any impact of ICT on sector productivity and lack of cross-country evidence.

The overriding rationale for introducing computers in Kenyan schools management has either been societal rationale where students are trained to fit and operate in computer society or vocational rationale where students are to be equipped with skills required by the computer driven job market (Mutisya & Makokha, 2016; Tarus et al., 2015; Wanjiru, 2013). The introduction of information technology to support administration does not seem to be significant.

Statement of the problem

Education institutions in Kenya have experienced rapid computerization partly due to government and partly due to donor funding. Despite sensitization programs and availability of computers for management in most primary schools in Kikuyu and Kabete Sub-County, there is minimal integration of ICT in school's management in Kiambu County. While conducting research in Kenya on a project called *Sema* on the use of Education management information system in Central Kenya where Kiambu County falls, (Traxler, 2007) observed that most primary schools still provide regular statistical returns to district and provincial offices through letter posts, couriers or by telephone

conversation, the author note that these methods are potentially slow, expensive and prone to errors.

Integration of ICT in school management is based on the assumption that ICT is already an integrated part of school data processing at all levels (Ghavifekr et al., 2013). This is not the case in primary schools in Kiambu County as there is no effective and rapid access to information from schools giving rise to the notion that there are incentives and barriers at work hampering integration of ICT and as part of infrastructure such as computers in school management evaluated in classrooms. The basis is to integrate educational technology also known as instructional technology into the education system and provides access to innovations in technological equipment and skills (Omariba et al., 2016). Zaki, A. & Issa G. (2013) defined as educational technology as the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources. In this context and using Zaki Amarin Rima Issa Ghishan, (2013) definition of educational technology, it is crucial to find out whether the use of technology management carried out by schools in Kenya has any influence on academic performance of students if utilized in a classroom.

A number of studies carried out on the ICT and education sector such by Fu, 2013; Murithi & Yoo, 2021; Verónica Alderete & Marta Formichella (2016) have been general or have failed to give detailed insights on use of technology management on academic performance of students'. Although these studies among others attained their objectives, they did not delve into the use of technology management on academic performance of pupils. There is a paucity of published work on use of technology management on academic performance of pupils, particularly in the context of developing countries in the dynamic African region and specifically in Kenya. This study intends to bridge this gap in knowledge that exists.

Arguably, access to technology is one of the key elements necessary for integrating technology into management of learning in schools. However, the technology in question is not readily available and physically inaccessible while statistical returns between schools and agencies such as District Education Board (DEB), Kenya National Examination Council (KNEC), Teachers service Commission (TSC) among others are done manually making production of information slow and prone to errors. Therefore, this calls for a study on the influence computers as part of the infrastructure used in ICT on the management of learning in primary schools in Kenya. The purpose of this study therefore was to evaluate the availability of ICT in primary schools in Kikuyu and Kabete Sub-county, Kiambu in Kenya.

2. Literature Review

Schools Technological infrastructure

Obtainability and use of technology for management to teachers and learners in schools will determine the part that technology plays in the classroom. (Verónica Alderete & Marta Formichella, 2016) formerly saw that scholars could use computers to help them break out of the walls of the classroom to partake and have access to all the awful information and experience that was now possible. Quality of education can be achieve through embracing SDG's and lifelong learning (English & Carlsen, 2019). Dzakpasu and Adom, (2017) state that the measure of technology training was one of the formal predictors of technology for learning management use. Still, it was intriguing to note that training was concentrated on tutoring introductory skills rather than addressing the integration of ICT for learning and management in the classroom. Regarding technology for learning vacuity, (Bladergroen et al., n.d.) state that availability of ICT for learning management was a crucial factor in precluding teachers from using technology for learning in their instruction management. Strategies towards hindrances have proved to be sources of enablers towards achieving an education which has ICT (Tarus et al., 2015). Darling-Hammond et al., (2019) agrees that access to technology can enkindle students' " studies and ultimately move them towards a better learning experience. It was significant to collaborate in this study whether conclusions similar as these hold in the Kenyan environment.

Availability of technology should enhance the easy use of computers as scholars and teachers likewise accordingly employ them more frequently. MoE, (2015) realizes that access to technology in schools was supported by parents, development agencies similar as NEPADe -schools programme and the private sector. This support takes the form of donations of technology in form of tackle from the corporate world or backing of the acquisition of corresponding hardware and software. Still, access to technology could be largely bettered if it was the government's responsibility to ensure that all schools have the needed technology. This was because the private sector cannot be put to task by the government for its inequitable distribution of the technological resources. The most introductory educational administrators were the classroom teachers who were the mortal resource when it comes to the use of teaching resources. Packard, (2003) notes that achieving quality in teaching and learning depends mainly on making learning resources similar as the computer as accessible and interactive as possible. Packard, (2003) also brought out the fact that the position of organizational support given to a

technology for learning management was critical to its long-term success.

Changes in executive structures and procedures, bettered specialized support for staff and students, and fresh staff development and training were supported by (Oyedemi, n.d.). With the Researchers similar as Rutten et al., (2012) suggest that technology continues to be underutilized in numerous schools. Statistics on access to technology in schools tell us little about the quality and quantity of learner and teacher commerce with computers (Darling-Hammond et al., 2019). There was a need to measure the quality and volume of use of technology in our schools; this research aimed at being the starting point as it sought to ascertain whether computers were available and used by teachers and learners of Business Studies. Although ICT for operation may have been available in schools, only a few teacher use them (Fu, 2013). Could this be the situation indeed moment in Kenya for Business Studies? The experimenter hoped to get an answer to this question. Teachers can play a vital part in exposing students to computer technology for learning management by demonstrating how to use it effectively for teaching and learning. Teachers can only play this part if they were well-equipped and confident that the technology for learning operation was salutary. One purpose of this study was to find out why other researchers similar as Waweru et al., (2017) concluded that computers for operation were underutilized indeed when they were available. It'll also test availability of computers for management in Westlands secondary schools. Some researchers while considering an important aspect of development for us all, play had a central role in the development of children. Children spend a lot of their time in school. In this school learning takes center stage because they study hard and play hard. In this system some ICT proved some aspects to play and may give avenues generalities that can be tutored in class with what is out in the real world. With the use of technology infrastructure, the gap to be associated with numerous contents was bridged by use of technology. This study may have to establish the nature of hardware that can be utilized by learners to impact on their general future. The variety of technology can be employed to give the ends in literacy. Also, the mechanisms through which ICT with good learning programs can inescapably yield to great use in recaps for assignments which may affect in influences for development (Hixon & Buckenmeyer, 2009). Hepp, (2004) had argued that the toys children use with technology with — whether they be pads, Mobile phones or gaming gadgets — help them make sense of their worlds and were essential to their development. Plainly, hardware were decreasingly products of a globalized consumer culture, but in children's hands, Fleming suggests, children have the capacity to escape the conceptions of gender and power that these gadgets occasionally supposedly produce. Majority of these technologies were missing in the East African request which would have an impact on this study in establishing the availability and the potential to manage

the infrastructure. Also, the study by Dyson (1997) of children's story-making, using superheroes and characters drawn from the media, suggests that these act as a prism in which images of power and gender were restated into children's worlds, rendering them more complex and helping them deal with the antithetical pressures of growing up in a multilateral society. The researcher believes that the availability and use of ICT for management should be worth probing because technology for management in education had the capability of replacing so numerous teaching technologies similar as wise charts, resource persons, and textbook and indeed to some extent real events and effects. The versatility of the technology for learning operation in tutoring general studies and other subjects was amazing, if only its availability and application could be well known.

Theoretical Framework Guiding the Study

This study was pegged on the systems and transformational theories. The proponents of these theories who applied social system concept to educational administration were (Ballantine & Spade, 2009). The theory's proposition was that the teams (principal, teachers, parents and pupils) in a school need to cohesively work together to achieve the school goals. School modern computer skills were perceived to be a technological integration and one main role of the school administration was to intertwine the demands of the institution, staff learners and students in such a way that they were all geared towards the organization and individual success. It was noted that involvement of students in modern computer skills on matters affecting education, allowing students to extend their learning experience and integrating and instructional preparedness, it will help in the learning and financial management of schools. Steffek (2021) argues that organized institutions don't live in utopia but it depended on their internal and external environment. The use of technology for learning management was an example of the internal environment of school which may influence how schools were managed for integrating and instructional preparedness. The inputs emanating from the external environment include people, capital, skills and stakeholders demands. Jesse et al., (2016) reflect an understanding of modern computer skills as social control and advancing on integrating and instructional preparedness. This means that if the pupils have right on the way their careers change, then it means they was able to participate on matters affecting them in the school learning and management.

The implication of this theory to the present study lies on the fact that learning and management of learning institutions was mediated by the use of technology in integrating and instructional preparedness management of issues. The school learning and financial management structure should be set in such a way that all stakeholders were involved in the learning experience

on matters affecting them through their representatives who have well defined roles in learning to maximize on integrating and instructional preparedness of such institutions. To primary schools, use of technology aspects like use of technology, clear modern way of motivating young leaders, various learning experience systems and integrating and instructional preparedness use of technology for learning management to perform their roles were noted to have implications on how school were managed. This means that these were not aspects which can be taken lightly and need to be incorporated in use of technology which had implications on the learning and management of schools. The theory was appropriate to the research because it enabled the reader to understand how learning and management of learning institutions was significantly influenced by the involvement of the use of technology for learning managers who were key stakeholders in primary school

Methodology

The study involved use of mixed methodology. Both qualitative and quantitative research methods was used during the study. A qualitative research method involves a study where answers to questions are sought by using

well defined procedures to get evidence and findings which are not determined earlier. It is noted that qualitative research is most effective when dealing with intangible factors like; education norms, education economic status, gender roles, religion among others (Apuke, 2017). This study adopted a descriptive survey aimed toward investigating organizational factors influence of computers for management within the management of learning in primary schools in Kikuyu and Kabete Sub-county. It targeted the primary school head teachers, BOM members, and teachers in Kikuyu and Kabete Sub County. There were 134 head teachers in the 134 schools in the sub county, 859 teachers, and 1,742 BOM members with each school having 13 members with each school in the sub county having 21 members. The total target population for the study was 5,549. Stratified, simple random and purposive sampling methods was used to obtain a sample size for the study.

3. Results and Discussion

Evaluation of availability of technology in primary schools in Kikuyu and Kabete Sub-counties

Table 1 shows the teachers, BOM and student on the rating of evaluation of availability of technology in primary schools.

Table 1: BOM rating on the evaluation of availability of technology in primary schools

Test item	SA		A		N		D		SD	
	N	%	N	%	f	%	f	%	N	%
Teachers always use technology for administrative works such as marksheets etc	13	43.3	7	23.3	5	16.7	2	6.7	3	10.0
School administration provides technology for better learning in Lessons and class management in in your learning institution	7	23.3	14	46.7	2	6.7	2	6.7	5	16.7
There was clear policy and guideline on administration practice and the use of technology	10	33.3	10	33.3	4	13.3	4	13.3	2	6.7
Most of the school staff always have technology uses for administration and management of learning process.	13	43.3	8	26.7	5	16.7	1	3.3	3	10.0

From the table 1 13(43.3%) of the respondents strongly agreed that teachers use technology for administrative works such as marksheets etc. This was very true since the applications such as Microsoft Excel which was used as spreadsheet to tabulate the results of the students while 7(23.3%) agreed, 5(16.7%) were not aware if the teachers used technology in administrative works while 2(6.7%) both disagreed and 10.0% of respondents totally disagreed that there was use of technology by the

teachers in their administrative work. 14(46.7%) of the BOM' respondents indicated that the school administration provides technology for better learning in Lessons and class management in in your learning institution, while 7(23.3%) strongly agreed, 2(6.7%) of the respondents indicated as neutral and strongly disagreed while 5(16.7%) of the respondents disagreed with this. A total of 10(33.3%) indicated that there was a clear policy and guideline on administration practice

and the use of technology, while 10(33.3%) strongly agreed for the case of neutral and disagree was indicated by 4(13.3%) while strongly disagree had a total of 2(6.7%). The analysis found out that 13(43.3%) respondents strongly agreed the school staff always

have technology uses for administration and management of the learning process, a total of 8(26.7%) of respondents indicated agreed scale while 5(16.7%) had a neutral agenda. A total of 1(3.3%) of the BOM indicated that the same case strongly disagreed.

Table 2: Teachers rating on the evaluation of availability of technology in primary schools

	SA		A		N		D		SD	
	F	%	F	%	F	%	F	%	F	%
Teachers always use technology for administrative works such as mark sheets etc.	27	35.5	29	38.2	11	14.5	5	6.6	4	5.3
School administration provides technology for better learning in Lessons and class management in in your learning institution	23	30.3	37	48.7	6	7.9	3	3.9	7	9.2
There was clear policy and guideline on administration practice and the use of technology	15	19.7	33	43.4	21	27.6	5	6.6	2	2.6
Most of the school staff always have technology uses for administration and management of learning process.	28	36.8	21	27.6	17	22.4	5	6.6	5	6.6

From table 2 it indicated that 29(38.2%) of teachers agreed that teachers always use technology for administrative. A similar vice was observed where teachers agreed 37(48.7%) that school administration provides technology for better learning in Lessons and class management in your learning institution while 3(3.9%) disagreed. 33(43.4%) of the teachers agreed that there was a clear policy and guideline on

administration practice and the use of technology while 2(2.6%) strongly disagreed that there was a policy and the use of technology. Most of the school staff always have technology uses for administration and management of learning processes with 28(36.8%) strongly agreed, 21(27.6%) agreed and 6.6% disagreed and strongly disagreed.

Table 3: The decision and use of technology in the school

Respondent	Test item		N	%
TEACHERS	Who decides on the use of technology in your school	Administration	44	57.9%
		Teacher	15	19.7%
		Facilitator in use of technology	14	18.4%
	Who was your uses technology for administration in the use of technology	Students	3	3.9%
		Administration	37	48.7%
		Teacher	17	22.4%
BOM	Who decides on the use of technology in your school	Facilitator in use of technology	20	26.3%
		Students	2	2.6%
		Administration	20	66.7%
	Who was your uses technology for administration in the use of technology	Teacher	3	10.0%
		Facilitator in use of technology	5	16.7%
		Students	2	6.7%
		Administration	16	53.3%
		Teacher	9	30.0%
		Facilitator in use of technology	5	16.7%
		Students	0	0.0%

From the research it indicated that administrator was the one that decides who on the use of technology in your school with 44(57.9%) in teachers, similarly to be BOM with 20(66.7%) of the respondents. Similarly, the administration worn while testing on the usage of technology for administration in the use of technology

with teachers indicating administration 37(48.7%) of the respondents, 16(53.3%) of the BOM.

Regression analysis on the evaluation of availability of technology in primary schools in Kikuyu and Kabete Sub-counties

Table 4: Model summary on the evaluation of availability of technology in primary schools

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.876 ^a	.767	.751	.21938

From table 4 it indicated an R squared of 76.7% where it shows that the data used was fully explained while

trying to test on the evaluation of technology in primary school.

Table 5: ANOVA summary on the evaluation of availability of technology in primary schools

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	13.488	6	2.248	46.708	.000 ^b
	Residual	4.091	85	.048		
	Total	17.579	91			

The table 4 represents the Model summary, ANOVA Model and Regression summary for the evaluation of availability of technology in primary schools.

value 2.21 at (85,6) degree of freedom hence making us to fail to reject that there was a statistical significance on the evaluation of availability of technology in primary school.

From the ANOVA model summary above it indicated an f-value of 46.708 which was greater than the table

Table 6: Regression analysis on the evaluation of availability of technology in primary schools

Model		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.901	.084		10.740	.000
	Who decides on the use of technology in your school	.041	.026	.088	1.562	.122
	What was your use of technology for administration in the use of technology	.025	.027	.052	.922	.359
	Teachers always use technology for administrative works such as marksheets etc.	.197	.030	.510	6.578	.000
	School administration provides technology for better learning in Lessons and class management in in your learning institution	.080	.031	.206	2.603	.011
	There was clear policy and guideline on administration practice and the use of technology	.161	.027	.366	5.933	.000
	Most of the school staff always have technology uses for administration and management of learning process.	.006	.023	.015	.241	.810

From table 6 on the unstandardized coefficients, teachers always use technology for administrative works such as marksheets etc. had the highest impact towards determining availability of technology in primary schools and Most of the school staff always have technology uses for administration and management of learning process showing the lowest coefficient. The below multiple linear regression was formulated;

$$y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + \beta_6x_6 + \varepsilon$$

$$y = 0.901 + 0.041x_1 + 0.025x_2 + 0.197x_3 + 0.080x_4 + 0.161x_5 + 0.006x_6 + \varepsilon$$

x_1 = Who decides on the use of technology in your school?

x_2 = Who decides your uses of technology for administration in the use of ICT?

x_3 = Teachers always use technology for administrative works such as marksheets etc.

x_4 = School administration provides technology for better learning in Lessons and class management in in your learning institution.

x_5 = There was clear policy and guideline on administration practice and the use of technology

x_6 = Most of the school staff always have technology uses for administration and management of learning process.

Thematic Analysis on the evaluation of availability of technology in primary schools in Kikuyu and Kabete Sub-counties

Some of the teachers indicated the way some of the staff use technology for administration that influence

learning and management in this school where they indicated that.

“Some of the staff may memorize the notes which will give them to students where in the practical bit there will be no existing skills for ICT development as learners develop”.

This created a problem with the ICT implementation since these were the next employers in the society. This finding conceded with the research done by (Jonassen, 2000). The research concluded that the ICT was lower expectations on the part of the teachers as long as the skills have been acquired this will help to implement and pass them to the students hence will improve the implementation of relevant ICT infrastructure for all stakeholders with a larger margin targeting both learners and teaching staff captured in the entire primary education system.

5. Conclusion and Recommendations

5.1 Conclusion

High percentage of teachers indicated that they strongly agree that the use of technology for administrative work where the main components used were Microsoft word in tying of documents and Microsoft Excel while feeding in the students results i.e., student’s performance grading where 42.1% strongly agreed. From table 2 highest percentage of the BOM indicated similar case that teachers always use technology for

administrative purpose with 35.5% strongly agree and 38.2% agree. The same rating was observed on the students where 39.1% of students strongly agreed on use of technology in administrative work. The school administration should provide technology for better learning in Lessons and class management in in your learning institution was strongly supported by the three groups of the respondents in the study with 42.1% who agreed and 23.7% who strongly agreed as per table 1. On table 2 BOM indicated was upon the school administration to provided technology to enhance the learning processes within the school institutions with 30.3% strongly agree and 48.7% agree. as long as there was school it was their responsibility to provide the technology need within the institutions. Policy and guidelines should also be provided by the school administration on the use of technology. They help to handle the criminal cases related to the use of the technology and software tools where 28.9% of teacher's respondents they strongly agree and 39.5% agree this was results as per table 13. According to the BOM respondents they highly indicated that clear of policy and guidelines will help in productivity on the use of technology with 43.3% who agreed. Most of students indicated on policy and guidelines existed on use of technology within primary schools. 39.5% of the teachers they indicated that they use mostly use technology as for administration and management of learning process. The 5.3% and 7.9% of the teacher's respondents disagreed and strongly disagree where it may indicate the misuse of the technology within the learning institution. 36.8% and 27.6% of BOM strongly believed and agreed that the technology was used for management of learning process within the school institutions. A number of students were not aware whether the technology was used for administration and management of learning process where 20.7% had a neutral agenda while 6.5% had disagreed and strongly disagree on the same case this was represented on table 5. ICT services for remote and learning for teachers will be effective in ensuring access to equity in upcoming

school in Kenya. Greater focus on use of ICT on learning must be matched with a credible work for management in schools to make quality learning in education for all by attempting to credit the equivalence on financial management.

From the global perspective as noted by Ericsson (2016), that 69% of primary schools graduates from Philippines schools had ICT use in schools needed to be improved compared to the 94% from rich households from the same country who can access ICT information this is according to the UNESCO education for world report

5.2 Recommendation

1. Those of the view that the processes that ICT made easier was due to the fact that they use them in a more systematic and general way and thus they have developed the required skills to take full advantage of them. Improvement in the learning outcomes were usually linked to an innovative educational use of technologies and this should be put into consideration.
2. Increase use of ICT can be attributed to the appropriate and trusting atmosphere in the schools that was developed by the teachers. They were involved in global projects that takes into consideration aspects such as motivation and continuous training and they feel the schools have strong leadership. We can draw a conclusion that for improvement of learning processes, innovation and teaching then ICT was a key factor. Having the participation of the entire teaching staff of a school in the designing of the ICT integration will give us the opportunity to analyze and reflect why and with which aim will ICT be used and it will play a role to its potential as an innovative element of the curriculum.

References

- Adeoluwa, O. V., Aboderin, O. S., & Omodara, O. D. (2013). The Challenges Toward Implementation of Information and Communication Technology (ICT) in Secondary Schools in Ondo State, Nigeria. *International Journal of Innovation and Applied Studies*, 2(3), 259–264. <https://hal.archives-ouvertes.fr/hal-00817621>
- Al-Ansari, N., Abdellatif, M., Zakaria, S., Mustafa, Y. T., Knutsson, S., Al-Ansari, N., Abdellatif, M., Zakaria, S., Mustafa, Y. T., & Knutsson, S. (2014). Future Prospects for Macro Rainwater Harvesting (RWH) Technique in North East Iraq. *Journal of Water Resource and Protection*, 6(5), 403–420. <https://doi.org/10.4236/JWARP.2014.65041>
- Apuke, O. D. (2017). Quantitative Research Methods : A Synopsis Approach. *Kuwait Chapter of Arabian Journal of Business and Management Review*, 6(11), 40–47. <https://doi.org/10.12816/0040336>
- Ballantine, J. H., & Spade, J. Z. (2009). Social Science Theories on Teachers, Teaching, and Educational Systems. *International Handbook of Research on Teachers and Teaching*, 81–102. https://doi.org/10.1007/978-0-387-73317-3_6
- Bladergroen, M., ... B. S. I. R. M., & 2016, undefined. (n.d.). Management of ICT in education: A meta-study on the local (South African and International research landscape. *Aisel.Aisnet.Org*. Retrieved January 18, 2022, from <https://aisel.aisnet.org/cgi/viewcontent.cgi?article=1039&context=confirm2016>
- Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2019). Implications for

- educational practice of the science of learning and development.
<https://eresources.mku.ac.ke:2082/10.1080/10888691.2018.1537791>, 24(2), 97–140.
<https://doi.org/10.1080/10888691.2018.1537791>
- Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2).
<https://doi.org/10.1080/10888691.2018.1537791>
- Dzakpasu, P. E., & Adom, D. (2017). Impact Assessment of Information and Communication Technologies on Lesson Delivery and Students' Performance in Selected Tertiary Institutions in Ghana. *Journal of Computer Sciences and Applications*, Vol. 5, 2017, Pages 29-41, 5(1), 29–41. <https://doi.org/10.12691/JCSA-5-1-5>
- English, L. M., & Carlsen, A. (2019). Lifelong learning and the Sustainable Development Goals (SDGs): Probing the implications and the effects. *International Review of Education* 2019 65:2, 65(2), 205–211. <https://doi.org/10.1007/S11159-019-09773-6>
- Fu, J. S. (2013). ICT in Education: A Critical Literature Review and Its Implications. *International Journal of Education and Development Using Information and Communication Technology (IJEDICT)*, 9, 112–125.
- Ghavifekr, S., Zabidi, A., Razak, A., Faizal, M., Ghani, A., Ran, Y., Meixi, Y., & Tengyue, Z. (2013). ICT Integration In Education: Incorporation for Teaching & Learning Improvement. *The Malaysian Online Journal of Educational Technology*, 2(2). www.mojet.net
- Hennessy, S., Hennessy, S., Harrison, D., & Wamakote, L. (2010). Teacher factors influencing classroom use of ICT in sub-Saharan Africa. *Itupale Online Journal of African Studies*, 2, 39–54.
- Hepp, P. J. E. E. L. (2004). Technology in Schools: Education, ICT and the Knowledge Society. *World Bank Education Advisory Service*.
- Hixon, E., & Buckenmeyer, J. (2009). Revisiting technology integration in Schools: Implications for professional development. *Computers in the Schools*, 26(2), 130–146.
<https://doi.org/10.1080/07380560902906070>
- Jesse, S. N., Jesse, J. M., & Omariba, A. (2016). Effects of user interface on the utilization and efficacy of educational digital content among secondary school in Kenya. *International Journal for Innovation Education and Research*, 4(10), 244–260. <https://doi.org/10.31686/ijer.vol4.iss10.613>
- MoE. (2015). *The development of education national report of Kenya Ministry of Education*. <https://www.globalpartnership.org/sites/default/files/document/file/kenya-nessp-2018-2002.pdf>
- Murithi, J., & Yoo, J. E. (2021). Teachers' use of ICT in implementing the competency-based curriculum in Kenyan public primary schools. *Innovation and Education* 2021 3:1, 3(1), 1–11.
<https://doi.org/10.1186/S42862-021-00012-0>
- Mutisya, D. N., & Makokha, G. L. (2016). Challenges affecting adoption of e-learning in public universities in Kenya: <http://dx.doi.org/10.1177/2042753016672902>, 13(3–4), 140–157.
<https://doi.org/10.1177/2042753016672902>
- Omariba, A., Gitau, E. N., & Ayot, H. (2016). Challenges facing teachers and students in the use of instructional technologies: a case of selected secondary schools in Kisii central district, Kisii county. *Undefined*.
- Oyedemi, O. A. (n.d.). *ICT and Effective School Management: Administrators' Perspective*.
- Packard, B. W. L. (2003). Web-based mentoring: Challenging traditional models to increase women's access. *Mentoring and Tutoring: Partnership in Learning*, 11(1).
<https://doi.org/10.1080/1361126032000054808>
- Rockoff, J. E. (2004). The Impact of Individual Teachers on Student Achievement: Evidence from Panel Data. *American Economic Review*, 94(2), 247–252.
<https://doi.org/10.1257/0002828041302244>
- Rutten, N., Joolingen, W. Van, education, J. V. D. V.-C. & & 2012, undefined. (2012). The learning effects of computer simulations in science education. *Elsevier*.
<https://doi.org/10.1016/j.compedu.2011.07.017>
- Steffek, J. (2021). *International Organization as Technocratic Utopia*. [https://books.google.com/books?hl=en&lr=&id=H4k4EAAAQBAJ&oi=fnd&pg=PP1&dq=organized+institutions+don't+live+in+utopia+but+it+depended+on+their+internal+and+external+environment+Harold+et+al.,+\(2010\)+&ots=0IIPcoZ1vu&sig=Uq6DsUV7jxnBfiUV6I2MIJ73r38](https://books.google.com/books?hl=en&lr=&id=H4k4EAAAQBAJ&oi=fnd&pg=PP1&dq=organized+institutions+don't+live+in+utopia+but+it+depended+on+their+internal+and+external+environment+Harold+et+al.,+(2010)+&ots=0IIPcoZ1vu&sig=Uq6DsUV7jxnBfiUV6I2MIJ73r38)
- Tarus, J. K., Gichoya, D., & Muumbo, A. (2015). Challenges of implementing E-learning in Kenya: A case of Kenyan public universities. *International Review of Research in Open and Distance Learning*, 16(1), 120–141.
<https://doi.org/10.19173/IRRODL.V16I1.1816>
- Traxler, J. (2007). Defining, Discussing, and Evaluating Mobile Learning: The moving finger writes and having writ.... *International Review of Research in Open and Distance Learning*, 8(2).

<http://www.alt.ac.uk>

- UNESCO. (2013). *United Nations Educational, Scientific and Cultural Organization – Office of the Secretary-General’s Envoy on Youth*. <https://www.un.org/youthenvoy/2013/08/unesco-united-nations-educational-scientific-and-cultural-organization/>
- Verónica Alderete, M., & Marta Formichella, M. (2016). *The effect of icts on academic achievement: the Conectar Igualdad programme in Argentina*.
- Yuksel Goktas, Soner Yildirim, & Zahide Yildirim. (2009). Main Barriers and Possible Enablers of ICTs Integration into Pre-service Teacher Education Programs. *Journal of Educational Technology & Society*, 12(1), 193–204.
- Wanjiru, K. R. (2013). The Use of Information and Communication Technology in Improving Teaching and Learning in Public Primary Schools in Gatanga District, Murang’a County, Kenya. *Research in Learning and Education*, 18(3), 207-220..
- Waweru, F. K., Mwebi, R. B., & Kirimi, E. M. (2017). Influence of school based quality assurance practices on academic performance of pupils in public primary schools in Subukia sub County, Kenya. *International Journal of Innovation and Applied Studies*, 20(1).
- Youssef, A. Ben, & Dahmani, M. (2008). The Impact of ICT on Student Performance in Higher Education: Direct Effects, Indirect Effects and Organisational Change. *Post-Print*. <https://ideas.repec.org/p/hal/journal/halshs-00936560.html>
- Zaki Amarin Rima Issa Ghishan, N. (2013). Learning With Technology from a Constructivist Point of View. *International Journal of Business*, 3(1). www.ijbhtnet.com