ASSESSMENT OF PUBLIC PRIMARY SCHOOLS FACILITIES FOR THE IMPLEMENTATION OF E-LEARNING PROGRAMMES IN EMUHAYA SUB-COUNTY KENYA.

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Abstract

The purpose of this study was to assess public primary schools facilities for the implementation of e-learning programmes in Emuhaya Sub-county in Kenya. Two specific objectives guided this study as follows: To establish the physical structures available to facilitate e – learning and quantities of electronic hardware and software available in schools. Simple random sampling method was used to select 25 public primary schools from 83 schools in the sub-county. The sample size comprised 200 class teachers as respondents selected from middle and upper primary. Questionnaires were administered to class teachers and their responses presented in frequencies and percentages for the purpose of data analysis. The findings of the study revealed that 95% of public primary schools did not have computers and 79% had no electricity. Based on the findings of the study, there are no appropriate physical infrastructures in public primary schools to ensure smooth implementation of the programme. The schools do not have sufficient funds for construction of computer laboratories. Lack of computers, laboratories and guidelines in schools are identified as impediments to implementation of e – learning programmes. It poses a hindrance to teachers who have trained in ICT and may not practice it. Arising from the findings the study recommends that the government should provide funds through the budget allocations and ensure schools acquire modern computer laboratories with supply of electricity. Schools may also send proposals to CDF for funding of computers and modern e-learning classrooms. Security to curb theft and vandalism of equipment should be provided.

Key Words: ***Assessment, Facilities, Implementation, E-learning.***

1.0 Introduction

The use of ICT in many countries has contributed to improvement of their economies through scientific knowledge and services. Youths in these countries have access to employment opportunities. In Kenya the policy makers initiated Vision 2030 as a vehicle for industrial advancement and growth of economy. This is a very important step undertaken by the government to prepare the country for future development. Jackson (2004) argues that the advancement of countries lies in global reform and development of education through ICT technology. It was developed to support what MOEST (2005) spelt out in Sessional Paper 5 of 2004 on policy framework for education, training and research whose vision is 'Quality education and training for development'. The purpose is to integrate ICT into education and training systems.

Public primary schools in Emuhaya have large enrolments and staffing is an issue because teachers are not enough. The solution to this problem lies in the introduction of e – learning in schools as one teacher can deal with more learners within a specific period of time. Therefore, schools require preparing in terms of physical facilities, equipment and human resources for the purpose of successful implementation of e-learning programmes. Public primary schools are expected to be prepared for implementation of e-learning programmes because learners learn better if they are accorded autonomy in the classroom (Mukwa, 200). With time and facilities they could construct knowledge for themselves and others. There are various technologies available in the classroom

for teaching and learning. The technologies include blackboards, whiteboard, computers, video and recorders among others. Delivery of e-learning education in primary schools is important because with the use of internet it would bring new ideas and information meant to educate, mould and shape young people in the society. Application of electronic media would mechanize the process of teaching (Osei 2006).

In view of this Santhanan (1992) argues that mechanized instruction can help teachers to deal with more learners with less expenditure educating them. Individual development would be harmonized with aesthetic education and works of art in an effective instruction. Mukwa (2000) argues that televised instruction improves access to schooling for rural and urban groups of learners. It saves on time and ensures that the syllabus is fully covered. It is also important in distance learning and dissolves the barriers of both distance and time to access schooling.

One of the most versatile technologies in the modern classroom is the computer and related digital systems, the internet. The presence of ICT in a school is a pointer to an enabling environment for e-learning. It is prepared in order to provide access to quality education, equality and equity through teleconferencing. It is expected to help with addressing perennial problem of teachers' shortage. As much as that can be planned it is also important to note that new changes in the curriculum cannot easily be implemented focusing on challenges that are likely to come with the system. Teachers' attitudes have a profound impact on teaching practices and behaviours of learners. Goldhaber (2003) says that attitudes provide meaningful learning experiences and would support learners getting well prepared for e-learning. So, it is important to sensitize teachers, for example, in seminars and workshops to be fully engaged in ICT teaching. Mbando (2003) argues that to be effective teachers require the competency to use all technologies in the classroom for the benefit of learners.

2.0 Statement Problem

After studies were carried out in e – schools project, NEPAD (2003) report recommended that ICT delivery of education be integrated in primary schools. It was followed by MOEST (2005) report in the Kenya Government Sessional Paper No. 1 of 2005 which laid emphasis on ICT skills to provide economic development in the country. Since then public primary schools have not been seen carrying out the process of implementation. It prompted the need to carry out an assessment of public primary schools preparedness by looking at the availability of appropriate physical structures for e-learning, electronic equipment and human resources.

The expanding knowledge and continued demand for ICT education calls for important initiatives to be laid down first by each public primary school in Emuhaya Sub-county. Computer laboratories are required with adequate space to accommodate all the learners for a single e-learning lesson and other learning resources such as furniture. There is need to determine availability of security for cushioning schools against vandalism a practice that is prevalent in rural local communities. Mukwa (2000) argues that there is need to have flexible learning and teaching approaches incorporated in education through electronic multimedia.

The most critical element of an effective schooling for pupils is the quality of teachers. What teachers know and do have the most influence on what pupils learn. The quality of a teacher should be supported by formal training from ICT training colleges. Teachers require continuous training on emerging issues in education such as classroom management and curriculum implementation of e-learning. ICT integration in teaching and learning is an innovative and powerful method of instruction that requires professional development of the teachers. In support of above information Goldhaber (2003) asserts that the teacher's quality has the greatest impact on learners' achievement among educational resources.

Osei (2006) on professional development argues that consultative meetings give teachers the opportunity to interact and get new ways of assessing learners. Their positive attitude towards e-learning may stimulate learners' creativity and motivation. Consultative meetings with other teachers in forums in regard to e – learning instruction should be encouraged to have a lasting impression on their attitudes and behaviours. They would have high level of commitment to work which may increase their skills and content knowledge through sharing of information. Since this country is looking forward to realization of Vision 2030, implementation of ICT technology in primary schools would give this country a strong foundation. That is why the study sought to assess the preparedness of public primary schools facilities for the implementation of e – learning programmes in Emuhaya Sub-county Kenya.

2.1 Specific objectives

The study was guided by the following objectives,

a) To establish the physical structures available to facilitate the implementation of e-learning in public primary schools in Emuhaya Sub-county.

b) To find out the quantities of electronic hardware and software available in public primary schools in Emuhaya Sub-county.

3.0 Integration of electronic media in educational instructions

The increasing explosion of information, communication and technology (ICT) needs flexible learning and teaching approaches to be able to meet the challenges of the 21st century. Mukwa (2000) argues that the increasing explosion is the expanding knowledge and continued demand for education. Menjo (2008) says that integrating electronic media resources would supplement and complement traditional classroom learning and teaching. The contemporary world has sophisticated electronic media such as the computers which could be integrated into the system. To operate them there is need to train teachers first and provide security to the hardware against vandalism a practice that is prevalent in rural communities. Learning and teaching is the concern of a trained teacher. Media is a powerful tool that influences the minds of those who use them. Kafwe (1998) says that media technology is ideal for young people to be engaged with educational material from the internet.

It advocates for training of teachers to know how to handle the media effectively. Learning is reinforced with learning aids of different variety because they stimulate, motivate as well as arrest learners' attention for a while during the instructional process. Developed countries have taken great strides towards exploitation of new and emerging technologies for instructional process. It is important to address the issue of funds in the development of educational projects. Efforts to initiate the same technologies in developing countries like Kenya are down played. Money is needed to purchase equipment and sustain the programmes (Menjo 2008).

Alternative way such as encouraging the participation of private sector should be sought because economic development of the country cannot be achieved without modern technology. Faced with deteriorating quality of education and poor academic results in the core subjects such as mathematics, one way is the use of integrated electronic media resources in schools. It would assist to reap the benefits of such an intervention. Application of electronic media resources is classified as hardware approach (Jackson 2004). However, the approach is not expected to replace the role of the teacher in the classroom.

The media is supposed to supplement and complement the learning activities. Multimedia is a very effective means of instruction. Multimedia arouses interest, attention and increased level of understanding. Intellectual development is supposed to be harmonizing with aesthetic education and works of art. The long term implications for the use of technology are profound both for the

delivery of literacy education and for a new innovation. In view of that, it is possible to say that the world is fundamentally transformed by technology. Santhanan (1992) says that the approach mechanizes the process of teaching so that teachers are able to deal with more learners with less expenditure educating them.

3.1 The effects of school resources on teaching and learning

Teachers are the cornerstone or hub of any educational system and rated as the most important human resource in a school. No system could rise above the quality of its teachers. They are the pivot and upon their number, their quality and devotion depends on the success of any educational system. Pupils' academic performance relies on the qualification of teachers who teach them. Ashworth (1994) argues that trained teachers are more reliable in delivery of quality services to the learners and their maximum utilization has a lot of benefits. Adeogun (2001) says that high teacher – pupil ratio in most public schools is as a result of non – recruitment of additional teaching staff to meet up with the increase in the enrolment which in turn affects the educational system.

The government is expected to consider employing more teachers. What the government is doing is merely making replacement of retired teachers and those lost through natural attrition. The number could not match the ever expanding enrolments in public primary schools. Schools endowed with more material resources perform better than schools less endowed. A very positive and significant relationship between instructional resources and academic performance exists. Instructional materials increase teacher's effectiveness because they augment, complement and supplement their effort (MOEST 2005).

Although teaching and learning could take place in any setting, physical facilities lacking basic structures are dangerous. Such structures need rehabilitation to ensure learners are protected. Health officials who are supposed to inspect and recommend on physical facilities rarely do their duty as required by law. Teachers' professionalism is affected by physical environment. The most important environmental features which affect teachers' performance are classrooms, furniture and class equipment. Therefore, proper planning is expected to be done on school facilities. For instance, adequate and qualitative facilities are required for an effective learning and teaching to take place (Mukwa 2000).

It is important to note that the outputs or products of transactions of institutions are acceptable, desirable, beneficial, efficient or effective from the point of view of the school stakeholders. The stakeholders include the government, society, parents, private agencies and international bodies. When something has high quality it fetches a higher price on its face value. Tamuno (1995: 5) says that acceptable standards of excellence concerning the environment of the school system provide high standards of quality

3.2 Financing of learning resources in public schools globally and in Kenya

Throughout the world education is seen as consuming the largest share of Government expenditure. The ever growing demand of education, the resultant expansion of educational system, rising costs of resources in education due to inflation, the need of sophisticated and expensive equipment have all led to massive increase in finance of education all over the world. There is increasing evidence of financial constraints and in many developing countries the proportion of the government budget devoted to education has begun to decline. The shortages have been a consequence of governments' reduction in their expenditure on education. Complete reliance on central government revenues for financing development projects is no longer feasible and governments are expected to consider alternative ways of tapping the resources from the private sector (NEPAD).

Sourcing funds from the private sector would encourage the government to raise the tax index on goods which could impact negatively on citizens. Grants from development partners have not been

utilized well due to mismanagement. The budget allocation for education could not meet all the demands. Integrity on management of funds from donors is required to be upheld and increase the budget allocation of education to finance most of the planned activities (Osei 2006).

In Kenya, education has continued to consume the largest share of government expenditure. Consequently, the government developed the philosophy of cost – sharing in education. The philosophy has taken root in the educational institutions and the problem of financing education from the public budget has proved to be a strategic issue facing the educational sector. MOEST (2005) report on strengthening delivery of education for all indicates that the government has found itself in a situation compelling it to increase financial expenditure on formal education in schools.

Like any other developing country, Kenya has continued to experience severe shortage of financial resources required to meet all the educational needs since independence. Alternative ways have to be sought to raise funds. It is very difficult to target the tax budget as the main source of revenue to finance projects when the country has a high poverty index among the citizens.

4.0 Research Methodology and Methods

This study found ex-post facto design useful because it looked at how public primary schools got prepared for the implementation of e – learning programmes. Kerlinger (1973) asserts that a researcher would not have direct manipulation or control over events already occurred. Teachers are aware about the introduction of e – learning in schools. Information required about them depends on inferences to establish the relationships given the existing conditions in public primary schools. A study of independent variables is made and a comparison taken to establish the effect of relationships on dependent variable.

Emuhaya Subcounty has 83 public primary schools from which 25 schools were selected using simple random sampling procedure as an optimum size likely to provide increased precision in the estimates of population properties. A larger sample may give negative results and therefore is not appropriate to pick on. Each school provided 8 teachers purposively selected to form a sample size of 200 respondents. The study used one questionnaire for class teachers

5.0 Findings and Discussions

The section presents the findings and discussions of data collected. It is divided into two sub-sections: Physical structures available to facilitate the use of e – learning, quantities and quality of electronic hardware and software available in schools.

5.1 Physical structures available to facilitate the use of e - learning

The study sought to identify physical structures available to facilitate the use of e-learning in public primary schools. To do this, teachers who were respondents were asked to provide information on availability of e – learning classrooms and the quality of physical structures. The data collected in the form of frequencies was computed into percentages as shown in Table 5.1.

Table 5.1 Available physical structures to facilitate e – learning

Table 5.1 shows physical structures available to facilitate e – learning in public primary schools.

Statement	Level of satisfaction		Total
	Yes	No	
Availability of computer labs	54 (32%)	115 (68%)	169
The quality of physical structures	45 (27%)	124 (73%)	169

Source: Responses from sampled schools

Despite having few computer labs in schools, from Table 4.1 above it can be observed that 32% of public primary schools had classrooms that could probably be used for e – learning and 68% did not have. Schools with quality physical structures formed 27% compared to a larger proportion of schools 73% where the quality was low.

From the teachers' responses it was noted that lack of computer labs impeded the process and achievement of objectives of implementation. The classrooms that are available in schools do not have the acceptable standards for e-learning. The government can provide grants for construction of computer labs or alternatively the school management may also ask for funding from donors in the private sector.

When constructing computer labs the increased class enrolments should be considered because the same could also affect teachers' professionalism. This argument is supported by Bartiz (1995) who asserts that overcrowded classes due to inadequacy of physical resources affect teachers' instructional techniques. Although teaching and learning could take place in any setting, it is important to ensure appropriate physical facilities are available for teachers to be effective. The relationship between availability of computer labs and the need of financing them was tested using Chi-square (X^2) and frequencies in Table 5.2 given below.

Table: 5.2 The need of financing physical structures

Table 5.2 indicates the need to finance physical structures.

Item	Frequency					Total
Computer labs	27	24	24	22	18	115
Financing of physical structures	25	21	19	24	22	111
Total	52	45	43	46	40	226
$E_i = \frac{(\text{Total } O_i \text{ x Total } O_j)}{\text{Grand Total } O_{ij}}$	27 26	23 22	22 21	23 23	20 20	
$X^2 = (O_i - E_i)^2 / E_i$	0 0.04	0.04 0.05	0.18 0.19	0.04 0.04	0.2 0.2	0.98

c = 5, r = 2 df = (c – 1) (r – 1) = 4

Source: Responses from sampled schools

From the table 5.2 above the calculated value CV = 0.98 where c = 5, r = 2, df = 4 and the table value TV = 9.488 at 5% level of significance. Since CV is less than TV, the null hypothesis is rejected meaning that there is a difference. The variables are independent and show no relationship. Public primary schools do not have computer labs, causing constraint to implementation of programme.

5.2 Quantities of electronic hardware and software available in public schools

The quantities of computers were determined as shown in the table below under the following variables: New and functional, old and maintained, new but not functional and none.

Table: 5.3 Quantities of computers in public primary schools

Table 5.3 below shows quantities of computers found in public schools.

Statement	No. of computers	Responses
New and functional	1	5 (3%)
Old and not maintained	1	2 (1%)
New but not functional	1	2 (1%)
None	0	160 (95%)
Total	3	169 (100%)

Source: Responses from sampled schools

Respondents were asked to state the number of computers available in their schools. From the table 5.3 above, 160 (95%) respondents said there were no computers in their schools and 9 (5%) reported having at least one computer. On quality of computers respondents indicated as follows: new and functional 5 (3%), old and not functional 2 (1%), and new but not functional 2 (1%). From the findings of the study it is evident that the objective of implementing e – learning programmes in public primary schools may not be achieved because the computers are very few.

Head teachers gave reasons why they did not have computers in their schools. They indicated that lack of funds was a critical factor. The programme was expensive to run and without funds implementation could not be possible.

The source of power to run the software was electricity and due to the involvement of financial implications, installation was not easy. They said that rural communities had a high poverty index and it was difficult for schools to raise funds for purchasing computers. There are three schools in Emuhaya Sub-county which indicated that they had at least a computer.

Schools need computers because it is a powerful tool that can influence the minds of learners. Teachers should be engaged with the internet and know how to handle the media effectively. Provision of security is required for computers against vandalism prevalent in rural areas. This information is also complemented by Kafwe (1998) on media technology as a way of bringing new ideas and information meant to educate, mould and shape individuals especially young people in the society.

Public primary schools should have measures in place to source funds for purchasing of computers. This sentiment is enjoined by Mukwa (2008) who comments at the issue of increasing enrolment in public schools. He indicates that as schools purchase computers they should put into consideration the ratio of the learners per computer to make e – learning effective and meaningful. A report of the study by Menjo (2008) complements Mukwa (2008) view of integration of electronic media resources in the traditional classroom learning and teaching.

Table: 5.4: Availability of computers and electricity in schools

The table below shows the relationship between computers and the source of power.

Item	Frequency					Total
Availability of computers in school	36	33	33	30	28	160
Electricity installation	30	27	29	25	22	133
Total	66	60	62	55	50	293
$E_i = \frac{(\text{Total } O_i \times \text{Total } O_j)}{\text{Grand Total } O_{ij}}$	36	33	34	30	27	
	30	27	28	25	23	

$X^2 = (O_i - E_i)^2 / E_i$	0	0	0.03	0	0.04	0.15
	0	0	0.04	0	0.04	

c = 5, r = 2 df = (c - 1) (r - 1) = 4

Source: Responses from sampled schools

Chi-square (X^2) was calculated to determine the relationship between availability of computers and installation of electricity in the school using the table 5.4 above. Calculated Value CV = 0.15 and Table Value TV = 9.488 at 5% level of significance. Since CV was less than TV, the null hypothesis was rejected meaning there was a difference. There was no relationship between the variables since they were independent meaning the schools were not prepared to implement e – learning programmes because they neither had computers nor electricity.

Table 5.5: Financing of e – learning programmes in public primary schools

Table 5.5 below shows the need of financing e – learning programmes.

Statement	Frequency		Total
	Yes	No	
Financing of e – learning programmes	111 (66%)	58 (34%)	169 (100%)

Source: Survey data

From the results of study shown in table 5.5 above indicate that 111 (66%) respondents said schools require financing in order to run e – learning programmes effectively against 58 (34%) who did not agree. Implementation of the new programme depends on the training capacity of teachers and how they are readily prepared to receive the new programme. The preparedness also lies in the provision of quality learning resources and facilities. The process is costly and needs more effort to ensure funds are available.

Purchasing of equipment and renovation of the existing physical facilities require a lot of funds that the government should provide in the form of budget allocation or grants from donors in private sector. Eicher (1984) says that concerning quality of education it must be seen in the light of monetary indices such as expenditure per pupil focusing on teacher-pupil ratio in terms of learning and teaching resources.

6.0 Conclusion and Recommendation

The first objective of the study was to assess physical structures available to facilitate the use of e-learning in public primary schools. Based on the findings of the study given there are no appropriate physical infrastructures in public primary schools to ensure smooth implementation of the programme. The structures require rehabilitation in order to have effective implementation. The schools do not have sufficient funds for construction of computer laboratories. There is high poverty index among rural communities in Emuhaya Sub-county and even in the past it was very difficult for local schools to organize fundraisings for construction of decent classrooms.

The second objective was to assess quantities of electronic hardware and software available in public primary schools. Lack of computers, laboratories and guidelines in schools are identified as impediments to implementation of e – learning programmes. It poses a hindrance to teachers who have trained in ICT and may not practice it. The computer is capable of transforming teaching and learning into a learner-centred process which nurtures cognitive and psychomotor skills. Government should avail funds for e – learning programmes.

The costs of sophisticated equipment like computers and the accompanying costs of installing electricity makes the programme look expensive to be shouldered by primary schools. The integration of ICT in schools is an ideal way of improving and reforming the traditional curriculum

process. In education, it is seen as a way of promoting educational change, improvement of skills of learners to prepare them for information society.

Lack of e – learning infrastructure in schools contributes to the limitation of accessing the new technology. Teachers may act the change for technology in education and it is essential the basic ICT skills be taught in pre-service and in-service courses in teacher training colleges. Braak (2001) asserts that ICT usage fosters collaborative learning, increased flexibility and accessibility to education.

Arising from the research findings it is evident that lack of appropriate inputs poses a hindrance to the implementation of e – learning programme in Emuhaya Subcounty. The Ministry of Education through Kenya Institute of Curriculum Development (KICD) should rise to the occasion and reverse the trend by ensuring that public schools receive adequate resources for e – learning. The curriculum developers at the institute need to redesign the incorporation of the new approach into educational system.

Inappropriate provision of hardware and software equipment in primary schools poses a problem while IT management staff in primary schools does not play its role as required. There are no stringent measures put in place to provide maintenance services to equipment.

Lack of funds for ICT instructional programmes is noted as a problem and it has hindered the progress of implementation. The planners do not have a foresight of challenges to implementation of e – learning. The other problems noted are lack of management support and teachers' commitment to the new innovation.

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