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E-Learning In Public Institutions In Kenya: Implementation Challenges

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Abstract

Identification of a business problem is the first step to ensuring that strategic planning and implementation is carried out effectively. In line with this observation, this study was geared towards examining the factor affecting the effectiveness of e-learning in secondary schools in Nairobi County, Kenya. The study objectives included the critical examination of strategies that could be put in place to widen the base of ICT infrastructure provision; to investigate how to provide specialized training on e-learning to computer teachers in Kenya; and to critically review the current ICT policy in schools integrating teachers, students and schools. The study employed the use of mixed method research; the target population was teachers, principals and students from 15 schools, purposively sampled. From the 15 schools, 15 teachers, 15 principals and 150 students were sampled and involved in the study. The students were sampled using simple random sampling. Questionnaire and interview schedule were used for data collection. Both quantitative and qualitative data was analyzed using SPSS and data presented in tables, graphs and charts and some in prose form. Research findings indicated that there is a significant relationship between availability of ICT, teacher competencies, cost of ICT equipments, ICT support staff and ICT policy and effective e-learning in secondary schools. It was concluded that unavailability of ICT equipments, lack of competent teachers and training centers, high cost of ICT equipments, inadequate and untrained ICT support staff and weak ICT policy framework have contributed to the ineffective of e-learning in Kenya. The study recommended that there be a review of ICT policy to allow for clear strategies that have well formulated implementation guidelines and mechanisms for monitoring e-learning integration and use in the classrooms. Moreover, the government should introduce e-learning in teacher institutions and collaborate with e-learning software providers to incorporate e-learning in the current curriculum. Schools should employ an ICT technician who could make computer laboratory accessible to learners at all time, much like the school library and be able to repair and maintain the ICT infrastructure. Moreover, the government should deploy ICT support staff at least once a year in each school to ensure that the problem of availability of staff is dealt with. The school BOGs, with assistance from the government, should look for private sector partners who would be able to install Internet facilities and e-libraries for the public schools having ICT facilities to enhance and improve learners' personal information base.

Key words: e-learning, knowledge transfer

1. Introduction

Education and training is often seen as a panacea for all social evils and as a vehicle for economic growth by raising incomes and employment. Swarts and Wachira (2009) observe that for education to fulfil such expectations, it must be relevant and geared towards providing citizens with the required knowledge, skills, attitudes and value to survive, thrive and competently take up responsibilities in a modernized, ever-changing and increasingly complex world. Moreover, educational systems around the world are under increasing pressure to use the new information and communication technologies (ICT) to teach students the knowledge and skills they need in the 21st century.

One of the ways identified as a means to achieving the above is through investment in ICT and specifically in e-learning. E-learning is the purposeful use of electronic systems or computer in support of the learning process (Ayere, Odera and Agak, 2010). With the provision of audio, audiovisual, audio/ audio visual conferencing, computer conferencing, multimedia - online and offline – ICTs eventually facilitate and promote classroom teaching, learning practices and concepts promoting and improving access, quality and equity and stimulating students' interest and motivation for life-long learning.

In Kenya, success in education is exam oriented, and students are still wholly subject to a strict academic discipline that focuses at passing exams at the expense of learning that develops one's talents and genius. Spotbeam (2010) note that approximately 25% or less of the secondary students who sit for their national exam perform well enough to join higher institutions of learning, the rest are termed as 'failures and they have to grapple with joblessness and non recognition. Digitalizing the Kenyan classroom therefore could go a long way in encouraging learning and innovation and a lee way for those students who do not acquire good grades.

Omwenga, Waema and Wagacha (2004) however notes that the major challenge confronting Kenyan education system is how to transform the curriculum and teaching –learning process to provide students with the skills to function effectively. Omwenga (2006) notes that even with the introduction of e-learning, a tool that provides an array of powerful tools that may help transform the present isolated, teacher-centred and text-bound classrooms into rich, student focused interactive knowledge environments, its effectiveness is still to be felt in Kenyan Secondary schools.

Many studies have revealed that there are various factors that affect effectiveness of e-learning including, teacher related factors (Hennessy, Harrison and Wamokote, 2010), E-learning policy framework (McCarthy and Berger, 2008), ICT support staff in schools (Swarts and Wachira, 2010) and high costs of equipments (Wangari, 2008). However, since the ICT world is dynamic and keeps on changing, it is important to note that there is need for constant review of the factors leading to effectiveness of e-learning in Kenyan secondary school, given that Kenya is not where it was economically 5 years ago. Furthermore, the study has observed that there are so many studies related to ICT usage in Kenyan schools, many studies been dedicated towards computer training in secondary schools, but little empirical evidence is given in regards to e-learning.

The question therefore remains as to why e-learning is not making an impact in Kenya and what can be done to ensure that the situation is reversed. However, this cannot be done without gauging how e-learning has been embraced in Kenyan secondary schools, the factors hampering its effectiveness and the way forward by reviewing the already existing e-learning programs in Nairobi County, Kenya. This paper intends to find out the above through critically examining the strategies that could be put in place to widen the base of ICT infrastructure provision; investigating how to provide specialized training on e-learning to computer teachers in Kenya; and critically reviewing the current ICT policy in schools integrating teachers, students and schools.

2. Literature review

2.1 Availability of ICT Infrastructure

One of the major factors identified as influencing effectiveness of e-learning in Sub-Saharan Africa, and indeed Kenya, is the availability of ICT infrastructure. The argument advanced in this paper is that availability of ICT infrastructure will facilitate the effectiveness of e-learning. This argument is supported by Swarts and Wachira (2009) who in a situation analysis of ICT education in Kenya found that according to the National ICT in Education Strategy of 2006, "most secondary schools in Kenya have some computer equipment" but "only a small fraction is equipped with basic ICT infrastructure" necessary for teaching and learning. However, Bush and Jackson (2002) differ with the above findings arguing that the major cause of ineffectiveness in e-learning is the theories on educational training adopted by school leadership, mostly transferred from America. The researcher observes that the theories pose challenges in application due to national and culture differences.

In other studies, the argument brought forward is that while ICT is available in schools, differences in geographical and economic conditions, different educational backgrounds and pedagogical views, language and content issues, usability and technical literacy issues, attitudes and prejudices hinder effectiveness of e-learning (Bitew, 2008; Masters, 2004). Liverpool (2002) further notes that though in a slow pace, schools are increasingly being equipped with ICT infrastructure. The current study intends to establish whether availability of ICT infrastructure in Kenyan schools is a factor affecting e-learning, given the conflicting points of view.

2.2 Teacher Competence on e-Learning

Tilya (2007) observes that for implementation of any technology, trained man-power is very crucial. Hennessy *et al.* (2010) found that teachers and trainers who are mandated to provide e-learning in many secondary schools are lacking the skills to apply e-learning and therefore adopt an attitude of hostility towards ICT learning. While

Henderson (2003) agreed that teachers' resistance to change hinders e-learning, the researcher argued that the major factor hindering e-learning is the teachers' perception that learning on-line is not secure and thus lack confidence in e-learning materials provided. On the other hand, Kiptalam (2010) in a study refuted teacher incompetence as the study found high levels of ICT literacy skills among students and teachers and low levels of e-learning adoption. Kozma, McGhee, Quellmalz and Zalles (2004) cited teachers' lack of time due to an overloaded curriculum as a major factor as opposed to teacher competence.

2.3 ICT Support Staff

Previous analysis of ICT education situation in Kenya revealed that one of the factors that hamper effective e-learning in secondary schools is lack of or inexperienced support staff. The findings estimated that 60% of the ICT infrastructure in schools was not used due to lack of maintenance which included repairs, upgrades, diagnostic and other preventive measures (Swarts and Wachira, 2009). However, Hennessy et al. (2010) argues that even with the availability of competent ICT support staff the challenge lies within the curriculum in terms of lack of contextually appropriate course content and negative attitudes among school leaders towards computers and internet

2.4 ICT Policies

McCarthy and Berger (2008) indicated that a school's ICT policy greatly affected students' ability to adapt to e-learning. These observations calls for comprehensive policies enhancing ICT in education so that schools can be better equipped to respond to challenges of innovation. However, though the government of Kenya, through Sessional paper No.1 of 2005 introduced ICT education in Kenyan secondary schools, lack of reliable, quality data, in addition to the absence of standardized guidelines for establishing relevant and comparable indicators, hinder policy makers in making informed decisions or in demonstrating greater commitment to integrating ICT into education systems (Swarts and Wachira, 2009). In contrast, Tedre, Bangu and Nyangava (2009) observes that even with the appropriate ICT policy structures in place, students' reliance on rote learning incapacitates the students from finding information or coming up with answers or solution themselves, a key component of e-learning.

2.5 Costs of e-learning Equipments

Okuongo (2006) and Wangari (2008) observe that besides teachers' ICT literacy status, school ICT policy and availability of hardware in schools, the high cost of e-learning equipment remain a major impediment to effectiveness of e-learning in secondary schools in Kenya. Wafula and Wanyonyi (2007) found that though the government, having realized the importance of ICT in education encouraged private sectors to assist in promotion of ICT in schools, Bonyo (2008) highlights that the main reason given for non-connectivity of schools was cost. Most schools in Kenya do not have electricity and the cost of internet is very high. Though it is hard to establish the authenticity of the study results above due to lack of clear methodology of study, the current study acknowledges that these studies give important insights as to the factors affecting effectiveness of e-learning in Kenya. However, this study intends to go beyond identifying the factors affecting e-learning to providing solutions to how the question of cost can be resolved in order to enhance the same.

3. Methodology

The study targeted secondary schools in Nairobi County, out of the 250 secondary schools in Nairobi, according to the Nairobi provincial Director of Education, the researcher purposely selected 15 schools. Purpose sampling was used to select 15 principals and 15 computer teachers. Simple random technique was used to sample students as simple random ensures that every respondent has a chance of being selected for study while also it saves on resources and time (Kothari, 2004). This is because the student population was greater than that of teachers and principals. Data collected was both qualitative and quantitative.

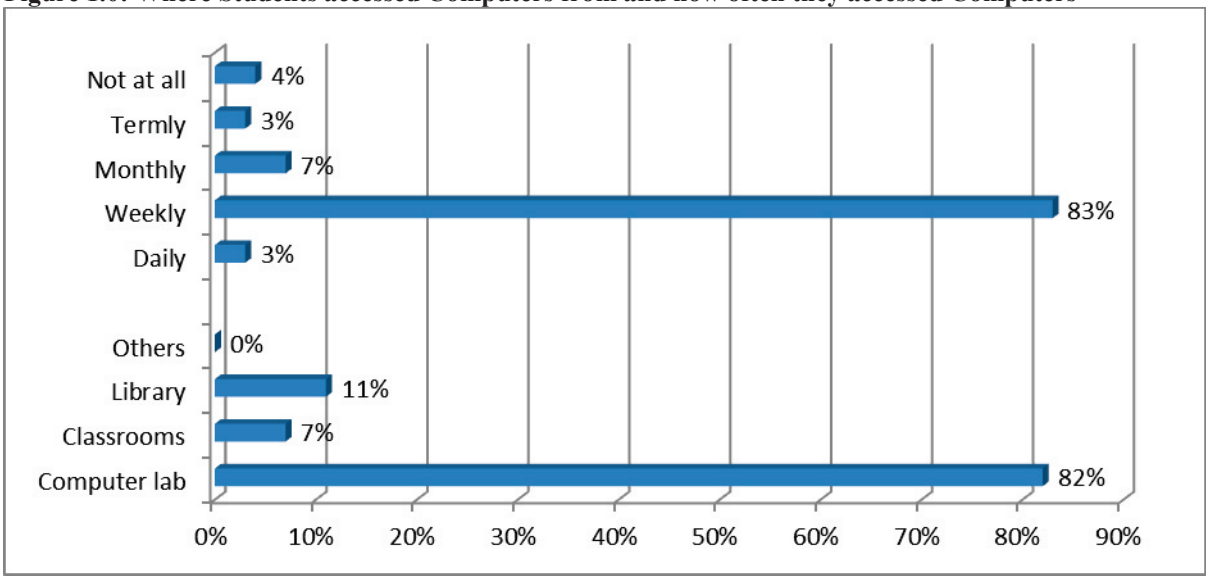
Quantitative data was analyzed through the use of a data analysis programme known as the Statistical Package for Social Sciences (SPSS). This was done through derivation of mean, standard deviation and frequency distributions for observable variables (Paton, 2002). Quantitative data was presented in form of charts, tables and graphs. Qualitative data was analyzed through the use of content analysis. Palmquist (2011) observes that content analysis is a methodology for determining the content of written, recorded, or published communications via a systematic, objective and qualitative procedure. Content analysis was used in this study because data to be tabulated was obtained from open ended questions through interviews

4. Discussion of results and findings

4.1 Availability of ICT in Schools

In order to verify the responses of teachers, the students were asked a few questions related to availability of ICT. The findings are as shown in figure 1.0.

Figure 1.0: Where Students accessed Computers from and how often they accessed Computers



Research findings on where the respondents used computers indicated that majority (82%) of the respondents used computer labs, 11% library and 7%. Moreover, majority (87%) of the respondents said that they used computers on a weekly basis, 7% on a monthly basis while 4% did not use computers at all. These findings are similar to earlier findings from teachers on where and how often the students accessed computers and therefore are also supported by Liverpool (2002) who argues that the slower rate of ICT adoption could only imply that students do not have daily access to computers. The researcher then sought to find out how availability of ICT infrastructure was affecting e-learning from the students' point of view. The findings are as indicated in Table 1.0.

Table 1.0: Effects of Availability of ICT Infrastructure on e-learning

Statement	Strongly disagree	disagree	Neutral	Agree	Strongly agree	Total
ICT is used as a learning tool in our school	110 75%	18 12%	7 5%	10 7%	5 3%	150 100%
We use computers to help us learn school subjects	110 75%	18 12%	7 5%	10 7%	5 3%	150 100%
We use computers to assist us in answering school assignments	90 60%	35 23%	2 1%	13 8%	10 7%	150 100%
I can learn some subjects independently with the aid of a computer	70 47%	45 30%	15 10%	6 4%	14 9%	150 100%
Computers makes learning easier in our school	90 60%	35 23%	2 1%	13 9%	10 7%	150 100%
We use internet to share knowledge with other students and teachers	115 77%	20 13%	10 7%	2 1%	5 3%	150 100%
I use computer software to assist me learn on my own	70 47%	45 30%	15 10%	6 4%	14 9%	150 100%
I use computers to present what I have learnt in class and to teachers	110 75%	18 12%	7 5%	10 7%	5 3%	150 100%
We use computers to gather learning materials on emerging issues like HIV/AIDs, drug abuse, environmental degradation, elections and violence against vulnerable groups	80 53%	24 16%	3 3%	10 7%	33 22%	150 100%

Research findings indicated that majority (90%) of the respondents said that they did not use internet to share knowledge with other students and teachers as in tandem with ANSTI (2005) who found that internet usage was low due to high cost of connectivity. Further findings indicated that majority (83%) of the respondents said that they did not use computers to present what they had learnt in class to teachers, that ICT was not used as a learning tool in schools and that they did not use computers to help them learn school subjects.

Moreover, 83% of the respondents also denied that they used computers to assist them in answering school assignments. This implies that computer usage was not embraced in the classrooms. This confirms earlier findings that majority of the students only accessed computers from the computer lab where classes were fixed, mostly in a weekly basis. These results agree with Wangari (2008) argument that ICT was mainly taught as a subject and not integrated into the classrooms as a learning tool. On the same note 69% of the respondents denied that they used computers to gather learning materials on emerging issues like HIV/AIDs, drug abuse, environmental degradation, elections and violence against vulnerable groups. This could be explained by the earlier findings on low connectivity rate in secondary schools under the area of study.

Table 2.0: Effect of Cost on e-learning

Statement	Frequency	%
lack of funds to hire support staff	4	27
Lack of funds for maintaining and upgrading ICT infrastructure	4	27
difficult in acquiring ICT infrastructure due to cost	7	56

On how cost affected e-learning, majority (56%) the respondents felt that cost made it difficult in acquiring ICT infrastructure while 27% said that cost affected the hiring of support staff and maintainance and upgrading of ICT infrastructure. This findings are in tandem with earlier findings on why the teachers felt that cost affected the usage of ICT to a great extent. This findings are also supported by Bonyo (2008) who was of the opinion that for ICT infrastructure to be available and effective in schools, the issue of cost has to be looked into as it was amojor hindering factor.

Table 3.0: Effect of Teacher Competence, ICT Support Staff and ICT Policy on e-learning

Statement	Frequency	%
unavailability of competent teachers	3	20
low ICT teacher training	4	27
No course structured for e-learning	5	33
No formal e-learning training centers for teachers	3	20
E-learning content underdeveloped	4	27
no baseline data on teacher competencies	3	20
weak framework for ICT integration and use	3	20
No strategy to explore affordable solutions	5	33
Enhance the development of e-learning content	3	20
Establish mechanisms for documentation of ICT teacher competencies	4	27
Enhance framework for e-learning integration and use	3	20
Provide guidance and support for e-learning through clear policies	5	33

On how competence of teachers affected e-learning, 33% of the respondents said that there was no course structured for teachers to learn e-learning, 27% of the respondents felt that there was inadequate teacher training on ICT matters while 20% said that there were no formal e-learning training centers and the competent teachers were generally unavailable. This implies that teacher competence, like earlier findings affected the effectiveness of e-learning to a great extent. This is supported by Muriithi (2005) who argue that what the teachers lack most is the knowledge on e-learning as majority of them only have general knowledge on the use of ICT.

On how ICT policy affected e-learning, 33% of the respondents observed that there were no strategies set to explore affordable ICT solutions. Moreover, 27% of the respondents felt that the e-learning content was underdeveloped. These findings are supported by Swarts and Wachira (2009) who argue that while efforts are underway to develop content starting with Teachers Training Colleges (TTCs), content for secondary and primary schools was under development. Other findings indicated that 20% said that there was no baseline data to evaluate teacher competence and there was a weak framework for ICT integration and use. Swarts and Wachira (2009) also established that there was no baseline data on teacher ICT competencies and therefore planning becomes more difficult. They also established that there were no frameworks in place to guide the integration of ICTs into teaching and learning and the curriculum in its entirety had not been reviewed. Without review and overhaul of curriculum to integrate ICTs, ICT integration will only be an “add-on” and not have the desired transformational impact.

On how ICT policy could be enhanced to ensure effective e-learning 33% said that there should be provision and support of e-learning in educational institutions through clear policy, strategy and implementation guidelines. Other findings indicated that 27% of the respondents said that there should be an establishment of mechanisms for documentation of ICT teacher competencies while 20% felt that the e-content should be enhanced and

improvement of framework for learning integration and use. The researcher then sought to find out the contribution of various bodies towards e-learning and findings are as indicated in Table 4.0.

Table 4.0: Contribution of Various Bodies towards e-learning

Contribution	Very high	High	Low	Very low	Total
NGOs-donation of computers	0 0%	2 13%	10 67%	3 20%	15 100%
Parent	0 0%	0 0%	0 0%	15 100%	15 100%
Government	0 0%	5 33%	8 53%	2 13%	15 100%
Private institutions	0 0%	2 13%	9 60%	4 27%	15 100%
Religious organizations	0 0%	0 0%	8 53%	7 47%	15 100%

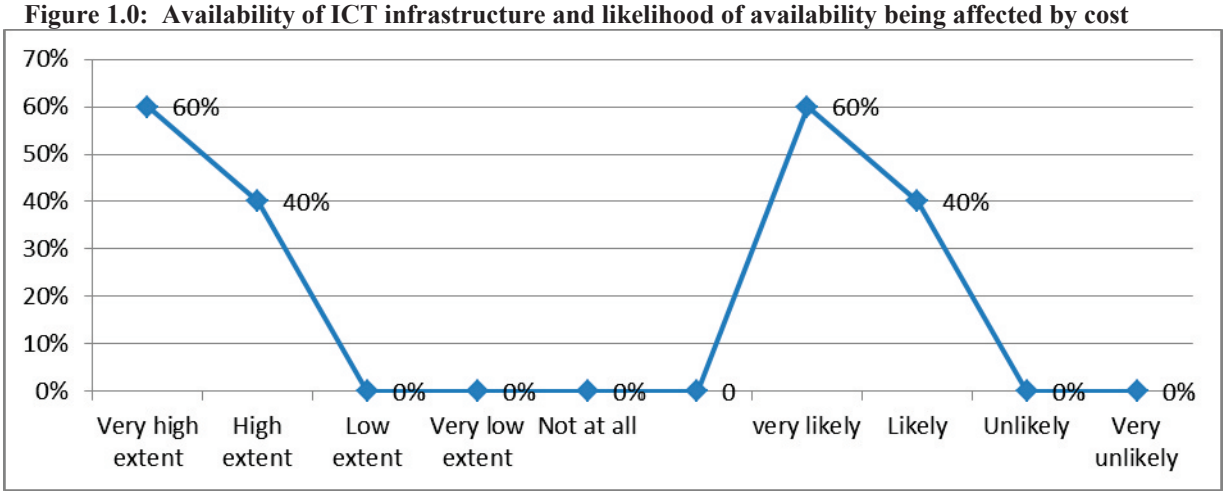
Research findings indicated that majority (100%) felt that the contribution of parents and religious organizations was very low, 87% of the respondents said that the contribution of NGOs through donations and private institutions was also low, only 33% of the respondents felt that government contribution was high. This implies that there was minimum contribution towards ICT and e-learning for that matter. This is in tandem with Wangari (2008) who observes that schools should intensify their mobilization towards acquisition of e-learning among the key bodies in the country.

On what could be done to further ensure the above bodies contribute more to the effectiveness of e-learning in secondary schools, the respondents said that schools should partner with private institutions to be incorporated in their programs that promote e-learning; write proposals seeking for support on from NGOs and private sector; come up with a scheme where parents contribute towards a fund to equip schools with ICT. Moreover, the government should set up institutions where teachers can receive training on e-learning, engage teachers in workshops and seminars and set aside finance to equip schools with ICT infrastructure.

4.2 Cost of ICT Equipments

One of the objectives of the study was to find out the effect of cost of ICT equipments on effectiveness of e-learning in secondary schools in Kenya. As such, the researcher sought to find out the extent to which cost of ICT equipments influenced e-learning in schools. The researcher also sought to find out if availability of ICT infrastructure in the schools under study were influenced by cost. The findings are as indicated in figure 1.0.

Figure 1.0: Availability of ICT infrastructure and likelihood of availability being affected by cost



Research findings indicated that all the respondents (100%) were of the opinion that cost of ICT infrastructure affected the effectiveness of ICT infrastructure to a great extent while all the respondents (100%) said that it was likely that the availability of ICT equipments in their schools was affected by their cost. This is in tandem with Okuongo (2006) who observed that the high cost of e-learning equipments remained a major impediment to effectiveness of e-learning in secondary schools in Kenya. Having established the likelihood of cost affecting the availability and effectiveness of e-learning in schools, the researcher then sought to find out how adequately their school was equipped with ICT equipments necessary for e-learning. The findings are as indicated in Table 5.0.

Table 5.0: How adequately schools were equipped with ICT equipments necessary for e-learning

Statement	Very adequately	Adequately	Inadequately	Very inadequately	Total
Computers	1 7%	1 7%	10 67%	3 20%	15 100%
Printers	1 7%	1 7%	10 67%	3 20%	15 100%
Scanner	0 0%	1 7%	8 53%	6 40%	15 100%
Photocopier	1 7%	1 7%	10 67%	3 20%	15 100%
Projector	0 0%	0 0%	3 20%	12 80%	15 100%
Digital video camera	0 0%	0 0%	3 20%	12 80%	15 100%
Webcams	0 0%	0 0%	0 0%	15 100%	15 100%
Microphones	2 13%	1 7%	10 67%	2 13%	15 100%
Special needs equipments	0 0%	0 0%	0 0%	15 100%	15 100%

Research findings indicated that majority (100%) of the respondents said that projectors, webcams, digital cameras and special needs equipments were inadequately available. Further findings indicated that 87% of the respondents said that computers, scanners, printers and photocopiers were also inadequately available. This implies that most schools were inadequately equipped with ICT infrastructure. These findings were supported by earlier findings by Wangari (2008) who found that ICT infrastructure was not adequate in schools. Having established the adequacy of availability of ICT infrastructure, the researcher then sought to find out whether the adequacy was influenced by the cost of ICT. The findings are as shown in figure 4.10.

Research findings indicated that all the respondents (100%) agreed that the cost of ICT equipments had a great effect on the adequacy of ICT infrastructure in secondary schools under study. These findings are supported by Bonyo (2008) who found that the main reason why e-learning equipments were unavailable in schools was as a result of high cost of equipments. The researcher then sought to find out how cost further affected ICT availability.

Table 6.0: Issues related to cost of ICT and e-learning

Statement	Strongly disagree	disagree	Neutral	Agree	Strongly agree	Total
There are no strategies to explore alternate affordable solutions to ICT equipments and its availability	0 0%	2 13%	4 27%	7 47%	2 13%	15 100%
High cost of ICT equipments hamper effective delivery of e-learning	0 0%	3 20%	0 0%	9 60%	3 20%	15 100%
High cost of internet connectivity affect e-learning	0 0%	3 20%	0 0%	9 60%	3 20%	15 100%
The Ministry concerned with provision of ICT is not dedicated to provision of affordable ICT equipments hence acquisition and sustainability is an issue	0 0%	0 0%	0 0%	9 60%	6 40%	15 100%
e-learning software is expensive to acquire	0 0%	0 0%	0 0%	9 60%	6 40%	15 100%

Research findings further indicated that majority (100%) of the respondents agreed that the ministry concerned with provision of ICT is not dedicated to provision of affordable ICT equipments hence acquisition and sustainability was an issue and that e-learning software was very expensive. These findings are in Tandem with African Network of Scientific and Technology Institutions (ANSTI) (2005) who reported that low investment in ICT infrastructure by governments coupled with high cost of connectivity were two major problems that hindered effective use of ICT. Moreover, on the same note, further findings indicated that 80% of the respondents indicated that high cost of ICT equipments hampered delivery of e-learning and that high cost of internet connectivity affected e-learning.

Table 7.0: Recommendations on what should be done to improve Cost of ICT Equipments

Statement	Frequency	%
Government to provide ICT infrastructure to schools	6	40
Source for more e-learning software providers to allow for competition	4	27
Engage the corporate sector in the provision of ICT infrastructure in schools	5	33

On the recommendations on what should be done to ensure that cost of ICT equipments do not hinder the effectiveness of ICT infrastructure, findings indicated that 40% of the respondents said that government should provide ICT infrastructure to schools, 33% suggested that sourcing for more e-learning software providers to allow for competition should be emphasized before acquisition of computers by schools while 20% said that schools should engage the corporate sector in the provision of ICT infrastructure in schools.

4.3 ICT policies

One of the objectives of the study was to find out the effect of ICT policies on effectiveness of e-learning in schools. As such the researcher sought to find out the extent to which ICT policy influence on effectiveness of ICT in schools. Research findings indicated that all the respondents (100%) said that ICT policy affected the effectiveness of e-learning to a great extent. This is in tandem with McCrthy and Berger (2008) who found that a school's ICT policy greatly affected whether a student chooses to pursue studies in technology. Having established the effect of ICT policy on the effectiveness of e-learning, the researcher then sought to find out how ICT polivy related to e-learning. The findings are as indicated in table 8.0.

Table 8.0: How ICT policy relates to e-learning

Statement	Strongly disagree	disagree	Neutral	Agree	Strongly agree	Total
Current focus on ICT as a subject rather than enhancing curriculum affects e-learning in my school	0 0%	1 7%	4 27%	6 40%	4 27%	15 100%
For e-learning to be effective, there has to be enormous investment of ICT in classrooms as opposed to computer labs	0 0%	0 0%	4 27%	3 20%	8 53%	15 100%
Lack of clear policies and strategies for e-learning affect delivery of e-learning in schools.	0 0%	0 0%	3 20%	6 40%	6 40%	15 100%
Lack of relevant data on the number of ICTs in schools affect planning for integration of e-learning	0 0%	4 27%	8 53%	2 13%	1 7%	15 100%
Lack of effective standard and quality assurance team affects the quality of e-learning in schools	0 0%	0 0%	4 27%	3 20%	8 53%	15 100%

Research findings indicated that majority (80%) of the respondents agreed that lack of clear policies and strategies for e-learning affect delivery of e-learning in schools while (73%) of the respondents agreed that for e-learning to be effective, there has to be enormous investment of ICT in classrooms as opposed to computer labs and that lack of effective standard and quality assurance team affects the quality of e-learning in schools. Moreover, 67% of the respondents were of the opinion that current focus on ICT as a subject rather than enhancing curriculum affects e-learning in their school. However, interesting findings were observed where 53% of the respondents were neutral on whether lack of relevant data on the number of ICTs in schools affected planning for integration of e-learning. This could be interpreted that the respondent were not aware of the mechanisms to document ICTs in schools or the mechanisms were not available at all.

All the above findings on ICT policy are supported by supported by Muriithi (2005) who found that in Kenya like most developing countries, ICT usage is still limited to computer literacy training. She contends that the present ICT curriculum merely deals with 'teaching about computers' and not how computers can be used to transform the teaching and learning in our schools. In her thesis, she says that integration should consider learning pedagogy, the pattern of student use of ICT, and the extent of use in teaching and learning programmes.

5. Conclusion and recommendations

5.1 Conclusion

From the results and findings, it is also evident that ICT is taught in school as a subject and integration into the classroom to enhance e–learning has been slow. This is confirmed by majority of the respondents (67%) being of the opinion that current focus on ICT as a subject rather than enhancing curriculum affects e-learning in their school. This is further supported by findings from the principals' interview which indicated that there were no strategies set to explore affordable ICT solution. Moreover, there was no baseline data to evaluate teacher competence and there was a weak framework for ICT integration and use.

5.2 Recommendations

The school BOGs, with assistance from the government, should look for private sector partners who would be able to install Internet facilities and e-libraries for the public schools having ICT facilities to enhance and improve learners' personal information base. This would assist the government in achieving their objective of making "education the natural platform for equipping the nation with ICT skills". Moreover, a fund should be set aside where parents contribute once in every school academic year to enable acquisition of ICT infrastructure. Moreover, before schools settle on acquiring infrastructure, they should source for more e-learning software providers to allow for competition and fair rates.

On e-learning content, local software companies could liaise with the education sector policy makers to provide country and curriculum specific software relevant to the needs of the nation. These companies could offer, for instance, to forward personnel to the KIE to fast track their change of curriculum content to e-content. Moreover, the ICT policy should be revised to provide clear strategies and offer implementation guidelines. The policy should also provide for mechanism to evaluate teacher competencies on e–learn at least once in year.

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