

Usage of Information Communication and Technology (ICT) for the Effective Management of Secondary Schools in Elgeyo Marakwet County, Kenya

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Abstract – This study investigated the use of information communication and technology (ICT) for effective management of secondary schools in Elgeyo Marakwet County, Kenya. In order to achieve the purpose of this study, six specific research objectives were addressed that is to establish the level of availability of ICT facilities to secondary schools, to find out the level of principals' management of secondary schools, the extent of usage of ICT in the management of schools, the relationship between the usage of ICT and effective management of secondary schools, the perceived advantages of using ICT in the effective management of secondary schools and the constraints to the effective usage of ICT in secondary schools in Elgeyo Marakwet County. The study was a descriptive survey. The study population comprised all the 62 secondary schools in the County. Out of this population, a sample of 31 secondary schools was taken and selected through the stratified random sampling technique. Out of the 1750 teachers in the schools, 812 teachers made up of 160 principals and 652 teachers were selected for the study. The method of selection was also through the stratified random sampling technique. The data for this study was collected from primary and secondary sources. The instrument used to collect data was a questionnaire while the data collected were analyzed using frequency counts, percentages and Pearson Product Moment Correlation analysis. It was found that the level of provision of ICT equipment to secondary schools in the Elgeyo Marakwet County was low. The level of principals' management of schools was also low. The inadequate funding was found as major problem inhibiting the usage of ICT equipment for the management of schools in the County. It was concluded that the County government was not fully ready to imbibe (ICT) for the effective management of secondary schools in the County. It was recommended that the County government should supply the necessary ICT equipment to all secondary schools in the County. Government should also improve the training of principals, teachers and computer personnel in the use of computers and other ICT equipment through seminar, workshop and in-service training.

Keywords: Information Communication Technology (ICT), effective management

I. INTRODUCTION

At the start of the 21st Century, the importance of Information Communication Technology (ICT) in all spheres of life cannot be gainsaid. Computers are involved in many

aspects of our day to day lives, especially in the workplace, and this is likely to increase in the future. Therefore, our secondary schools have to ensure that they maximize their ICT utilization for the benefit of their students. This includes students' competence in using computers, and using ICT to teach curriculum content. In Africa, however, ICT utilization is at very low levels, not only in the education sector, but in other areas as well. This is in sharp contrast to countries of the developed world, where computer utilization is prevalent. This is the so-called 'digital divide' between the developed world and third world countries. Thus, while it is relatively easy for developed countries to implement ICT in their education systems (indeed some have already done so), it is a major hurdle for African countries to do the same. The overall number of computers per number of people and the corresponding levels of computer literacy are low. In addition, funding constraints mean that most ministries of education in African countries are unable to improve ICT utilization in their secondary schools, even though they are aware of its importance.

In addition to the aforementioned challenges, the low level of computer literacy in Africa means that some policy makers may not even be aware of the implications of teaching using ICT in technical training institutions. However, there are a number of authors who disagree with this view. Although many observers of the ICT utilization in secondary schools in Kenya would agree that computers are neutral technology, and that the use of computers can bring about a change in the education system, it would not be true to say that the education system is driven by computers. Therefore there is a need to find out how the current system of secondary schools training institutions can be modified to raise the levels of ICT utilization.

The educational system in Kenya has been delineated into different levels mainly pre-primary, primary, secondary and tertiary levels. The increasing development of educational system at all levels brings greater demands on educational practitioners such as schools curriculum planners, evaluators and teachers in their bid to move along with the information technology of this 21st century. As the world changes, information and knowledge change rapidly. Teaching and learning processes as well as the management of schools also have to change. The use of information communication and technology (ICT) can improve education quality expand learning opportunities and make education accessible. It is as a result of these advantages that Kenyan educational reforms have stressed the use of computer technology in schools.

One major policy in enhancing the deployment of information and communication in Kenya was the Kenyan National Policy on the adoption of ICT in schools. In enhancing this policy, the Government of Kenya laid emphasis on the role and utilization of information and communication technology (Republic of Kenya, 2006). It emphasized that the prominent role of information and communication technology could be seen in advancing knowledge and skills necessary for effective functioning in the modern world. There is therefore the need to integrate (ICT) into education in Kenya for effective teaching and learning processes in schools.

Furthermore, Kinyanjui (2004) stresses that e-Schools initiative (of the New Partnership for Africa's Development, NEPAD) will ensure that a majority of the people on

the continent have the skills required to function in the knowledge economy'. He goes on to define NEPAD's e-Schools' objectives as: to minimize the effects of the digital divide on young people and to provide them with ICT skills necessary to function in the knowledge economy; to ensure that every African youth leaving school has the necessary ICT skills that will assist them find jobs, create jobs or further their education optimally; to make universal e-access in every institution a policy priority on the African continent; to re-define universal service/access to meet the requirement of the new economy; and to transform every institution of learning into a health literacy center and zone to combat diseases especially malaria, HIV AIDS and tuberculosis' (Kinyanjui, 2004). In order to meet these objectives, all stakeholders in ICT utilization will need to collaborate in order to catch up with the rest of the world. Technical training institutions can play a leading role in this process.

It has been observed, however, that it is not all schools in the country that have the opportunity in the training of learners in the use of ICT in secondary schools. This might be as a result of some constraints in the management of schools such as the problem of controlling large population of students as well as conducting examinations on a large scale. The fact that the Elgeyo Marakwet County, Kenya is witnessing a tremendous growth in pupils' enrolment has made the management of schools complex thereby, creating challenges ranging from the management of students and staff, community relations, supervision of instruction to the management of school finance.

The evolution of the computer and its capability to handle diverse kinds of problems has made easy the mounting challenges created by the staggering development in secondary school education in the Elgeyo Marakwet County. The school principal in Elgeyo Marakwet County, Kenya needs to be well informed in ICT application for effective management of the school. This is necessary in the areas of budgeting, collection of student data, recording of results and effective keeping of school records. Data of various types could be programmed into the computer. Data on staff, teaching and learning could also be done through the effective use of ICT in schools. The introduction of ICT in the management of education could become an antidote in providing effectively solutions to educational problems that would have been difficult, if not impossible to solve through human natural efforts.

Commenting on the relevance of data in the educational system (Nwagwu, 1995) argued that effective record keeping is vital to educational development. In addition, he emphasizes that, it will be an impossible task to plan and administer any institution in which kept. Consequently, the educational planners and administrators need to have adequate and accurate data of student enrolment, school personnel i.e. academic and non-academic staff and school records for effective planning and management of schools.

One cannot over-estimate the utilization of ICT in everyday activities of the school. (Raseroka 1997) noted that ICT assists the school administrator to meet the task of school management in the areas of curriculum and instruction, school community relationship and school business operations. In support of this (Mohammed, 2006) argued that the introduction of ICT in schools enhances the daily school routine, programme, updating the evaluation of school programmes, solving individuals' or groups' as well as staff development.

There is no doubt therefore, that secondary school education has become more complex and hence its management demands more from the managers. The enormous rise in the number students in schools as well as the multiplicity of programmes have made school principals to handle large quantity of data which they must process speedily to provide information for the teaching service commission and ministry of education for effective management and decision making. Hence the use of ICT in the management process is imperative for sustainable development. It has however been observed that in many public secondary schools in Elgeyo Marakwet County, Kenya ICT tools like computer, internets and other telecommunication technologies that can aid teaching and learning are hardly use or not available. It is against this background that this study intended to examine the utilization of information and communication technology (ICT) in the effective management of secondary schools management secondary schools in the county.

A. Statement of the Problem

The enormous increase in student enrolment and teacher data in most secondary schools in African countries has been noted by educationist (World Development Report, 1999 and Nwosu, 2003). This increase as called for the use of sophisticated equipment and facilities such as ICT for the processing of data in schools. It has been observed however that ICT facilities might not have been used effectively in the management of schools in the County. The problem of this study therefore was to examine what relationship exists between the utilization of ICT and effective management of secondary schools in Elgeyo Marakwet County, Kenya. In addressing this problem, the following specific research objectives were raised.

B. Purpose of the Study

The purpose of the study was to study investigate the use of information communication and technology (ICT) for effective management of secondary schools in Elgeyo Marakwet County, Kenya. In order to achieve the purpose of this study, six specific research objectives were addressed;

- i. To establish the level of availability of ICT facilities to secondary schools
- ii. To find out the level of principals' management of secondary schools
- iii. To find out the extent of usage of ICT in the management of schools
- iv. To establish the relationship between the usage of ICT and effective management of secondary schools
- v. To identify the perceived advantages of using ICT in the effective management of secondary schools
- vi. To identify the constraints to the effective usage of ICT in secondary schools in Elgeyo Marakwet County

II. METHODOLOGY

This study adopted the descriptive research design of the survey type. The study population comprised all the 62 secondary schools in the Elgeyo Marakwet County. Out of this population, a sample of 31 secondary schools was taken and selected through the stratified random sampling technique. Out of the 1750 teachers in the schools, 812 teachers made up of 160 principals and 652 teachers were selected for the study. The method of selection was also through the stratified random sampling technique. These principals and teachers were the respondents in the study. The instrument used to collect data for the study was a questionnaire based on research objectives. The content validity was determined by experts in Educational Management and Test and Measurement who examine the instrument to determine whether or not they measured what they were supposed to measure. Their comments were used to correct items in the instrument before they were administered to the respondent.

The reliability of instrument was determined using the test-retest reliability techniques (Fraenkel and Wallen, 2000). In doing this, the questionnaire was administered to fifty respondents outside the study area. After period of two weeks, the instruments were re-administered to the same respondents. The data collected on the two tests were collated and analyzed using the Pearson Product Moment Correlation analysis. A reliability coefficient of 0.76 was obtained indicating that, the instrument was reliable for the study.

The instruments were administered through the use of research assistants. Returns were received from 780 respondents, out of which returns from 32 respondents were badly completed and discarded while the returns from the remaining 780 respondents were well completed and used for the study. The data collected from the respondents were collated and analyzed using frequency counts, percentages and Pearson Product Moment Correlation analysis. The hypothesis generated from the research question was tested at 0.05 alpha levels.

III. FINDINGS

In order to meet the objective of the study, questionnaire was administered to principals and teachers. The findings were discussed below.

Research Objective 1

To establish the level of availability of ICT facilities to secondary schools. This objective sought answer on the availability of Information Communication and Technology (ICT) facilities from the principals and teachers of the sample schools using the questionnaire. The responses were arranged into fifteen items and presents in Table 1.

Table 1: Level of Availability of ICT Facilities in Secondary Schools in Elgeyo Marakwet County, Kenya

Facilities	N	Available	%	Not available	%
Computer	160	148	92.5	12	7.5
Printers	160	145	90.6	15	9.4
Internet Services	160	02	1.30	158	98.7
Projector	160	0	0.0	160	100.0
Projector Screen	160	0	-	160	100.0
Xeros Machines/Photocopying machine	160	12	7.5	148	92.5
Scanning Machine	160	0	0.0	160	100.0
Computer Accessories	160	160	100.0	0	0.0
Software	160	160	100.0	0	0.0
Radio Cassette	160	146	91.3	14	8.7
Television	160	120	75.0	40	25.0
Satellite Disc	160	06	3.8	154	96.2
Handset	160	160	100.0	0	0.0
Laptop	160	0	0.0	160	100.0
Fax Machine	160	0	0.0	160	100.0

As indicated in Table 1, the findings show that many schools in the Elgeyo Marakwet County are deficient in the availability of information communication and technology (ICT) equipment. Although most schools have computers (92.5 %) and printers (90.6 %), almost all the schools did not have projectors, projectors screen, scanning machines and fax machines. This is an indication that ICT materials are not vigorously provided for the schools.

Research Objective 2

To find out the level of principals' management of secondary schools. In answering this question, data on the responses of teachers on the level of management of secondary schools in the Elgeyo Marakwet County were collected through the questionnaire. The data were collated and analyzed using frequency counts and percentages. The findings are presented in Table 2.

Table 2: Level of Principals' Management of Secondary Schools in Elgeyo Marakwet County, Kenya

Variables	N	High	%	Moderate	%	low	%
Effective supervision	652	82	12.6	220	33.7	350	53.7
Effective Leadership	652	64	9.8	216	33.1	372	57.1
Effective Communication	652	60	9.2	120	18.4	472	72.4
Disciplinary Ability	652	71	10.9	254	38.9	327	50.2
Monitoring	652	46	7.1	260	39.8	346	53.1
Motivation	652	50	7.7	262	40.2	340	52.1
Delegation of duties	652	52	7.9	282	43.3	318	48.8
Average Total	652	61	9.4	231	35.4	360	55.2

In Table 2, the findings show that the principals' level of management of secondary schools in Elgeyo Marakwet County, Kenya was low. As many as 360 respondents (55.2 %) on question, the average reported that the principals' management of secondary schools in the State was at a low level. Out of the variables examined, effective communication had the lowest level of effective management. This is evident in the large number of respondents (72.4 %) who claimed that principals' level of management in terms of effective communication was low. Since communication is one the essential tools of information communication and technology (ICT), a situation whereby as many as 472 out of the 652 respondents examined in the study gave a low level response in terms of effective communication shows that information communication and technology has not been fully developed in the schools. Although some respondents gave a moderate level response in terms of principals' management of schools, most of them indicated that the principals' level of management in the schools was generally at a low level.

Research Objective 3

To find out the extent of usage of ICT in the management of schools. It was paramount to evaluate the extent of usage of ICT in the effective management of schools. This was meant to enable the researcher to suggest possible ways of tapping ICT for effective management of schools. Table 3 presents response to this question.

Table 3 Extent of Usage of ICT in Secondary Schools in Elgeyo Marakwet County, Kenya

Utilization Variables	N	Frequently Used	%	Occasionally Used	%	Not Used	%
Computer for typing, processing and storage of data for effective management	812	420	51.7	332	40.9	60	7.4
Printers for printing of documents	812	261	32.1	401	49.4	150	18.5
Internet services for browsing.	812	0	0.0	120	14.8	692	85.2
Handset for communication between principal and staff, principal and students as well as staff and students	812	228	28.1	540	66.5	44	5.4
Television for visual and educational purposes	812	0	0.0	20	2.5	792	97.5
Radio cassette for audio and educational purposes	812	0	0.0	42	5.2	770	94.8
Computer accessories for processing data	812	210	25.9	516	63.5	86	10.6
Satellite disc for distance viewing of foreign programmes	812	0	0.0	32	4.4	776	95.6
Photostat Machine for reproduction of documents	812	240	29.5	263	32.4	309	38.1
Software of different types	812	218	26.8	594	73.2	0	0.0

From the table 3, 420 of the respondents (51.7 %) claimed that the computer for typing, processing and storage of data were frequently used in the effective management of many schools. They however reported that ICT equipment such as the printer, internet services, handset, Xerox- photocopying machine were occasionally used. Other ICT equipment such as television for visual and educational programme, Satellite disc for distance viewing of foreign programmes and Radio cassette for audio and educational purposes was not used in many of the schools. The findings suggest that the usage of ICT equipment in the schools was at a low level.

Research Objective 4

To establish the relationship between the usage of ICT and effective management of secondary schools. In addressing this problem, the question was transformed to the following hypothesis:

Ho: *There is no significant relationship between the usage of ICT and effective management of secondary schools in Elgeyo Marakwet County, Kenya.*

In testing this hypothesis, data on the usage of ICT and the effective management of secondary schools in Elgeyo Marakwet County, Kenya were collected using the questionnaire. Data on the usage of ICT equipment were collected from the 812 respondents including principals and teachers while the data on effective management of schools were collected from the responses made by 652 teachers. The hypothesis was tested using the Pearson Product Moment Correlation Analysis. The findings are presented in Table 4.

Table 4: Correlation between Using of ICT and Effective management of Secondary Schools in Elgeyo Marakwet County, Kenya

Variables	N	df	r-calculated	r-table
Usage of ICT	812	1462	.612	.195
Effective Management of Secondary Schools	652	-	-	-

P < 0.05

In Table 4, the calculated r (.612) was greater than the table r (.195) at 0.05 levels of significant. Hence, the null hypothesis was rejected. This shows that there was a significant relationship between the usage of Information Communication and Technology and effective management of secondary schools in Elgeyo Marakwet County, Kenya. This suggest that the more the usage of ICT equipment Information Communication and Technology of facilities in the schools, the better would the effective management of secondary school in the County and vice versa.

Research Objective 5

To identify the perceived advantages of using ICT in the effective management of secondary schools. To address this research objective, data on the advantages of using ICT for the effective management of secondary schools in the County were collected from respondents through the questionnaire. The data were collated and analyzed using frequency counts and Percentages. Table 5 shows the findings.

Table 5: Advantages of Using ICT for Effective Management of Secondary Schools in Elgeyo Marakwet County, Kenya

Variables	N	Agree	%	Disagree	%
The usage of ICT could contribute to radical changes in school management	812	775	95.5	37	4.5
It could strengthen teaching and learning	812	812	100.0	812	0.0
It could make schools more effective and productive thereby making school management easy and less cumbersome	812	732	90.2	80	9.8
It could facilitate teacher's and principal's functions	812	767	94.4	45	5.5
It could provide opportunities for staffs and students to communicate with one another through e-mail, chat room and easier access to current information.	812	74	9.1	738	90.9

In Table 5, 775 of the respondents (95.5%) agreed that the usage of ICT in the effective management of secondary schools in the County could produce radical changes in school administration. It could make school more effective and productive thereby making school management easy and less cumbersome. 732 of the respondents (90.2%) agreed that ICT could provide opportunities for staffs and students to communicate with one another freely and effectively through e-mail, chat room as well as easier access to current information.

Research Question 6

To identify the constraints to the effective usage of ICT in secondary schools in Elgeyo Marakwet County. To address this research objective, data on the constraints to the effective usage of ICT in secondary schools in the County were collected from the responses of the principals and teachers in the schools through the questionnaire. The data were collated and analyzed using frequency counts and percentages. The findings are presented in Table 6.

Table 6: Constraints to the effective usage of ICT in secondary schools in Elgeyo Marakwet County, Kenya

Constraints	N	Agree	%	Disagree	%
Intermittent disruption of electricity	812	812	100.0	0	0
Inadequate facilities such as well-furnished class rooms for ICT equipment	812	787	96.9	25	3.1
Inadequate funding to provide ICT equipment	812	775	95.5	37	4.5
Lack of expertise on the use of ICT equipment	812	156	19.2	656	80.8
Lack of interest among many members of staff to adopt the use of computers and other modern IT for management of schools	812	693	85.4	119	14.6
Lack of interest by many individuals to learn the usage of ICT facilities in schools	812	208	25.6	604	74.4

As indicated in Table 6, all the respondents (100 %) claimed that the most notable constraints to the usage of information communication and technology in secondary in Elgeyo Marakwet County, Kenya were the intermittent disruption of electricity supply. In like manner 787 of the respondents (96.9%) reported that inadequate facilities such as well-furnished class rooms for ICT equipment are major constraints to the effective usage of ICT in secondary schools in the County. Other constraints include inadequate funding to provide ICT equipment, lack of expertise on the use of ICT, lack of interest among many members of staff to adopt the use of computers and other modern information technology for management of schools as well as lack of interest by many individuals to learn the usage of ICT facilities in schools.

IV. CONCLUSION

During the course of this study relevant information was obtained and explained by means of descriptive statistics. Considering the findings of this study, it was concluded that the County government is not fully ready to imbibe information communication and technology (ICT) for the effective management of secondary schools. This is evident in the findings of this study which indicated a low level provision of ICT equipment and facilities to schools. The findings have led the researchers to conclude that the provision of ICT equipment is significantly related to effective management of schools. It was therefore concluded that intermittent disruption of electricity and that of funding are major problem inhibiting the usage of ICT equipment and facilities for the effective management of schools in the Elgeyo Marakwet County, Kenya.

V. RECOMMENDATIONS

In view of the above mentioned discussions, implications and conclusions highlighted above, the following recommendations are made for the improvement and effective management of secondary schools using ICT in Elgeyo Marakwet County, Kenya:

- i) Based on the findings, it was recommended that the Elgeyo Marakwet County government should show more interest in imbibing information communication and technology (ICT) and supply the necessary ICT equipment to all secondary schools in the County. This could be done through improved funding for the purchase of ICT equipment of materials.
- ii) Government should also improve the training of principals, teachers and computer personnel on the use of computers and other ICT equipment through seminar, workshop and in-service training.
- iii) Principals should also show interest in the use of ICT equipment for the effective management of their schools. This could be done through improved usage of computers and other ICT materials supply to their schools for the storage and retriever of data on staff and students as well as for data analysis.
- iv) The County government should endeavor to provide generating set to all schools in the County in order to forestall the intermittent disruption of electricity.
- v) The County government should also provide well-furnished classrooms in all schools for the keeping of ICT equipment and materials. This is necessary in order to enhance the desired sustainable development needed in the County in accordance with the provisions of the national policy on education.

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