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Teachers' Perceptions on ICT Integration in Secondary Schools in Tinderet Sub-County

Monica Jepkorir Ng'ososey,

P.0 Box 910-30100, Moi University

Abstract

Despite rapid growth in ICT access by teachers and students both at home and school, and substantially improved school ICT infrastructure most teachers are not keen in adapting and using ICT tools during teaching and learning. This paper sought to establish teachers' perception on ICT integration in secondary schools in Tindiret Sub-County. The study adopted descriptive survey design since it allows the use of both qualitative and quantitative data, hence suitable in obtaining the perception of teachers on integration of ICT in secondary schools. The study was conducted in Tinderet Sub-county. The study targeted all the 23 public secondary schools, all principals and all the heads of department in Tinderet Sub-county. The sampling procedures used are stratified sampling and simple random sample. The sample therefore consisted of 4 (57%) boarding schools, 3 (50%) day and boarding and 7 (70%) day schools which were randomly selected. All the 14 principals of the sampled schools were selected using purposive sampling method and the 5 Heads of Departments (H.O. D's) from each school selected using simple random sample were used as the main informants. Questionnaire, interviews and observation schedule was used as the data collection instruments. Data was analyzed using descriptive statistics while data from the interviews were summarized and presented in form of statements. The overall perception of teachers towards ICT integration is negative. The perception displayed by teachers has been influenced by their low competence in ICT skills since majority said that they are not confident working with ICT technology in class since lack of confidence or know-how on how to handle the different ICTs media would make both students and teachers shun ICTs in training or learning.

Key words: *Teachers' perception, ICT integration, Secondary schools, Tindiret*

Introduction

The integration of Information and Communication Technology (ICT) in teaching-learning processes heightens the need to offer learners the so-called 21st Century competencies. According to Ministry of Education (2011) information and communication technologies are commonly defined in education as diverse set of technological tools and resources used to communicate and to create, disseminate, store and manage information. Information Communication Technology (ICT) can play an important role in re-shaping education to respond to contemporary information society needs and reduce gaps that exist between socio-economic realities (United Nations Educational, Scientific and Cultural Organization, 2009).

In Australia, Europe, and North America, most ICTs are more universally accessible and more reliable than in Asia Pacific. Panda (2005), for example, has reported that online programs at Indira Gandhi National Open University (IGNOU) in India have only been successful in reaching 'the digitally rich who have access to the Internet or can manage to visit learning and teaching centers regularly. In Germany, ICT integration in pedagogy was not fully adopted in schools because of inadequate trained teachers on ICT integration in subject-related technology. The teachers have positive self-efficacy to use technology but have little knowledge on new pedagogical approaches that differ from traditional methods of teaching (OECD, 2014; Salhberg, 2010; UNESCO, 2005).

In Africa, many countries have put emphasis on the utilization of ICT in education in the process of reforming their educational systems. In Nigeria for instance, the educational reforms stressed the use of computer technology in schools during the 32nd Ministerial Council meeting of the National Council in 1987 (Federal Republic of Nigeria, 2004). The Nigerian policy on the adoption of ICT in school emphasizes the role and utilization of Information and Communication Technology. In enhancing sustainability development in Nigeria,

an internet service in schools (School Net Nigeria) was launched in September 2001 (Federal Ministry of Education, 2005).

The government of Kenya has been working towards transformation of all educational institutions in the country to be ICT compliant as attested by the interest shown on ICT in the number of government policy documents (Republic of Kenya, 2001; Republic of Kenya, 2005). Through the Ministry of Education, the government has made great initiatives towards developing ICT infrastructure in secondary schools. Some of the main organizations which have played a vital role in the development of ICT in schools include: Computers For Schools Kenya (CFSK), ICT Trust Fund, Kenya Institute of Education and Non-Governmental Organizations Network Initiative for Computers in Education (Farell, 2007).

To successfully initiate and implement educational technology in school's program depends strongly on the teachers' support and perception. It is believed that if teachers perceived technology programs as neither fulfilling their needs nor their students' needs, it is likely that they will not integrate the technology into their teaching and learning. Among the factors that influence successful integration of ICT into teaching are teachers' perception and beliefs towards technology Hew and Brush, 2007; Keengwe and Onchwari, 2008). If teachers' perception is positive toward the use of educational technology then they can easily provide useful insight about the adoption and integration of ICT into teaching and learning processes.

Statement of the problem

ICT integration in education is critical in empowering participants to develop competitive skills and knowledge that are necessary in the global knowledge economy of the 21st Century (Economic and Social Research Council, 2005; Ministry of Education, 2006; Trucano, 2005). While there is wide acceptance, the world over that ICT integration supports effective teaching and learning, it has been noted that there is a considerable technology lag in educational institutions in most parts of the world especially in Africa.

Keengwe, & Onchwari, (2011) noted that, despite rapid growth in ICT access by teachers and students both at home and school, and substantially improved school ICT infrastructure (connection to internet and electricity, computer labs, availability of educational software, etc.) most teachers are not keen in adapting and using ICT tools during teaching and learning. It appears that their skills and attitudes towards ICT remain a challenge for them to adopt and use efficiently the technology in classroom. This paper sought to establish teachers' perception on ICT integration in secondary schools in Tindiret Sub-County.

Literature Review

Research has shown that teachers' attitudes towards technology influence their acceptance of the usefulness of technology and its integration into teaching, Huang & Liaw (2005). In European Schoolnet (2010) survey on teachers' use of Acer netbooks involving six European Union countries, a large number of participants believed that the use of netbook had had positive impact on their learning, promoted individualized learning and helped to lengthen study beyond school day. However, evidence suggests that small number of teachers believe that the benefits of ICT are not clearly seen. The Empirical survey revealed that a fifth of European teachers believed that the use of ICT in teaching did not benefit their students' learning, Korte & Hüsing (2007).
The governments in Africa and elsewhere are emphasizing on teacher development as the key in implementing ICT in teaching and learning hence improving the standards of education (Hennessey, Harrison and Wamakote 2010). The teacher factor is an important fact that the Kenya government has paid attention to while implementing ICTs in teaching and learning. Indeed, as noted in earlier studies by Keengwe, (2007); Rockman, (2004); Becker, (2001); and Allen, (2001) among many other reasons for the lethargy in the uptake of ICTs in teaching, is the negative teacher attitudes towards technology which stands out as one of the main reasons.

A study carried by Woodrow, (2002) points out that for successful transformation of school practice; teachers need to develop positive attitudes toward innovations. Van Braak, Tondeur, & Valcke, (2008) argued that positive computer attitudes by teachers are expected to foster implementation of ICT in schools. Further study by Teo (2012) on teachers' attitudes towards computer use in Singapore, found that teachers were more positive about their attitude towards computers and intention to use them, than the helpfulness of computer towards teaching and learning. These studies reveal that teacher's skills, perceptions, and attitudes influence adoption and use of ICT in schools.

Mwangi (2014) conducted a study on Access and Pedagogical Integration of Information and Communication Technology in Secondary Schools in Nairobi and Kiambu Counties: The Case of Computers for Schools Kenya.

The study not only explores the status of pedagogical ICT integration by teachers in Kenyan secondary schools but with special focus on schools that have been supported by Computer for Schools Kenya (CFSK).

Amuko, Miheso, Ndeuti, (2015) on their study to explore the various opportunities and challenges influencing integration of ICT in teaching and learning Mathematics in secondary schools in Nairobi County. Of the twenty-four mathematics teachers selected to participate in the study, two fifth agreed that Mathematics teachers lacked technical support in regards to ICT integration, two fifth of the Head of Department mentioned that teachers in their schools haven't fully embraced the use of ICT in teaching Mathematics due to limited resources and lack of confidence. Half of the respondent agreed that Mathematics teachers lacked training opportunity for ICT integration and knowledge acquisition in teaching and learning Mathematics.

Another study done by Miima (2014) on integration of information communication technologies in teaching and learning of Kiswahili language in public secondary schools in Kakamega county. The study mainly looked at; the level and nature of integrating ICTs in teaching and learning of Kiswahili language in Secondary schools; teacher' and learners' perceptions about integration of ICT in teaching and learning of Kiswahili language; teachers' competency in integrating ICTs in teaching and learning of Kiswahili language in Secondary schools; challenges encountered by both the teachers and learners in integration of ICT in teaching and learning of Kiswahili and finally, the extent to which these challenges influence both the teachers and learners in their teaching and learning respectively. The study found out that; the level and nature of integrating ICT in teaching and learning of Kiswahili language is low, Kiswahili language teachers and learners have positive perception towards integration of ICT in teaching and learning of Kiswahili language but seem to lack enthusiasm and that Kiswahili language teachers' perception about ICT in teaching and learning of Kiswahili language was significantly influenced by the teachers' age, experience in teaching of Kiswahili, school category and their academic and professional qualification. The above literature indicate that few studies have been conducted on teacher perception on integration of ICT in secondary schools.

Methodology

Research design

According to Creswell (2009) research designs are plans and procedures for research that spans the decisions from broad assumptions to detailed methods of data collection and analysis. In this study, the researcher used descriptive survey design. According to Burns and Grove (2003), descriptive design is designed to provide a picture of a situation as it naturally happens. For the purpose of this study, descriptive design was used since it allows the use of both qualitative and quantitative data, hence suitable in obtaining the perception of teachers on integration of ICT in secondary schools.

Study area

The study was conducted in Tinderet Sub-county. The sub-county was curved out of the larger Nandi South District. It shares common borders with Wareng Sub-county to the North, Londiani Sub-county to the East, Muhoroni to the South, Nandi South to the South West and Nandi East to the North West. The sub-county is mainly inhabited by the Kalenjin community. Tinderet Sub-county was chosen because; it being a rural set up it is a representation of all schools in such a set-up, since technology is changing rapidly ICT is therefore very crucial in enhancing teaching and learning especially in Tinderet sub-county, and there being no any study that has been conducted in a similar set-up the researcher thought it wise to have it so as to bring out clearly the difference and similarities with other related studies in urban areas.

Target Population

The study targeted all the 23 public secondary schools, all principals and all the heads of department in Tinderet Sub-county.

Sample size and sampling procedures

The sampling procedures used was stratified sampling and simple random sample. According to Thompson, (2012) Simple random sampling is a sampling design in which k distinct items are selected from the n items in the population in such a way that every possible combination of k items is equally likely to be the sample selected or a subset of a statistical population in which each member of the subset has an equal probability of

being chosen it has an advantage that it is easy to assemble the sample it is considered as a fair way of selecting a sample from a given population since every member is given an equal opportunity of being selected.

George (2006) defines stratified sample as where a researcher divides the population into separate groups called strata and then a probability sample is drawn from each group and its advantage is that it provides greater precision of the same size hence requires a smaller sample. Therefore, the researcher used schools, principals and Heads of departments as sampling units. Here 14 (60.9%) schools were selected using stratified and simple random sampling method and these were stratified into boarding schools, day and boarding and day schools. The sample therefore consisted of 4 (57%) boarding schools, 3 (50%) day and boarding and 7 (70%) day schools which were randomly selected. All the 14 principals of the sampled schools were selected using purposive sampling method and the 5 Heads of Departments (H.O. D's) from each school selected using simple random sample were used as the main informants. Therefore, the sample size of this study consisted of 70 Heads of Department and 14 Principals giving a total of 84 respondents.

Table 1 Sampling frame

Sampling units	Population	Sample size	Sampling methods
Schools	23	14	Stratified and simple random sampling method
Principals	14	14	Purposive sampling method
H.O.D's	141	70	simple random sampling method

Research Instruments

Questionnaire for H.O.D's

According to Dwivedi (2006) the term questionnaire refers to a device for securing answers to questions using a form which the respondent fills in himself or herself. They are advantageous since they are easy to administer and also confidentiality of respondents can be upheld (Kombo &Tromp, 2006). The questionnaires used comprised both open-ended and closed-ended questions. Closed-ended questions are easy to administer and analyze hence economical in terms of time and money whereas open- ended are important for clarification and added information not previously captured. (Mugenda & Mugenda, 2003). Questionnaire was appropriate for this study because it was cost-effective to collect data from many respondents at the same time without engaging the researcher in too much movement from one respondent to the other. The questionnaire administered to the Heads of Departments on teachers' perception to ICT integration.

Interview schedule for Principals

According to Carson (2005) Interview schedule is a set of questions which are asked by an interviewer and filled in on the spot in a face to face interaction with another person. Its advantage is that accurate and more information can be collected. An interview guide was used to collect in-depth information about the principals' views on the use of ICT in secondary school administration. According to Gay, Mills & Airasian (2009), interviews can be used to explore and probe participants' responses to gather in-depth data about their experiences and feelings. It is also a flexible tool for data collection, enabling multi-sensory channels to be used; verbal, non-verbal, spoken and heard (Cohen, Manion and Morrison, 2008). The tool was used to collect information from the principals to clarify some aspects that were not captured in the questionnaires. It comprised of open ended type of questions prompted by the researcher with no predetermined answers. The interview schedule consisted of question on teachers' perception to ICT integration in schools under study.

Data analysis

Data analysis was done based on the objectives of the study. The data collected were analyzed using descriptive statistics (frequencies, percentages). Since the study sought to establish the state of existing ICT infrastructure and the degree of preparedness by the teachers to the integration of ICT by teachers. Frequencies and

percentages enabled the researcher to understand the major attributes of preparedness under consideration. Generally, the information collected through the questionnaires was coded and entered into the SPSS program which aided in the analysis. The analyzed data was presented in form of tables and graphs. The data from the interviews was summarized in form of themes and presented through descriptions and narratives (qualitative analysis).

Findings

Teachers' perception to ICT integration

The researcher sought to establish teachers' perception towards ICT integration. This is because the perception of teachers towards ICT integration plays a significant role as a predictor of utilization of ICT tools for their professional as well as for private activities.

Data from HODs' Questionnaire on Teachers' perception to ICT Integration

The respondents were presented with five Likert questions to respond to; strongly agree, agree, undecided, disagree and strongly disagree. During analysis, both strongly agree and agree were sum up and presented as agree, while disagree and strongly disagree were summed up and presented as disagree as in table 2.

Table 2: Teachers perception towards ICT

	Attitudes to Information and Communication Technology	Agree		Undecided		Disagree	
		F	%	F	%	F	%
i.	I enjoy using Information and Communication Technology	15	21.4	0	0.0	55	78.6
ii.	I think using ICT saves time in class.	19	27.4	1	1.4	50	71.4
iii.	I know that ICT can help me to learn many new things.	15	21.4	5	7.1	50	71.4
iv.	Using ICT does not intimidate or threaten me.	20	28.6	10	14.3	55	78.6
v.	I feel very confident when it comes to working with technology in class	9	12.9	5	7.1	40	57.1
vi.	I want to learn more about using ICT in class.	9	12.9	3	4.3	60	85.7
vii.	Changing the curriculum to integrate ICT is possible	6	8.5	2	2.9	62	88.6
viii.	ICT does not break down too often	3	4.3	0	0.0	67	95.7

The respondents were asked if they enjoy using ICT, 15 (21.4%) agreed and 55 (78.6%) disagreed. On the statement that, I think using ICT saves time in class, 19 (27.4%) agreed while 50 (71.4%) disagreed. Majority of the respondents 50 (71.4%) disagreed on the statement that, I know that ICT can help me to learn many new things, and 15 (21.4%) disagreed. On statement that using ICT does not intimidate or threaten me, 20 (28.6%) agreed and 55 (78.6%) disagreed.

Majority of the respondents, 40 (57.1%) disagreed with the statement, I feel very confident when it comes to working with technology in class, and 9 (12.9%) agreed. On the statement that, I want to learn more about using ICT in class 9 (12.9%) agreed and 60 (85.7%) disagreed. Majority of the respondents 62 (88.6%) disagreed with

the statement that changing the curriculum to integrate ICT is possible. Finally, on statement that ICT does not break down too often to be of very much use, 3 (4.3%) agreed and 67 (95.7%) disagreed.

The study indicated that the perception of teachers towards integration of ICT was very low, since most respondents were of opinion that; use of ICT is prone to frequent breakdown, it is not possible to change curriculum to accommodate ICT integration, were not ready to learn more on integration of ICT, and that ICT consume more time than the traditional teaching. Basically, the negative perception towards ICT enhanced barrier to effective integration of ICT in teaching and learning.

Data from interviews with Principals on teachers' perception to ICT integration

Majority of the Principal on the ways the teachers utilize ICT tools commented that lack of interest and negative perception towards ICT integration obstructed teachers from adopting ICT integration in Teaching. One of the Principals commented that:

> " majority of teachers use ICTs either for social media, personal related objectives or for administrative tasks like the storage of students records and computation of subject means but the use ICTs to teach subject matter other than computing itself is almost completely absent.''

The Principals were asked to give their opinion on the utilization of ICT by teachers and it was evident that the effective use of computers in most of the schools in the area under study was determined by the level of their skills in ICT therefore most of the teachers find it time-consuming and cumbersome. Principals who were interviewed suggested training of all teachers on the use of ICT, and building of proper and secure computer labs. Another suggestion was addition of more computers to ensure accessibility by all teachers and availing internet connectivity to schools at affordable costs. Perception change towards ICT usage was also proposed as one of the Principals said that;

> "Teachers need to be encouraged, supported and helped teachers so as to see the essence of using computers in teaching and learning processes. This can be done through training, motivation and providing purchase of adequate ICT facilities.''

Guoyuans (2010) argued that the attitude/ perception of teachers can thus be improved through training, motivation and providing purchase of adequate ICT facilities for the schools. Otherwise majority of the Principals commented that teachers' perception towards ICT integration in their schools is still very low. Further, the findings of this study go along with the study by Kyalo and Nzuki (2014) who found that training of teachers on ICT integration helps to build high perception toward Technological, Pedagogy and Content Knowledge (TPACK) to match the technological changes.

Christensen and Knezek (2008) indicated that teachers' perception plays a key role in determining computer use as a learning tool and the likelihood that teachers will effectively use ICT for teaching reduced. The findings further agree with Bukaliya and Mubika (2012) who found that the teachers with negative perception towards ICT were less capable of using computer and were therefore less likely to adopt and use instructional technologies than the respondents with positive attitudes. However, these findings agreed with the study by Vanderlinde and Braak (2011) that teachers held negative perception towards classroom environment embedded on instructional technologies.

One of the most relevant barriers to the effective diffusion of e-learning concerns the cultural and personal attitudes of teachers towards e-learning (Afshari et al., 2009). It is important to understand the degree to which a teacher believes that e-learning would be free of effort and enhance his or her teaching. As there is a high rate of failure of ICT initiatives for the creation of development opportunities, a solid understanding of the determinants of user acceptance of particular ICT is crucial not only for theory building but also for effective practice (Park, et al., 2009). Research has shown that teachers' perceptions and attitudes towards technologies influenced the effective use of these technologies in teaching and learning (Paraskeva, Bouta & Papagianna, 2008).

Becta (2004) claims that one key area of teachers' attitudes towards the use of technologies is their understanding of how these technologies will benefit their teaching and their students' learning. Schoepp's study (2005) found that, although teachers felt that there was more than enough technology available, they did not believe that they were being supported, guided, or rewarded in the integration of technology into their teaching. According to Empirica (2006), teachers who are not using new technology such as computers in the classroom are still of the opinion that the use of ICT has no benefits or unclear benefit. Many studies show that if teachers view ICT programs are either satisfying their own needs or their students' needs, it is likely they would implement it in school. Teacher skills and attitudes influence the decisions they make during planning for teaching. Jimoyiannis, & Komis, (2007) observed that most of reforms and initiatives initiated in schools failed

due to their top-down approach that did not take into account teachers' skills, interest, and existing knowledge. Similarly, Demirci (2009) conducted a study on teachers' attitudes towards the use of Geographic Information systems (GIS) in Turkey. The study used questionnaire to collect data from 79 geography teachers teaching in 55 different high schools. The study revealed that though barriers such as lack of hardware and software existed, teachers' positive attitudes towards GIS were an important determinant to the successful integration of GIS into geography lessons.

Conclusions

The response from the principals reveals that teachers with less than 10 years in teaching profession demonstrated some interest in the use of computers in their schools. On the other hand, teachers with more years in teaching profession cited negligible interest in the use of technology in classroom activities. This could commonly be observed in schools where teachers who served for long period of time in teaching profession could rarely use computer for their private or professional activities. The overall perception of teachers towards ICT integration is negative. The perception displayed by teachers has been influenced by their low competence in ICT skills since majority said that they are not confident working with ICT technology in class since lack of confidence or know-how on how to handle the different ICTs media would make both students and teachers shun ICTs in training or learning.

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