

Teacher's extent of use of ICT in Promoting Learning For Hearing Impaired Learners In Special Schools In Mombasa County, Kenya

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Abstract: The main aim of this study was to examine the extent of use of ICT in special schools and units in Mombasa County. The study was anchored on the theory of Diffusion of Innovation and Capability Theory. The study adopted descriptive survey design. The study was conducted in special schools and units for learners with hearing impairment within Mombasa County. The target population comprised of all learners with HI and their teachers in 3 public and one private primary schools in Mombasa County. There was a total of 223 learners with H.I and 30 teachers. Simple random sampling was applied to select the target population and get the study sample size. That was 77 respondents comprising of 66 Hearing Impaired Learners, 6 Teachers and 2 Head teachers/Deputy Head teachers. The study collected primary data using questionnaires and interview guides. The study revealed that teachers reported that desk computers, laptops, UPS and printers were inadequate. Similarly, LCD projector were, KICD digital content devices and Internet connectivity were also found to be inadequate. The study concludes that desk computers, Laptops, Ups, LCD projector and Printers were inadequate. The study recommends that all schools promoting education for learners with hearing impairments should implement and invest in ICT in order to ensure that learners get sufficient ICT facilities required for their education to ensure there is uninterrupted learning in schools.

Keywords: Extent of use of ICT, Hearing Impairment, Special Schools.

I. INTRODUCTION

Hearing provides a basis for almost all kinds of learning. From the time a child is born, they are at least, after some weeks expected to respond to sound stimuli (Gordon, Henkin & Kral, 2015). However, according to World Health Organization (2006), about 10% of the world population is made up of persons with hearing impairment. Loss of the ability to hear can create difficulties in a person's communication, adjustment, and learning. Information and Communication Technology (ICT) can introduce new teaching and learning practices as it acts as a catalyst in transformation of an education system (Trucano, 2005). An international conference in Geneva on ICT utilization indicated that many learners with hearing impairments require the knowledge and utilization of Information and

Communication Technology (ICT) to participate in and benefit from educational programs (UNESCO, 2009).

Many developed countries pounced on ICT usage in teaching learners with disabilities when the information age came into being. The use of ICT has enhanced the cause of inclusive learning in the developed countries especially for learners with hearing impairment (Tanner, Dixon & Verenikina, 2010). For instance, in the USA, it is important that all learning institutions recognize technology especially in teaching learners with hearing impairment (United States of America Department of Education, 2013). However, in some cases like Eastern Europe, Asia and Africa, there are still many difficulties in implementation of inclusive education and especially to learners with disabilities (Ribeiro & Moreira, 2010). In Ireland, the Technology Integration Initiative, the Teaching Skills Initiative and the Schools Support Initiative all have been put in place to support use of ICT in teaching learners with HI. The Teaching Skills Initiative ensures that teachers of learners with HI are well equipped with adequate skills to effectively teach their learners through ICT (Harris, 2006).

In Kenya ICT integration is commonly embedded in private unlike public schools of hearing impairments with an aim of attracting learners in these schools for improved performance (Gakuu & Kidombo, 2010). A study on training in ICT tools to teach learners with HI by Wakhaya, (2010) noted that only 32.1% of teachers of learners with HI were trained to use computers whereas 67.9% were not. In another study by Salim, Mutanyi, Wesonga & Mutuku, (2014) on technology for early childhood education, it was noted that learners at the age of 5 (pre-unit) who use computers on a daily basis out performed 7-year old (class 1) from the control group which did not have access to computers.

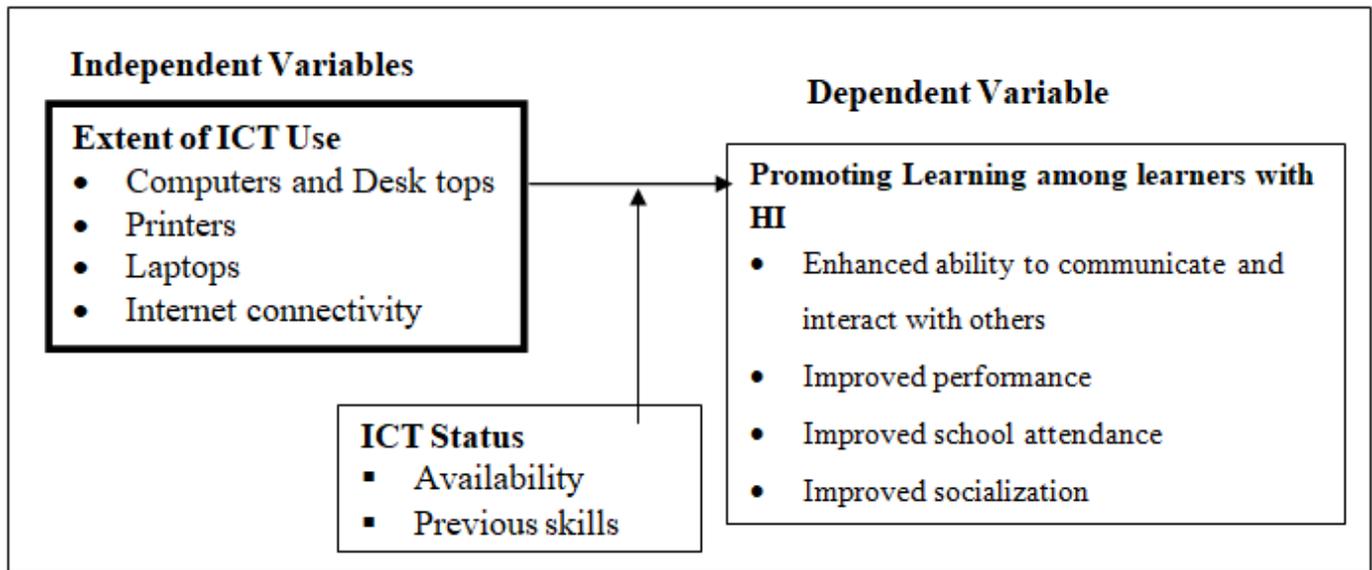
Mugo (2013) noted that learners with hearing impairment largely use analogy kind of technology in their daily educational activities with little exposure to modern technology in Mombasa County. Also, teachers of learners with HI are ill-equipped with skills to use ICT. Teaching strategies and approaches employed by teachers in teaching learners with HI are essentially of passive type and traditional composes; they are approaches which are regularly utilized in

schools to pass on guidance for learners having no hearing impairment. Hence, learners with HI become frustrated, discouraged and disengaged from the academic experience, with the resultant effect of poor performance. The current study assessed the use of information communication technology in promoting learning for the hearing impaired in special primary schools and units in Mombasa County, Kenya.

1.1 Purpose of the Study

The purpose of this study was to evaluate the teacher’s extent of use of ICT in special schools and units in Mombasa County.

1.2 Conceptual Framework



II. LITERATURE REVIEW

2.1 Teacher’s use of ICT in special schools

Information and Communication Technology has been the basis for human existence from time immemorial (El-Kadiri, Grabot, Thoben, Hribernik, Emmanouilidis, Von Cieminski & Kiritsis, (2016). This has driven a man to look for persistently approaches to enhance the preparing of data and conveying such data to each other regardless of separation and consistently (Ndukwe, 2002). ICT has been advocated as one of the most effective ways to progress learners with hearing impairment in learning (Lasa, 2010). Many of the developed countries are using different ICT programs among HI learners to advance learning in their educational programs. The developing and less-developed countries are following suit in adopting the use of ICT in teaching of the HI learners due to its inherent advantages. Some of the benefits accrued from the use of ICT in education for HI learners include greater efficiency in running school programs as educational programs are automated and improved communication channels between learners with HI and their teachers (Salaudeen, (2015). According to Salaudeen (2015), ICT assists learners with hearing impairments, by providing them with aids to learning capacities and also increasing their learning potential. ICT makes the children with hearing impairment proficient by providing them with the capacity to get to learning with the assistance of appropriate computerized media. To effectively meet these expected

results in schools, teachers must, therefore, embrace the new technology learning tools (Handel & Harold, 2006).

In South Africa, just like other in African countries, 30% of deaf are ICT illiterate (Asmal, 2004). According to Asmal (ibid), the vast majority of deaf children never attended school or attend at a very late age due to ignorance of ICT usage in teaching learners with hearing impairment. There are very few ICT teachers who are equipped to teach learners with hearing impairment. The hearing-impaired learners in elite schools in South Africa like in the USA use cutting edge technology devices. The use of ICT is incorporated in Hearing Aids devices which are either behind-the-ear, body worn, eyeglass or in the ear by school children (hearing impaired). They also use Frequency-modulated (FM) Amplification systems (auditory trainer) which create a direct link between the learner and teacher, who wears a hearing aid. Others are infrared systems, Audio loops, cochlear implants, Captioned Television, Live speech captioning and Telecommunication Devices for the deaf (TDDS) (Asmal, 2004).

In Kenya, the Basic Education Act (2013) provides that special public schools be created and maintained. This shows governments’ interest and desire in accessibility of ICT to all learners with disabilities. In connection to advancement in technology, much has been done. For example, a meta-study research into the use of ICTs among secondary school teachers in Kenya was done by Kiptalam and Rodrigues in 2011. The study showed that learners with hearing

impairment could accomplish tasks working at their pace, and independent access to education can be improved (Kiptalam & Rodrigues, 2011). Furthermore, teaching practices on ICT and Curriculum development have not much attention on ICTs and ATs used in classrooms. The KICD is yet to roll out a comprehensive curriculum inculcated in the syllabus for deaf schools (Mundi, 2011) This makes it very difficult for teachers to identify ICT equipment (software and hardware) relevant to teaching and learning for the hearing impaired, teachers need an appropriate curricular that permits the use of ICT tools for enhancing education in teaching and learning. Lack of these tools, especially the assessment tools is a big problem of teaching and learning using ICT.

III. METHODOLOGY

3.1 Research Design and Target Population

This study employed a mixed methodology approach and a descriptive survey research design. Both qualitative and quantitative procedures were utilized. The target population comprised of 223 learners with H.I, 30 teachers and 6 Headteachers/Deputy Headteachers in 3 public and one private primary schools in Mombasa County. However, only 3 schools (Ziwani School for the Deaf, Tudor Special Unit and Ronald Ngala Special Unit) were targeted since one of them (Kibarani School for the Deaf) was used for piloting (Ziwani School for the Deaf, Tudor Special Unit and Ronald Ngala Special Unit).

3.2 Sampling Technique and Sample Size

Simple random sampling was applied to select the target population and get the study sample size. According to (Mugenda and Mugenda, 2003), 20% to 30% of the population is adequate, however, the larger, the better. For this reason, 30% of the pupils were considered while all the teachers were sampled since the number was small and manageable. In every school, either the head teacher or the deputy was chosen. The researcher therefore, had 99 respondents.

3.3 Research Instruments

The study used questionnaires and interview schedules in collecting data. The questionnaires were utilized for collecting data from the learners with hearing impairment and their teachers. The interview guide was semi-structured and used for collecting primary data from the head teachers.

3.4 Pilot Study

The pilot study was done at Kibarani School for the Deaf, involving five teachers and five learners. To enhance validity of the instruments, the researcher sought the assistance of research experts, experienced supervisors and results of the pilot study to contribute to improving content validity of questionnaires. They were asked to validate the content of the research instruments by giving opinions on whether the specific questions were addressing the research objectives. For reliability, the instruments were tested using a test-retest

method and a Cronbach coefficient was used to calculate the coefficient and Cronbach alpha of 0.723 was obtained that showed that there is the high reliability of data.

3.5 Data Collection Procedure

Questionnaires were delivered to the respondents through face to face meeting by the researcher in person. The head teachers were interviewed after school. Care was taken not to interfere with the normal teaching schedules. Each rating teacher was required to fill the information in the questionnaires during the long break and later collected after completion. This was done twice, before and after two weeks to comply with the study reliability test-retest plan

3.6 Data Processing and Analysis

After data collection, the questionnaires were checked for completeness. The incomplete ones were discarded. Quantitative data was edited, categorized based on research objectives, coded, entered into a computer and analyzed using Statistical Package for Social Science (SPSS version 22). Tables were used to present the data where conclusions were made. The data were presented using tables and charts. On the other hand, qualitative data was analyzed using thematic discussion and direct verbatim.

IV. STUDY RESULTS

Several statements on extent of use of ICT in special schools and units were carefully identified by the researcher. Teachers were requested to indicate the extent of their agreement with each of these statements using a Likert scale of 1-5 where 1= Not Available, 2= Very Inadequate, 3= Inadequate 4= Adequate and 5= Very adequate. The findings are indicated in Table 1.

Table 1: Extent of Use of ICT in Special Schools and Units

ICT Resource Items	Adequacy of ICT resources									
	V A		A		I		V I		N A	
	F	%	F	%	F	%	F	%	F	%
Desk computers	1	3.3	3	10	17	56.7	4	13.3	5	16.7
Laptop	2	6.7	3	10	16	53.3	5	16.7	4	13.3
UPS	1	3.3	16	53.3	2	6.7	7	23.3	4	13.3
Printer	1	3.3	3	10	15	50	6	20	5	16.7
LCD Projector	1	3.3	2	6.7	17	56.7	5	16.7	5	16.5
Installed Local Area Network	1	3.3	15	50	13	46.7	4	13.3	7	23.3
Internet connectivity	2	6.7	3	10	14	46.7	4	13.3	7	23.3
ICT trained teachers	1	3.3	13	43.3	4	13.3	5	16.7	7	23.3
KICD digital content devices	14	46.7	3	10	6	20	3	10	4	13.3

(Key: VA- Very adequate, A-adequate, I- inadequate, VI- very inadequate, NA- not applicable)

From the findings, desk computers (56.7%) were inadequate. Laptops (53.3%) were inadequate. Ups (53.3%) were adequate. According to Asmal, (2004), other schools had adequate Telecommunication Devices for the deaf (TDDS), infrared systems, Audio loops, cochlear implants, live speech captioning and Captioned Television. Printers (50%) were very inadequate. LCD projectors (56.7%) were inadequate. Installed Local Area Network (50%) were adequate. Internet connectivity (46.7%) were inadequate. ICT trained teachers (43.3%) were adequate. KICD digital content devices (46.7%) were very inadequate. The findings of this study are in line with Starcic & Niskala, (2010) in their study of vocational learners with difficulties when learning on the digital technology; noted that there are four key pillars critical to effective implementation of ICT initiatives to meet ICT integration in the education sector relevant digital content, deployment of ICT infrastructure and robust policy and strategy are vital.

4.1 Learners Response on Strategies Used in Promoting ICT

Learners were asked to rate the adequacy of ICT resources in their schools using the scale Enough-E, Not enough-NE and Not available-NA. Their responses are indicated in Table 2.

Table 2: Learners Responses on Strategies Used in Promoting ICT

Resource Items	E		NE		NA	
	F	%	F	%	F	%
Desk computers	10	16.7	35	58.3	15	25
Laptops	18	30	38	63.3	4	6.7
Printers	10	16.7	34	56.7	16	26.7
Projectors	4	6.7	18	30	38	63.3
Internet Connectivity	17	28.3	37	61.7	6	10

From the findings 58.3% of the learners indicated that desktops were not enough in their schools, 63.3% indicated that Laptops were not enough in their schools, 56.7% of the learners also indicated that Printers were also not enough. However, 63.3% of the learners indicated that there were no Projectors in their schools while 61.7% indicated that there was no enough Internet connectivity in their schools.

V. CONCLUSION

It can be concluded that desk computers, Laptops, UPS, LCD projector and Printers were inadequate. However, Installed Local Area Network were adequate. In view of learners, desktops were not enough in their schools. Laptops were not enough in their schools. Printers were also not enough. There were no projectors in their schools with no enough internet connectivity.

VI. RECOMMENDATIONS

- 1) The study recommends that all schools promoting education for learners with hearing impairments should implement and invest in ICT in order to ensure that learners get sufficient ICT facilities required for their education to ensure there is uninterrupted learning in schools. The management of all special schools and units in Kenya should invest in desk computers, laptops, LCD projector and printers to promote learning especially of learners who are (hearing impairment).
- 2) The study recommends that all special schools should actualize voice correspondence which helps to enable learners to pick up certainty and social believability at school and in their community. All learning institutions should use computers to control hyperactive children.
- 3) The Ministry of Education in Kenya need to strengthen policy and regulatory framework in regard to implementation of ICT in schools with specific references to special schools and units.

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