Article https://dx.doi.org/10.4314/iijikm.v9i2.4

Information Impact

Information Impact:
Journal of Information and Knowledge Management
2018, Vol. 9 (2) Pg 44 - 57
ISSN: 2141 – 4297 (print)
ISSN: 2360 – 994X (e-version)

Access to, Use and Challenges of ICTs in Secondary Schools in Tanzania: A study of Selected Secondary Schools in Morogoro Municipality

Andrew A. Malekani
Sokoine University of Agriculture, Tanzania.

Abstract

This study was conducted to establish current status of ICTs in terms of access, use and challenges of ICTs in selected secondary schools in Morogoro municipality. The study was a cross section survey and used self administered questionnaires that were given to teachers and students in selected schools. This was supplemented by observations and secondary data review. 20 teachers and 60 students were involved in the study. The findings indicated that the status of ICTs is not good in secondary schools. Though students and teachers seem to be aware of ICTs, but the schools have no enough facilities for ICTs and the facilities available are not adequately utilized. Moreover, the teachers reported that they have no in-service training related to ICTs in teaching and learning. It was also reported that low band width (resulting into poor internet connectivity or slow speed), lack of standby power, and lack of a policy and training schedule hindered the utilization of ICTs in the selected schools. It is recommended that to effectively introduce and efficiently utilize these emerging technologies, remedies should be made to overcome the stated challenges.

Key words: ICTs, Improved learning, secondary schools, Morogoro

Introduction

Information and Communication Technologies (ICTs) refer to all technologies used to communicate, create, manage, access, gather, and distribute information (UNESCO, 2009). According to Sector Strategy Paper of the World as cited by Ayere *et al* (2010), ICTs consists of hardware, software, networks and media for collection, storage, processing, transmission and presentation of information. Application of Information and Communication Technologies can help both teachers and students improve teaching and learning at school. According to many researchers, Information and Communication Technology in educational context refers to a set of combined technologies that enable not only information processing but also its transmission for the purposes of teaching, learning and educational developments (Karsenti *et al*, 2009). The ICT on their own will not only bring about improvement in educational quality but when we change our mindsets to use them reflectively and strategically, teaching and learning processes can be deepened (Toure, 2008). Information and Communication Technologies

allow learners to apply a concept or understanding to a new situation, to analyse ideas by organising them and manipulating them and to learn how to evaluate and solve problems. In the international community, however, the status of ICTs in teaching and learning at school has been reported in various ways. The former UN General Secretary Koffi Annan (2005) as cited by Karsenti *et al* (2009) "Information and Communication Technology are not a panacea or magic formula, but they can improve the lives of everyone on this planet". In fact the participation of researchers and educators in the processes of change that ICTs bring to education is an opportunity to construct, shape and share developed knowledge. Educational system around the world are under increasing pressure to use the new Information and Communication Technology (ICT) to teach students the knowledge and skills they need in the 21st century (Omwenga, 2006).

In Africa, Information and Communication Technologies are increasingly present in African societies and have been introduced to varying degrees at all educational levels from preschool to university, and in both formal and informal sectors (Karsenti *et al*, 2009). In East Africa particularly Kenya, the Ministry of Education and Technology (MOEST, 2005) discusses the ways in which Information and Communication Technologies can be leveraged to support and improve the delivery of quality education for all Kenyans. The MOEST (2005) says that there are obvious benefits for integrating computers into secondary schools as students at this age need to focus on subject specific contents, greater critical thinking skills, scientific inquiry and mathematics, science and language. Students will benefit greatly with the analytical, creative and collaborative power of computers to map out and analyse assumptions, present ideas and participate in projects with peers from around the country and around the world. As a result, the government of Kenya recognises that an ICT literate workforce is the foundation on which Kenya can acquire the status of knowledge economy. It is believed that the use of ICT in education can increase access to learning opportunities. It can help to enhance the quality of education with advanced teaching methods, improve learning outcomes and enable reform or better management of education systems (UNESCO, 2009).

In Tanzania, as reported by Swart and Wachira (2010), the situational analysis reveals that the government and the MoEVT recognize the potential of ICT to act as a tool for improving education delivery, outcomes and impact, as evidenced through the

national plans, policies and strategies. The Tanzania Vision 2025, the key national development strategy, recognizes the role of education as a strategic change agent for transformation of the economy to a knowledge economy, and identifies the potential of ICT to address most of the development challenges including those presented by education. The National ICT Policy of 2003 recognizes that ICT can enhance education opportunities and advocates for the introduction of an e-education system.

In Morogoro as noted by Calder (2009) in the study of Secondary Education for Girls Advancement (SEGA-ICT show case school), there are challenges facing proper integration of ICT in teaching and learning at school. Those challenges, among other things includes low energy technology, low maintenance of computers, lack of renewable energy, student centered learning and appropriate use of technology in learning.

According to Punie *et al*, (2006), it is difficult and maybe even impossible to imagine future learning environments that are not supported, in one way or another, by Information and Communication Technologies. According to study done by Hare (2007), most private schools in the urban centers especially Dar-es-salaam are already using ICTs, though without formal setting or a policy frame work. Within the context of development, ICTs are regarded as tools for socio-economic development and sustainable livelihoods (Chilimo, 2009). There is a necessary commitment from the government and other development partners to support this goal. Komba *et al* (n.d), noted that strategic priorities of Primary Education Development Plan (PEDP) as part of Secondary Education Development Plan (SEDP) mentioned four priorities including enrollments expansion, quality improvement and optimizing human, materials and financial resources utilization. However, none of these priorities advocate on status of ICT in teaching and learning at secondary schools. Therefore the problems associated with accessibility, integration, training and infrastructure in introduction and use of ICTs in teaching at secondary schools are not well known. This is especially so in Tanzania. This study intended to bridge the existing knowledge gap by assessing the status of ICTs and their use in teaching and learning at secondary schools.

Objectives of the study

The objectives of the present study were to assess the status of ICTs and their use in teaching and learning among selected secondary schools in Morogoro district. Specifically, the study sought to establish:

- current status of ICTs in the selected secondary schools of Morogoro district,
- examine the current usage of ICTs in secondary schools in Morogoro district,
- assess current and planned programs that utilise ICTs to improve teaching and learning at schools,
- identify challenges in using ICTs that the schools face when they try to implement ICTs in teaching and learning and
- recommend best ways for effective implementation, integration and use of ICTs in the school curriculum.

Methodology

The study was conducted in four secondary schools namely Kilakala, Kigurunyembe, Educare and Denis which are found in Morogoro district. The area is located in the Eastern zone of Tanzania, about 200km from Dar-es-salaam. The area was chosen for this study because it was found that it is easily reached and the fact that the schools have introduced some forms of ICTs (especially computers labs) at their schools. The population included in this study included students and teachers who at the time of investigation were present in schools. For convenience, only form three and form four students were selected in the study. These were then selected from the class lists using simple random sampling. Teachers in both schools were purposively selected from each school. The study employed a cross sectional survey, where the study population was visited only once and the data was collected at one point in time. The study employed both quantitative and qualitative data collection methods. The reason for selecting this design was based on the fact that it allowed collection of data on different groups of respondents at one time, hence saved time and financial resources.

The study collected both secondary and primary data. Secondary data were collected through various document reviews present in public and academic libraries. The primary data were collected using questionnaires. Both closed and open ended

questionnaire were used to elicit information from respondents, while observation was employed as backups for data collection. In interviews and oral verbal responses were used. Most of data obtained from questionnaire and interview guide was first coded, compiled and then entered in the Statistical Package for Social Science (V16) prior to statistical analysis. The frequencies and percentages were used to present the findings.

Findings and Discussion

This study consisted of both girls and boys students of ages ranging from 17 to 28 years. The study revealed that, majority of respondents 39 (65%) was in the age group of 21-24 years. However, the study found that most teachers 14 (70%) had age range from 24-35 years.

In terms of teaching ICTs, only 15 students (25%) stated that they have ever been taught. The implication is that a majority of respondents (students) are not aware of ICT tools in secondary schools studied (Figure 1).

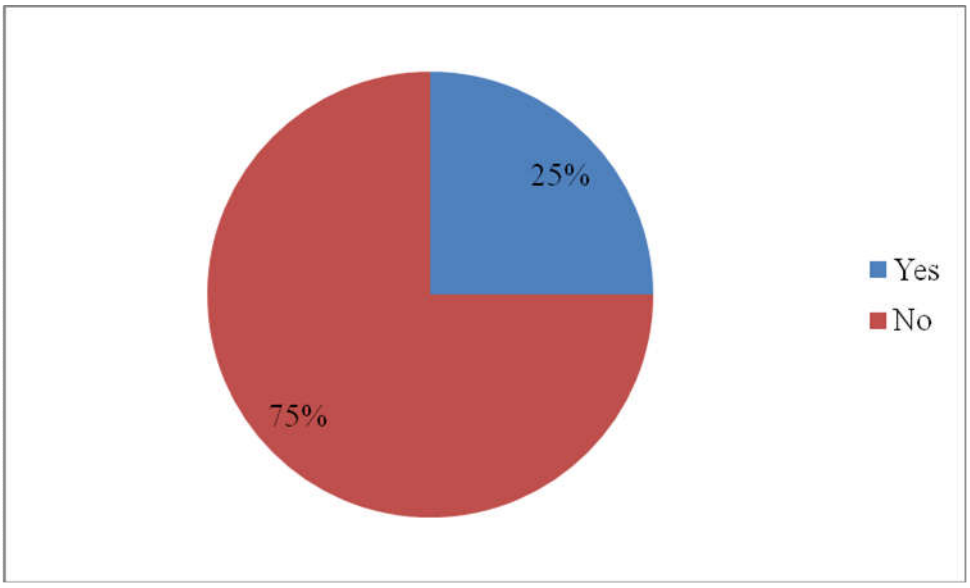

Figure 1: Percentage of students who reported that they have ever been taught ICTs at school N=60

The teachers too, 85 (75%) commented that they do not use ICTs in facilitating classroom teaching due to a number of factors including unavailability of ICT facilities, lack of formal setting or a policy framework for in-service training to teachers and also

they reported that there is no official ministry document that govern education sector in the use of ICTs for classroom teaching and learning. When asked on the importance of use of ICTs in learning, most students 56 (93.3%) reported that ICTs are useful if used for learning (Table 1).

Table 1: Students perception on use of computers in terms of importance N=60

Response	Respondents	Percentage
Less useful	4	6.7
Useful	10	16.7
Very useful	32	53.3
Most useful	14	23.3
Total	**60**	**100.0**

This implies that the use of ICTs in classroom instructions can drastically add knowledge and skills and hence better performance of subjects. It also shows that students perceive ICTs positively in the learning process. These findings were also supported by all teachers 20 (100%) who said that ICTs (especially computers and the internet) in the classroom would enhance and extend student knowledge during the teaching process.

Level of ICTs use in the surveyed schools

Both students and teachers were asked to state whether they were using the ICTs (computers and internet) or not, to determine their level of use. The results indicated that more than three-quarters 62 (77.5%) were using the computers and Internet, whereas 18 (22.5%) did not use the available ICTs (Table 2).

Table 2: Respondents' level of computer and internet use N=80

Statement	Frequency	Percent
Who used the computers and internet	62	77.5
Who did not use the computers and Internet	18	22.5
Total	**80**	**100**

These findings are supported by Anderson, *et al*., (2014) who in a similar study found that 62% of teachers were using internet in sharing knowledge. This indicates that training of teachers and their students on academic use of ICTs and particularly the internet can tremendously enhance ICT integration in education.

Planned programs in schools on ICTs

When asked about planned programs on ICTs in their schools, all teachers 20 9100%), responded that they have never attended in-service training related to ICT in secondary schools. During the study, it was revealed that there were no planned programs set by school or education authority that aimed at training teachers to use ICTs during classroom instructions. All teachers indicated that in future, they would need training on ICTs to meet the challenges of 21st century of knowledge development through the use ICTs.

When asked on whether teachers refer their students to use the internet cafes, only 4 (20%) of teachers said that they refer their students to do so (Table 3).

Table 3: Teachers reference of students to internet café to access reading materials N=20

Response	Frequency	Percentage
Yes	4	20.0
No	16	80.0
Total	**20**	**100.0**

This calls for a planned program to encourage teachers to refer their students to internet usage, which would also encourage students to use the ICT facilities available at schools.

Teacher and students were also asked to state future access points they considered useful to meet the knowledge and information needs in pursuit of their carriers.

Table 4: Internet access points required by students and teachers N=80

Point of Internet Access	Frequency	Percent
At the school	42	52.5
At home	9	11.25
Internet cafes	4	5.0
Cell phones	25	31.25
Total	**80**	**100**

Results indicate that most respondents 42 (52.5%) would use the internet at school, 25 (31.25%) would also prefer to use cell phones. 9 (11.25%) would like to access the internet at home and only 4 (5.0%) would prefer the internet cafes (Table 4).

Challenges that schools face when trying to implement and use ICTs

Several challenges were mentioned by both teachers and students as being a barrier to effective ICTs use at schools. These are discussed below.

Inadequate ICT facilities, particularly computers connected to the internet

The respondents were asked to indicate availability of various ICT facilities for teaching and learning in their schools. The findings in Figure 2 below show that inadequate computers connected to the internet (18.8%) were a problem.

The findings show that computers were very few and insufficient to meet the needs of the students and teachers in the schools. Observations made by the researcher revealed that no ICT facilities were allocated in the classrooms. These findings confirm the earlier findings by Mswanyama (2004) who reported that lack of computers and other ICT facilities in the Tanzanian teachers colleges hindered implementation and use of these facilities in the colleges. The shortage of computers and other ICT facilities in general has been a common problem in several education institutions in Africa. The situation is even worse in Tanzania where inadequate number of ICT facilities is not only found in primary and secondary schools but also in higher learning institutions.

Lack of teachers' training in use of internet

The teachers were also asked to indicate whether they had benefited from any training in internet use. The responses given indicate that 12 (60%) had not attended some training and only eight (40%) had attended any training as illustrated in Table 5.

Table 5: Teachers' training in Use of computers and the internet N=20

Response	Frequency	Percent
Have undergone training	8	40
Have not undergone training	12	60

The findings show that the majority of the teachers did not attend any formal training on computer and internet use. Lack of training in computer and internet use is one of the major factors that hinder effective ICTs use hence contributing to the underutilisation of these facilities and related resources even when access was available. In a similar study by Yidana (2007), it was found that most of the teacher-educators in two Ghanaian universities lacked knowledge and skills on ICT integration in teaching and learning. In a

study that involved 132 teacher educators, the results show that only12.9 percent (n=17) had knowledge and skills on ICT integration in educational instruction.

Problems related to internet usage

Teachers were also asked to indicate whether they faced any difficulties in using the Internet. The findings presented in Figure 2 show that the major problems encountered with regard to internet use were slow internet speed (19.3%), erratic power supply (18.8%), lack of skills for Internet use (16.3%), barriers related to timetabling (14.8%) and difficulties in finding relevant information (12.0%).

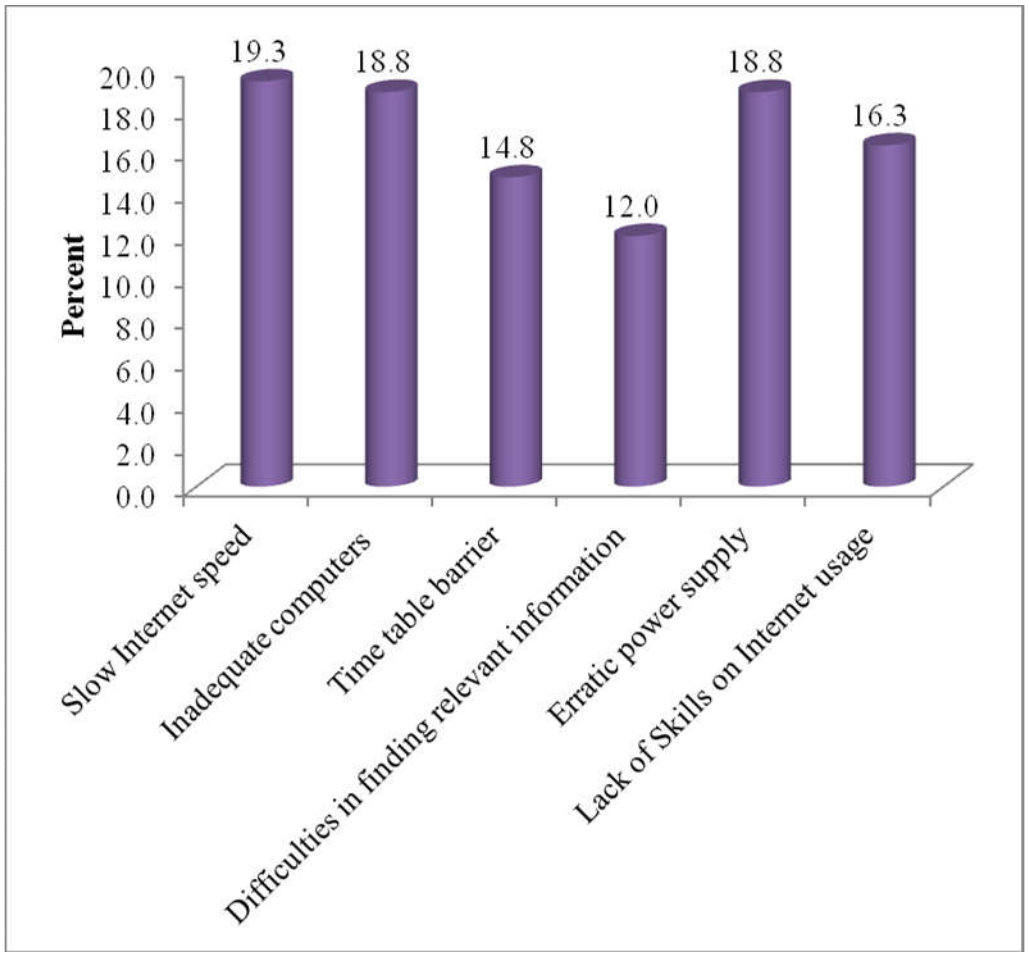

Figure 2: Challenges encountered in using the ICT facilities particularly the computers and the internet

Slow Internet speed seems to be a common problem in most institutions in Tanzania as they all receive Internet connection from the same source. It was established

through interviews with teachers that all schools involved in the study were connected via VSAT, which generally experiences poor connectivity. As one teacher commented:

"...Internet speed is always very slow especially from 6.00 pm to around 09.00 pm, hence this makes it difficult for us to download enough material for teaching."

The slow Internet speed might be attributed to the small bandwidth that slows down Internet access particularly during peak periods.

The student and teacher's time table is fixed and rather inflexible with very limited free time. In the schools studied, for example, the researcher observed that there was only one ICT period and double free periods per week. After classroom hours, students had to do some extra-curricular activities. Indeed, for the development of ICT in schools and internet use in particular, timetable should be set in such a way that both student and teachers get enough time to use ICT facilities for teaching and learning purposes.

For any new technology to be used effectively, relevant skills are a necessity. In this case, teachers were required to be equipped with relevant skills to be able to benefit from the Internet and to teach their students accordingly. Mapunda (2004) assert that, when technology appears difficult to use and when the majority of the potential users lack requisite skills, its application remains low, as users shy away from using the technology they were not familiar with. As a result, they tend to lose interest in using it. This finding is in line with assertion made by Unwin (2004) indicating that skills and training are variables that influence internet use. Frequent power cuts were identified as a problem facing not only Tanzania but also other African countries; this has tremendous effect on educational institutions, more particularly in secondary schools. Recently, frequent power cuts due to load shedding have wreaked havoc on different socio-economic activities in the country, including hitting hard educational institutions without recourse to standby power. Hawkins (2002) points out that lack of electricity and frequent power outages are factors hindering the effective use of ICTs in schools. To address this problem, schools should establish alternative power sources, such as purchasing standby generators, instead of waiting for the government. However, the present rural electrification project under Rural Energy Agency (REA) will possibly reduce the problem in the near future.

Conclusion and Recommendations

It is now apparent that ICTs can offer great opportunity for secondary schools in developing countries to improve teaching and learning processes in both aspects of content and pedagogy. It was in this base that the then ministry of education and vocational training (MoEVT) decided to prioritize on ICT development and deployment in secondary schools and teacher education colleges (TCs) through a joint venture between MoEVT and the Swedish International Development Agency (SIDA). The assessment on level of knowledge, attitudes, skills and practices revealed that, most students and teachers reported that they need to learn about Information and Communication Technologies because it is an excellent source of information related to subject of study. In line with the research topic, the findings of this study indicate that teachers have a strong desire for the integration of ICT into classroom teaching and learning but they encountered many challenges.

Therefore, considering the purpose and frequency of Internet use among teachers and students, it can be concluded that the computers and Internet has not yet to be effectively tapped as one of the foremost resource in enhancing the learning and teaching activities in Tanzania's secondary schools, as students still use traditional methods of note-taking and note-making and also remain largely dependent on teachers notes, handouts and printed materials. The teachers on the other hand, also use traditional ways of teaching and the parent ministry does not seem to work hard on this. Hence, there is a serious need to integrate ICTs in schools and raise the awareness to all stakeholders from the ministry to the secondary schools as well as teachers and students to enhance the use of the ICTs for academic purposes.

From the findings of this study, it is specifically recommended that:

1. The installation of ICTs facilities at school level should be encouraged by the Ministry concerned and providing basic ICT tools and materials. Teachers and students on the other hand, should take the advantage of resources offered at school by knowing how to access resources.
2. The Ministry of Education and Vocational Training should improve in-service training in ICT use and provide adequate guidance on how to use ICTs tools. The

ICTs syllabus which was introduced should be interpreted into action by making available those ICT facilities.

3. Teachers and students should be motivated to realize the learning opportunity in line with ICTs support through in-service training.

References:

Ayere M.A et al (2010) E-*Learning in Secondary Schools in Kenya: A case of NEPAD E-schools*.] Maseno University, Kenya Available at http://www.academicjournals.org/ERR2

Banhart C.L & Barnhart R.K (1990) *The World Book Dictionary*, Vol II": Marchandise Mart Plaza,world Book,Inc:Chicago. 186 pp

Chilimo W.L (2009) *Information and Communication Technologies And Sustainable Livelihoods*: A case of Selected Rural Areas of Tanzania. PhD Thesis, University of Kwazulu-Natal. South Africa

Calder G. (2009*) ICT Projects in Tanzania. Changes in Technology*. Available at www.iiep.unesco.org/.../GeoffCalder_NewCastelUniversity_Tanzania.ICT.ppt

Hare H. (2007) *Survey of ICT and Education in Africa: Tanzania Country Report ICT in Education in Tanzania*. Available at http://www.infodev.org

Harri H.R (1990) *The Production of Educational Media in Tanzanian Schools*: Problems and Prospects: A brief Survey of Iringa District. Master Dissertation, University of Dar es salaam . Tanzania

Hawkins, R.J. (2002).Ten lesson for ICT and Education in developing world. In G. Kirkman, P.K Cornelius, J.D Sachs & K.Schwab Eds, Global Information

Karsenti T. et al (2009) *The Panafrican Research Agenda on The Pedagogical Intergration of ICTs*. Bussan, Korea . Available at www.oecd.org/dataoecd/53/53/44097541.pdf

Komba et al (n.d) *Capacity of Primary School Management for Teachers Professional Development in Selected Primary Schools in Tanzania* . University of Dar-es-salaam. Available at www.u.ac.jp/cise/publication/aa/kampala_tanzania.pdf

Kothari C.R (2004) *Research Methodologies. Methods and Techniques*. Revised Edition. New Age International (P) Ltd: New Delhi.

Krishnaswami O.R (2003) *Methodology of Research in Social Science*. Himalaya Publishing House. Mumbai: New Delhi

Mapunda,H.S. (2004). *The Use of Internet by Secondary School Teachers: A Case of Twelve Secondary Schools*. M.A Dissertation, University of Dar es salaam

Mswanyama, C.A.(2004).*The Role of Information and Communication Technology (ICT) for Learning and Training in Selected Teacher Training Colleges in Tanzania*. MA Dissertation. University of Dar es Salaam.

UNESCO (2009) *Guide To Measuring Information and Communication Technologies (ICTs) in Education* Montreal, Canada. Available at http://www.uis.unesco.org

Unwin, T. (2004). *Towards a framework for use of ICT in teacher training in Africa*. Available at http://www.gg.rhul.ac.uk/ict4d/ICT%20TT%20Africa.pdf

Toure K. (2008) *Introduction: ICT and Changing Mindsets in Education*. [Internet] Bernenda, Cameroon. Available at www.rocare.org/ChangingMindsets/.../ch01_ICTandChangingMindsets.pdf

Swarts P and Wachira E.M (2010) *Tanzania: ICT in Education Situational Analysis* . Available at http://gesci.org/asserts/files/knowledge Centre/Situational Analysis_Tanzania.pdf

Schultze T.W (1971) *Investment in Human Capital*: The Role of Education and Research. New York, Free Press. 272 pp

MOEST (2005) *Kenya Education Sector Support Programme 2005-2010; Delivering Quality Education and Training to all Kenyans. Nairobi*: Government Printers .Available at www.education.go.ke .

Omwenga E.I (2006*) Pedagogical Issues and E-learning Cases: Integrating ICTs into Teaching and Learning Process*. Available at http://www.uneca.org/disd/events/2006/iucea-kenya/content/pedagogical issues and e-learning cases integrating acts into teaching and learning process-elijah omwenga-eu.pdf

UNESCO, (2009). *Guide to measuring information and communication technologies in education.* Montreal: UNESCO Institute for Statistics.

Yidana, I. (2007). *Faculty perceptions of technology integration in the teacher education curriculum: A survey of two Ghanaian universities*. Published Doctoral Dissertation, Ohio University, [Online]. Available at https://etd.ohiolink.edu/!etd.send_file?accession=ohiou1178570000&disposition=inline