European Journal of Education Studies
ISSN: 2501 - 1111
ISSN-L: 2501 - 1111
Available on-line at: www.oapub.org/edu

doi: 10.5281/zenodo.252872 Volume 3 | Issue 2 | 2017

THE INFLUENCE OF SCHOOL RELATED FACTORS ON ICT INTEGRATION IN THE MANAGEMENT OF PUBLIC SECONDARY SCHOOLS IN KITUI COUNTY, KENYA

Angeline Muli Mutisya[1i], Jonathan Muema Mwania[2], David Musyoki Mulwa[3]

[1]Ph.D candidate, South Eastern Kenya University, Kenya
[2]Dr., Senior Lecturer, Department of Educational Psychology, South Eastern Kenya University, Kenya
[3]Dr., Lecturer, Department of Educational management and Curriculum Studies, Machakos University, Kenya

Abstract:

The purpose of the study was to determine the influence of school related factors in integration of Information Communication Technology in the management of public secondary schools in Kitui County, Kenya. A descriptive survey research design was used in this study. The study was carried out in 58 public secondary schools in Kitui County that have functional ICT infrastructure. This study used sample size table as proposed by Krejcie and Morgan (1970) whereby 58 principals, 58 senior teachers and 266 assistant teachers from schools that have functional ICT infrastructure were selected. All 16 Sub-county Directors of Education and one County Director of Education were selected for the study. The researcher used questionnaires to collect data from principals, senior teachers and assistant teachers while interview schedule was used to collect data from Sub-county Directors of Education and the County Director of Education in Kitui County. The collected data was analyzed using both quantitative and qualitative data analysis approaches whereby both descriptive and inferential statistics were used. Descriptive statistics that were used in this study include percentages and mean. Hypotheses were tested using Pearson's moment of correlation coefficient and Pearson's Chi-square tests for independence. The qualitative data were presented in the form of narrative and integrated within the quantitative data. The findings of the study were; there was a strong positive correlation r(50) =

[i] Correspondence: Dr. Jonathan Muema Mwania, P.O. BOX 26 Code 90103 Wamunyu, Machakos, Kenya, email muemamwania@yahoo.com

0.842, $p<0.05$ between computer infrastructure and ICT integration in management of public secondary schools. The study recommended that; The government should increase their supply of computers to all schools as well as building computer laboratories for schools and that all the schools should have internet connections to enable principals and teachers to use ICT in the school. The government should make it compulsory for all schools to integrate ICT in management.

Keywords: information communication technology, public secondary schools, school related factors

1. Introduction

The components of Information and Communication Technology include print media, electronic media, telephone, telex, e-mail, fax and computers (Ayeni, 2004). Aboderin (2009) define ICT as the broad field 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. Technology is virtually ubiquitous in the workplace in the developed world. Its use is measured in various studies which show, for example, that in Europe, ICT skilled employment has generally increased. In Japan, slightly more than 60% of jobs in information and research services employ people with ICT skills (World Bank, 2008).

In Africa, the first computers arrived in educational institutions by the end of th**e** 1970s (Clark & Meyor, 2003). The use of ICT has not been extensive in school management worldwide as found in other fields, such as business and engineering. The reasons for the low adoption or absence of ICT in school management vary significantly depending on the prevailing circumstances. Kenya is in the process of implementing Information and Communication Technology (ICT) in schools. The government recognizes the positive impact of ICT in making the country a middle level economy as is envisaged in Kenya vision 2030. The government has disseminated several policies and guidelines that guide ICT implementation.

1.1 ICT Infrastructure and its Integration in Management of Schools

Samuel and Zaitun (2007) researched on the adequacy of ICT resources and the right ICT Skills for teachers in integrating ICT tools in teaching and learning of English Language in Malaysian schools. The findings reveal that 81.7% schools have computer laboratories, 64.2% said personal computers are connected to the central server and 48.6% have computers for use. However, majority of computer laboratories are inadequate in specifications and quality hence inadequate use. Swarts and Wachira

(2010) report that high cost of internet connectivity and poor electricity connections in rural areas pose a challenge to ICT integration in rural areas. The report further notes that 58.9% of computers in all schools are not connected to the internet except one school where all 50 computers are connected; that schools in rural set up are unable to use ICT due to internet inaccessibility and affordability, limited rural electrification and frequent power disruptions. Minishi-Majanja (2007) observes that affordability of ICT infrastructure could be limited by the high cost of putting infrastructure in place and is linked with the issue of poverty. Most schools in Kenya do not have the means to purchase expensive computers and hardware to provide training for their staff. Affordability could be achieved through the use of open source software or cheaper versions of software which can operate on older procurement or refurbished computers, redesigning of hardware so as to lower the cost of internet access, merging internet technology to use television connection with modification and using community wireless LAN (Local Area Networks).

Kukali (2013) reveals that 100% of principals, 93.8% of deputy principals and 90.6% of director of studies in Bungoma South District, Bungoma County, Kenya, cite lack of adequate ICT infrastructure as a major challenge in use and integration of ICT in management. In 50% of the schools, respondents observe that there is inadequate room for ICT equipment hence congestion limiting teachers to make maximum use of computers and the internet. Most respondents report either lack of or poor internet connectivity which is a hindrance to communication and linkages through email and fax. According to Mingaine, (2013) limited supply of qualified teachers and high cost of infrastructure are impediments to implementation of ICT in Meru County. In addition to the cost of infrastructure, other costs like electricity tariffs, import duties, software licensing, transportation of imported equipments adds to the cost thus making ICT unaffordable to many schools. The study recommends that cost of infrastructure should be reduced by adopting measures such as locally assembling as well as exploiting alternative technologies to avoid reliance on imported one. Qualified teachers with ICT skills should be employed and in-service courses design to train the ones already in the profession.

Goko (2012) reveals that 87.5% of the schools in Kangema Sub-county, Murang'a have computers in their while 8.3% have none. This was evidence that most schools have some ICTs which can be used in teaching and learning. The researcher identified that 56.3% have less than five computers, 10.4% have ten to fifteen computers, 18.8% have fifteen to twenty computers while 14.6% of the total number of the schools sampled have 20 computers and above. Most of the day schools sampled falls in the 56.3% which worsen the situation given that majority of the schools in the sub-County are day schools. The researcher further note that most of the computers in the school are found in the office represented by 47.9%, 43.8% have their computers in the computer

laboratory. Only 2.1% have a computer in the staffroom while 6.3% have their computers in other places. This implies that the teachers and the students do not easily access the computers for teaching and learning.

1.2 Teachers' ICT Skills and ICT Integration in School Management

The degree of ICT integration in school management in developed and developing countries depend on how teachers are trained to use computers since they are backbone in any curriculum innovation (Clark, 2000). Knowledge and skills are gotten through in-service training and capacity building workshops and it helps principal to be confident in use of ICT tools in daily school management practices. Ogachi (2015) asserts that the availability of ICT technical support significantly influences the integration of ICT by the principals in their administrative tasks areas. This implies that even though the advice on the ICT facilities to be purchased in the principals' offices was sound, the principals were increasingly cautious on their expenditure on ICT to an extent of utilizing computer instructors rather than technicians to maintain and repair computers in their offices.

Ndhine, Njoroge and Ogwel (2010) sought to establish ICT capacities and capabilities in secondary schools in Kenya in which 18 national secondary schools were purposively selected. Their findings reveal that 73% of teachers are ICT trained compared to 27% untrained. However, variations arose in levels of ICT training showing 57% have beginners' basic skills, 29% intermediate and only 14% have advanced basic skills. Despite the relatively high percentage of ICT literacy among teachers is, the study is done in national schools that are arguably established in terms of ICT requirements. Mwikya (2014) notes that integration of ICTs in the secondary schools is hindered by factors such as inadequate infrastructure, teachers have poor pre-service training in ICT because only very few have a diploma in ICT. It was observed that 70.5% of the teachers have certificate in computer application packages and 20% had a diploma in ICT while 6% did not disclose the level of ICT training. This showed that a big percentage of the teachers have the ability to use the computers although their ICT skills are not so advanced.

1.3 Technical Staff and ICT Integration in Management of Schools

Minishi-Majanja (2007) reports that the problem of technical expertise is two faceted; In the first place, there are not enough people qualifying or attaining ICT specialist skills at the speed which the technologies are adopted. Secondly, the problem of brain-drain whereby the few experts opt for better paying jobs overseas. Additionally, having technical staff available allow them to provide assistance to the school community in using software applications, when they are not engaged in servicing the technology. The report notes that without on-site technical support, much time and money may be

lost due to technical break downs. Kersaint (2007) reveals that one of the major obstacles to optimizing computer use in high schools has been the lack of timely technical support. In some extreme cases involving schools in remote areas, computers that have broken down take months to be repaired since no technician is available in the nearest town and so the computers have to be sent to the city hundreds of kilometers away.

According to Albirini (2006) teachers need on-site, classroom based technical support from qualified ICT personnel/technician. Jones (2004) reports lack of technical support as one of the major barriers that result in computers being underutilized in the classes. Teachers do not want to use computers because they were not sure where to turn for help when something went wrong while using computers. He further argues that breakdown of a computer causes interruptions and if there is lack of technical assistance, then it is likely that the regular repairs of the computer will not be carried out resulting in teachers not using computers in teaching. Yilmaz (2011) in a study to assess the technology integration processes in the Turkish education system, reports that in providing schools with hardware and internet connections, it is also crucial to provide the schools with technical support with regard to repair and maintenance for the continued use of ICT in schools. The study further notes that problems such as the breakdown of ICT devices and not having enough quick support led to insufficient class time.

1.4 School Type and ICT Integration in Management of Schools

In their study, Manduku, Kosgey and Sang (2006), sought to find out from the respondents if there is any significant difference in ICT adoption and use when performing management functions between day and boarding schools. The findings indicate that most of the day schools used both traditional and modern ICT related aspects in performing management functions but a slight difference is observed where more boarding schools seem to adopt and use modern ICT as compared to day secondary schools. The results imply that more boarding secondary schools have embraced modern ICT in the performance of management functions as compared to day schools. The study also establishes that there is a difference in ICT adoption and use among day and boarding secondary schools within Wareng District. According to the study, boarding schools have better facilities with modern ICT as compared to day schools. This is mainly because most of the boarding schools are well established with good infrastructural facilities and have been in existence for a longer period as compared to day schools. This brings out the glaring disparities between day and boarding schools and therefore there is need to improve the adoption and use of ICT and provision of other necessary facilities in day secondary schools in Kenya. Mwikya (2014) observed that 56.3% of the day schools in Migwani District, Kitui Countyhad less

than five computers, which were too few compared to the users in the schools. This not only limits the access but it also becomes difficult to rely on them in teaching and learning.

2. Methodology

This study adopted descriptive survey research design. This design is useful in describing the characteristics of a large population, makes use of large samples, thus making the results statistically significant even when analyzing multiple variables, many questions can be asked about a given topic giving considerable flexibility to the analysis. This study targeted only schools which have functional ICTs. According to reports at the Kitui County Education Office, only 58 public secondary schools in the County had functional ICT infrastructure (Kitui County Education office, August, 2015). The target population for this study was therefore the 58 public secondary schools principals, 58 senior teachers, 870 assistant teachers, 16 Sub-county Directors of Education in the 16 Sub-counties and one County Director of Education in Kitui County.

This study used sample size table as proposed by Krejcie and Morgan (1970). 58 principals, 58 senior teachers and 266 assistant teachers from 58 public secondary Schools in Kitui County that have functioning ICT infrastructure were selected for the study. All the 16 Sub-county Directors of Education and the County Director of Education were sampled for the study. This made a sample size of 58 principals, 58 senior teachers, 266 assistant teachers, 16 Sub-county Directors of Education and one County Director of Education.

Table 1: Sample size

Respondents	Target population	Sample population
Principals	58	58
Senior teachers	58	58
Sub-county Directors of Education	16	16
Teachers	870	266
County Director of Education	1	1
Total	1003	399

This study used the questionnaires and the interview schedule as tools for data collection. The questionnaires were administered to principals and teachers while interview schedules were administered to the Sub-county Directors of Education and the County Director of Education.

3. Findings of the Study

The intention of this study was to establish the influence of school related factors on ICT integration in management of public secondary schools in Kitui County, Kenya. Questionnaires were administered to 58 principals, 58 senior teachers and 266 assistant teachers. The interview guide was used to collect data from 16 Sub-county Directors of Education and one County Director of Education. The data was analyzed on the basis of these questionnaires and interview guide. In order to establish the influence of school related factors on ICT integration in management of public secondary schools the senior teachers were required to indicate their level of agreement with statements given in Table 2. where; 1-strongly agree, 2- Agree, 3- Undecided, 4- Disagree and 5-strongly disagree.

Table 2: The responses of senior teachers on school related factor with greatest influence on ICT integration

Factors	1		2		3		4		5		Total	
	f	%	f	%	f	%	f	%	f	%	f	%
School location	26	52.0	20	40.0	3	6.6	4	8.0	2	4.0	**50**	**100**
School type	10	20.0	14	28.0	4	8.0	9	18.0	13	10.0	**50**	**100**
ICT Technician	11	22.0	12	24.0	7	14.0	10	20.0	10	20.0	**50**	**100**
Teachers ICT skills	12	24.0	10	20.0	10	20.0	10	20.0	6	12.0	**50**	**100**

The results shows that majority (52%) of senior teachers strongly agreed that, school location influences ICT integration. Also 20% of the senior teachers strongly agreed that school type influences ICT integration and 22% and 24% strongly agreed that the school technician and teachers skills influence ICT integration.

3.1 ICT infrastructure and its integration in management of public secondary schools

The respondents were requested to indicate the number of functional computers in their schools. The responses are presented in Table 3.

Table 3: Functional Computers in the Schools

Principal			Senior teachers		Teachers	
Number of computers	Frequency	%	Frequency	%	Frequency	%
1 - 5	3	6.0	5	10.0	20	8.0
6 - 10	11	22.0	13	26.0	70	28.0
11- 15	25	50.0	22	44.0	80	32.0
16 - 20	7	14.0	6	12.0	50	20.0
More than 20	4	8.0	4	8.0	30	12.0
Total	50	100.0	50	100.0	250	100

Table 3 reveals that most (50% and 44%) of the schools had 11- 15 functional computers according to the principals responses and senior teachers responses. These results are supported by the teachers' responses whereby 32% of teachers indicate that they had 11 - 15 computers in their schools. This implies that schools have computers even though the number is not adequate as compared to the number of users.

The principals and assistant teachers were further required to indicate where they mostly accessed ICT resources. The results were presented in Table 5 below:

Table 5: Responses on where the Principals and Assistant Teachers Access ICT

	Principals		**Teachers**	
Frequency	Frequency	%	Frequency	%
School ICT labs	25	50.0	120	48.0
Office	10	20.0	70	28.0
Home	5	10.0	20	8.0
Cyber café	10	20.0	40	16.0
Total	**50**	**100.0**	**250**	**100**

Table 5 shows that majority (50% and 48%) of the principals and teachers respectively accessed ICT from the school laboratories. Others accessed ICT from their offices, homes and cyber cafes.

Further, the principals were requested to indicate the extent to which the following school related factors influence ICT integration, using a scale of 1 – Great Extend, 2- Some Extend, 3 –Un-decided, 4 - Less Extend, 5-No extent.

Table 6: Principals' Responses on the Extent to which School Related Factors influence ICT integration

	1		**2**		**3**		**4**		**5**		**Total**	
School related factors	F	%	F	%	F	%	F	%	F	%	**F**	**%**
Internet	30	60.0	12	24.0	3	6.0	3	6.0	2	4.0	**50**	**100**
Projectors	9	18.0	12	24.0	10	20.0	9	18.0	10	20.0	**50**	**100**
Computers(desk tops, laptops)	25	50.0	10	20.0	5	10.0	6	12.0	4	8.0	**50**	**100**
Printers	19	38.0	14	28.0	7	14.0	7	14.0	3	6.0	**50**	**100**
Technical staff	6	12.0	5	10.0	12	24.0	17	34.0	10	20.0	**50**	**100**

Results in Table 6 shows that majority (60%) of the principals observed that to a great extent, internet influenced ICT integration in school management. This was followed by computers which include desktops as well as laptops. Others include; printers, projectors and technical staff. However, projectors and technical staff did not seem to influence ICT integration to a great extent. The same results were given by the Sub-county directors of Education during their interview. They reported that the major reason why many schools do not use ICT is lack of computer infrastructure. The

infrastructure include; computers, computer labs and computer accessories. Report from the Sub-county Directors of Education reveal that most schools do not have computer infrastructure therefore relies on commercial cyber cafés for communication. It was also reported that many schools do not have computer laboratories as well as adequate computers.

3.2 School Type and ICT Integration in Management of Schools

This refers to whether the school is boys boarding, girls boarding, mixed day and boarding and mixed day. Since the research covered the same schools for principals, senior teachers and assistant teachers, the responses were the same so only data for the principals was reported. The responses were presented in Table 7 below.

Table 7: School type

Frequency	Frequency	Percent
Boys Boarding	18	36.0
Girls boarding	20	40.0
Mixed day and boarding	10	20.0
Mixed day	2	4.0
Total	**50**	**100.0**

Table 7 shows that majority (40%) of the schools interviewed were girls boarding followed by boys boarding with 36%. Mixed day was the least with 4%. This implies that the boarding schools had more ability to integrate ICT in management as opposed to day schools. The researcher further used Chi-square to test the hypothesis H_0: There is no statistically significant association between school type and ICT integration in the management of public secondary schools in Kitui County, Kenya.

The results were presented in Table 8 below:

Table 8: Chi-square tests for association between school type and ICT integration

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	48.123[a]	4	.001
Likelihood Ratio	8.21	4	.001
Linear-by-Linear Association	17.210	1	.000
N of Valid Cases	50		

a. 8 cells (75.0%) have expected count less than 5. The minimum expected count is .05. 0.05 sig. level.

Table 8 shows that there is a significant association (χ^2 (1, 4) = 48.123, $p < 0.05$) between school type and ICT integration. Results from the interview schedule with the County Director and Sub-county Directors of Education also indicated that principals in boarding schools integrated ICT in management tasks more than those in day schools.

This could be due to the fact that boarding schools are more established hence have the ability to acquire adequate ICT infrastructure.

3.3 Technical staff and ICT integration in management of schools

The researcher used Pearson correlation coefficient to test the next two hypotheses:

H_0: There is no statistically significant relationship between computer infrastructure and ICT integration in the management of public secondary schools in Kitui County, Kenya.

H_0: There is no statistically significant relationship between availability of technical staff and ICT integration in the management of public secondary schools in Kitui County, Kenya. The results are as shown in the tables 9 and 10 below:+

Table 9: Correlation for ICT infrastructure and its integration in management of schools

		Computer infrastructure	Technical staff	ICT integration
Computer infrastructure	Pearson Correlation	1		.842**
	Sig. (2-tailed)			.000
	N			50
Technical staff	Pearson Correlation		1	.659**
	Sig. (2-tailed)			.012
	N			50
ICT integration	Pearson Correlation			1
	Sig. (2-tailed)			.000
	N			50

**. Correlation is significant at the 0.05 level (2-tailed).

Table 9 shows that there is a strong positive correlation $r(50) = 0.842$, $p<0.05$ between computer infrastructure and ICT integration in management of public secondary schools and that there is also a strong positive correlation $r(50) = 0.659$, $p<0.05$ between technical staff support and ICT integration in management of public secondary schools.

3.4 Teachers ICT skills and ICT integration in management of schools

The researcher tested the hypothesis below using Chi-square test.

H_0: There is no statistically significant association between teachers' ICT skills and ICT integration in the management of public secondary schools in Kitui County, Kenya.

The results were presented in Table 10 below.

Table 10: Chi-square tests for association between Teachers ICT skills and ICT integration

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	58.11[a]	4	.000
Likelihood Ratio	7.21	4	.000
Linear-by-Linear Association	15.310	1	.000
N of Valid Cases	50		

a. 8 cells (75.0%) have expected count less than 5. The minimum expected count is .05.at 0.05 sig. level.

Table 10 shows that there is a significant association (χ^2 (1, 4) = 58.11, p< 0.05) between teachers ICT skills and ICT integration. This implies that schools where teachers have ICT skills then they will embrace ICT integration in management.

The principals were finally requested to indicate the major school factors that influence integration of ICT in management of schools. The results were presented in Table 11 below.

Table 11: Major school related factors influencing ICT integration in management of schools

	Principals		**Teachers**	
Frequency	Frequency	%	Frequency	%
Lack of adequate ICT facilities	17	34.0	85	34.0
Financial constraint	28	56.0	110	44.0
Lack of trained personnel	1	2.0	15	6.0
Out dated software	4	8.0	40	16.0
Total	50	100.0	250	100.0

Table 11 reveals that majority (56% and 44%) of the principals and teachers respectively indicated that financial constraint was the major school related factor that influence principals' integration of ICT in management of schools followed by lack of adequate facilities (34%).

The same results were given by the Sub-county directors of Education during their interview. They reported that the major reason why many schools do not use ICT is lack of computer infrastructure. The infrastructure include; computers, computer labs and computer accessories. Report from the Sub-county Directors of Education reveal that most schools do not have computer infrastructure therefore relies on commercial cyber cafés for communication. It was also reported that many schools do not have computer laboratories as well as adequate computers.

4. Recommendations

Based on the study finding, the following recommendations are made:

1. The universities should make it compulsory for all students training as teachers to take a compulsory unit on computer studies. The academic professional training that teachers and principals undergo should be assessed if it is relevantly meeting the threshold to promote the use and integration of ICT in public secondary schools. The government should also increase its supply of computers to schools and make it compulsory for all schools to integrate ICT in the management tasks as well as build computer laboratories to all the schools. This will enable most schools to acquire computers which can be used for ICT integration in management of the schools. The Ministry of Education should formulate a policy requiring every public secondary school teacher to procure and own a laptop through a government incentive such as subsidy, tax waiver or creation of an affordable laptop loan scheme.
2. All schools should have internet connectivity to enable principals and teachers to use ICT in the schools. This would help in communication as well as academic research. The schools should also have alternative source of power in places where there is no electricity so as to enable effective ICT integration in school management. The Teachers Service Commission should peg future recruitment and promotions of teachers to those who have undergone ICT training for e-learning and ability to integrate ICT into their duties of management.

References

1. Aboderin, O.S. (2009). *The status of Information and Communication Technology (ICT) in secondary schools in Ondo State* (Doctoral thesis): University of Ado-Ekiti
2. Albirini, A. (2006). Teachers' attitudes towards Information and communication Technologies. *Journal of computer and education,* 47.
3. Ayeni, A. A. (2004). Relevance of ICT to the Construction of Sports Courts and Pitches. *West African Journal of Physical and Health Education. Vol. 8.*
4. Clark, K. (2000). Urban Middle School Teachers' Use of Instructional Technology: *Journal of Research on Computing in Education,* 33 (2), pp.78 -193.
5. Clark, R. E., & Meyor, R.E. (2003). *Media in teaching.* In M. C. Wittrock (Ed.), Handbook of research on teaching (3rded.). (pp. 464–478). New York: Macmillan.
6. Goko, A. K. (2012). *Factors Affecting The Use of Information And Communication Technology In Teaching And Learning In Secondary Schools In Kangema Murang'a County.* (Masters Thesis) Kenyatta University.

7. Jones, A. (2004). *A Review of the Research Literature on Barriers to the Uptake of ICT by Teachers.* British Educational Communications and Technology Agency. Retrieved May 20, 2014 from http://www.becta.org.uk
8. Kersaint, G. (2006). *Pan African Research Agenda on Pedagogical Uses of ICTs.* IDRC. Quebec: Quebec University press.
9. Kitui County Education Office. (2015). *Education Management Information* (EMIS).
10. Krejcie, R. V. & Morgan, D. (1970). Determining sample size for research Activities; *A journal of Educational and psychology measurement vol*. 30 pp 607-610, Sage publishing. Retrieved on May 2016 at www.emp.sagepub.com/content/30/607/extract
11. Kukali, A. N. (2013). Opportunities and challenges for use of Information Communication and Technology in management of public secondary schools in Bungoma South District Kenya. *International Journal of Science and Research* (IJSR) India online ISSN:231-97064-Volume 2.
12. Manduku, J.G., Kosgey, A. K., & Sang, H. (2006). *Adoption and Use of ICT in Enhancing Management of Public Secondary Schools:* A Survey of Kesses Zone Secondary Schools in Wareng District of Uasin Gishu County, Kenya: Kabianga University College.
13. Mingaine, L. (2013). Challenges in the Implementation of ICT in Public Secondary Schools in Kenya International. *Journal of Social Sciences & Education,* 2013 Vol.4 Issue 1, ISSN: 2223-4934 E and 2227-393X Print 224.
14. Minishi-Majanja, M. (2007). *Integration of ICTs in library and information science education in sub-Saharan Africa*. Paper presented at the World Library and Information Congress: 73rd IFLA General Conference and Council. Retrieved on Sept. 2015 from http://www.ifla.org/IV/ifla73/index.htm.
15. Mwikya, D. N. (2014). *School based factors influencing Information Communication*
16. *Technology in public secondary schools in Migwani District, Kitui County. Kenya*. From http://erepository.uonbi.ac.ke retrieved on 10/05/2016
17. Ndhine, O. E. Njoroge, M. H. & Ogwel, A. C. (Eds.) (2010). *ICT Capacities and Capabilities in Secondary Schools in Kenya 2009/2010*, NCST No: 046.Nairobi: NCST.
18. Ogachi, N. M. (2014). *Factors Influencing Principals Integration of ICT in Administration of Public Secondary Schools in Isinya Sub-county, Kenya.* Masters Thesis, Unpublished: University of Nairobi.
19. Samuel, R. J. & Zaitun, A. B. (2007). Do Teachers have Adequate ICT Resources and the right ICT Skills in Integrating ICT Tools in the Teaching and Learning of English language In Malaysian Schools *in the Electronic Journal on information systems in developing countries* 29, 2, pp.1-15.

20. Swarts, P. & Wachira, E. M. (2010). *ICT in Education Situational Analysis:* Global e-schools and communities initiatives. *Dar-es-salaam,* Tanzania. Retrieved from www.tanzania.go.tz/egov
21. World Bank. (2008). *Governance, Management, and Accountability in Secondary Education in Sub-Saharan Africa*. World Bank Working Paper No.127.Washington D.C: the World Bank.
22. Yilmaz, N. P. (2011). Evaluation of the Technology Integration Process in the Turkish Education System. *A journal of Contemporary Educational Technology*, vol.2, no.1, pp. 37-54.