TEACHERS' PERCEPTIONS ON THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGY IN THE TEACHING OF DEAFLEARNERS: A CASE OF TWO PRIMARYSCHOOLS IN KAMPALA CAPITAL CITY, UGANDA

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DECLARATION

I, Joy Keirungi, the undersigned declare that this piece of work is my original research of my knowledge and effort and has never been submitted to this University and elsewhere for any other academic award and that sources of this information have been acknowledged.

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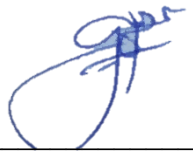
APPROVAL

We hereby certify that this research project titled "Teachers' Perceptions on the use of Information and Communication Technology in the Teaching of Deaf Learners: A Case of Two Primary Schools in Kampala City, Uganda." is an original work of Joy Keirungi (17/U/14808/GMNS/PE). It has been under our supervision and is now ready to be submitted to School of Post Graduates.

Signature :  Date: _____

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DEDICATION

I dedicate this report to my parents Mr. G, S. Kiribata and Mrs. Joy TumwesigyeKiribata, my children and my husband Mr. Eric ZitubundiKwizera for the support, encouragement and prayers rendered to me during the study. May the God Almighty reward and bless them for the support and encouragement rendered to me.

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ABBREVIATIONS

EFA	Education For All
ICT	Information and communication technologies
KCCA	Kampala Capital City Authority
UNCST	Uganda National Council for Higher Education
UNCRPD	United Nations Convention on the Rights of Persons with Disabilities
MDGS	Millennium Development Goals
MOES	Ministry of Education and Sports
NCDC	National Curriculum Development Centre
CRPD	Convention on the rights of person with disabilities
WSIS	World summit on the information society
UN	United Nations
UNESCO	United Nations Education Scientific and Cultural Organization
HI	Hearing Impairment
NGO	Non Government organization

ABSTRACT

The study was done in two Special Schools for deaf children located in Kampala Capital City to investigate the Teachers' Perceptions on the use of ICT in Teaching Deaf learners. It was guided by three objectives; to find out teachers' views on the use of ICT in teaching; the roles of ICT in the teaching of Deaf Learners and the challenges teachers encounter in the use of ICT in the teaching of Deaf learners. The purpose was intended to explore teachers' perceptions on the use of ICT in teaching Deaf learners. A sample of fifteen teachers was used from a population of eighteen teachers. Data was collected using interview guides and observation and analyzed using thematic analysis and triangulation. Findings from the study revealed that: teachers viewed ICT as a good tool for teaching in projection of work for learners and for communication as well, some viewed ICT as something difficult to use in teaching, and it takes much time. ICT helps both teachers and learners to get up to date information and development of vocabulary and innovative skills. The major challenges revealed were; inadequate devices fear to use ICT, lack of interest to learn ICT skills. Improper maintenance, lack of budget for ICT maintenance, poor service delivery and poor Internet connectivity in the two schools was also a challenge. Delay to change from old practices for some teachers and the large use of internet connectivity for non-academic purpose. The study concluded that: some teachers were not interested to learn and use ICT in teaching thinking it was time consuming, limited ICT skills by teachers, inadequate ICT facilities and infrastructure in the two schools of study. Recommendations that came out from the study were: schools with computers should avail them to teachers and learners Ministry of Education and Sports science communication technology should provide the schools with ICT devices and train the teachers in ICT skills.

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INTRODUCTION AND BACKGROUND OF THE STUDY

1.0 Overview of the Study

Structure of the Dissertation

The first part of the dissertation begins with introductory chapter of the study, introduction to the topic, statement of the problem, purpose of the study, objectives of the study, research questions, study scope, significance of the study, theoretical frame work and conceptual frame work. The second part of the study covers introduction to chapter two and related literature. The third part of the study covers the methodology that is used in the study and its explanation of how it is conducted following objectives of the study. The fourth part of the study covers presentation and discussion of results. The fifth chapter gives summary, conclusions, recommendations and suggested topics for further study.

1.1 Scope and Motivation

This research aimed to give a descriptive analysis of; "Teachers' perceptions on the use of Information and communication technology in the teaching of Deaf learners in primary schools; a case of two special schools in Kampala City, Uganda. It explored views from teachers on the use of ICT in schools, roles of ICT and challenges teachers encounter in the use of ICT in teaching Deaf learners.

The study was motivated by the experiences from work and information scholars and government bodies on Information and Communication Technology guide lines and practices. The study experienced situations where there were guidelines by the ICT policy to schools to adopt the use of ICT in primary schools while teaching. It underscores investment in education in ICT right away from primary level. In the field, the use of ICT in teaching as a tool has not been effected due to different constraints. Some schools have computers, others don't have, and some teachers are computer literate others are not. This is coupled by negative attitude and technophobia to use ICT in teaching.

Globally, ICT is relevant for PWDs as stated in the CRPD (2006) in article 9:

> "……state parties shall take appropriate measures to pursue with disabilities access, equal basis with others to the physical environment, transportation to information and communication including ICTs' and systems and other facilities and services open or provided to the public…"

Countries who signed, agreed and ratified the CRPD agreed to eliminate barriers to information and other services to support PWD's. World Summit on the Information Society (WSIS) Declaration and the Tunis commitment in 2003 agree that information society can be obtained only when ICT related efforts and program have been fully integrated into national and regional strategies. Although limited access to information and knowledge makes an impact on all people, lack of access is a complex barrier to utilization of ICT, especially among learners with disabilities; including the deaf learners and they strongly feel it because they need information to be provided in accessible format (Bingimlas, 2009)

Since ICT leads all processes based on information, every individual in a society should become technology competent. Due to the compulsory character of these curricula, the administration of ICT curricula as a top-down policy initiative brings ICT to a 'turning point' (Vanderlinde, van Braak & Hermans , 2009). Since the study needed to know what happened in the teaching of deaf learners the study had to be done so that effective measures are done.

1.2 Background to the Study

1.2.1 Global Perspective

Globally, Information Communication Technology (ICT) is commonly used as an umbrella term for a wide collection of computer based instruments, resources, environments, procedures, and skills used for obtaining, processing, and communicating information (Papert, 1999).

UNESCO described ICT as the range of technologies that are applied in the process of collecting, storing, editing, retrieving and transfer of information in various forms. Information and communication technology (ICT) is an umbrella term that includes all technologies for manipulation, ICT encompasses any medium to record information technology for broadcasting information – radio, television and technology for communicating through voice and sound or images, microphones, camera, loudspeaker, the world today is experiencing dramatic changes brought about by the use of Information and Communication Technology, especially computers (UNESCO, 2002). Information and communication technology has profoundly changed almost all aspects of the society in the world. It is now central to how people communicate, interact, make decisions and do work. It

plays a key role in social and economic transformation (Ertmer &Ottenbreit-Leftwich, 2010). Teachers are catalysts for the integration of technology through ICT. ICT is a medium for teaching and learning, can solve problems pertaining to quality, equity if well integrated in the teaching-learning process, among other things, and this is dependent on the preparation of teachers (Watts-Taffe et al., 2003).

Schools at all educational levels need to incorporate ICT in their curricula thus the human accessibility issues in web design/applications are crucial (UNESCO,2002).The deaf learners should not be excluded it is crucial for the society to have the capability and right to use any software, hardware or any assistive technology to understand and interact with the website content with no hindrances.

1.2.2 Contextual Perspective

In Ugandan, ICT is the use of different technologies to enhance and optimize the delivery of information. Information and communication technology (ICT) integration in primary curriculum is enhanced computer awareness programs and training. Teacher training colleges are expected to equip teachers with Information and communication technology skills to be used in primary schools. ICT has continued to grow due to demand for mobile voices and mobile internet services with the ICT sector contributing to 6% of Uganda's national GDP in 2010. In the study, teachers' use of ICT in class room teaching depends on their attitude and expertise in using ICT. Apart from having acquired ICT skills at school level through pedagogy, the focus of ICT in primary sectors for the training colleges is to provide many teachers with computer awareness skills and enough experience to make use of ICT in lesson

preparation and making teaching materials. The government investment in ICT in primary schools in Uganda has been guided by a policy that has variable focus at different levels in education (Buabeng-Andoh, 2012). The use of information and computer technologies (ICT) in classroom teaching of learners with hearing impairment has been supported by many countries World Wide. Countries now understand and regard information and communication technologies (ICTs) and mastering the basic skills and concepts of it as part of the core of education, alongside reading, writing and numeracy.

The UN 2030 agenda for school development is one of the international bodies that require a UN member country to implement ICT as a way of promoting national development. Under goal 17 of the UN international policy framework, the UN recognized the importance of ICT as a tool for national development. The ICT infrastructure development is one of top priorities to transform Africa. Convention on the Rights of Persons' with Disabilities (2006) CRPD Article 9 accessibility Subsection 2(g) Talks of promoting access for PWDs to new information and communication technology and systems, including the internet. Article 9 subsections (h) of 2 emphasize countries to promote the design, development, production and distribution of accessible information communication technology and systems at an early stage, so that use of technologies and systems become accessible at minimum cost.

Information and communication technology policies in East African Community (EAC) began taking shape in the early 2000's. Before that, there was unregulated increased use of ICT which triggered the need for government to offer direction in the use of these technologies. In Kenya, ICT use was dated way back in 1980. I n Uganda the policy

formulation started in 1998 by Uganda National Council for science and technology mandated by ministry of Education and sports in 2005 (Farrell, 2007).

The survey report that was done by Farrell &Shafika, (2007) revealed that only a few primary schools access ICT. At primary level ICT policy aims at encouraging the schools that have already acquired the technologies to use them to support teaching by either producing teaching materials or by use of the technology with students. The investments in ICT in primary schools was/is done by local and international NGO's with funding from a wide range of development partners. The ministry may just play a coordinating role in all these projects.

1.2.3 Deaf Learners and the use of ICT in Classroom Teaching

Deaf persons are those in whom the sense of hearing is non-functional for the ordinary purpose of life or those of who impute sound is meaningless for communicational purpose. Hearing loss has a continual impact on daily learning experience (George & Ogunniyi, 2016).For many Deaf learners, some form of Special Education services is required in order for the learners to received and appropriate education. Many deaf learners require the knowledge and utilization of Information and Communication Technology (ICT) to participate in, and benefit from educational programs (Ouma, Awuor, & Kyambo, 2013).

The right to education is fundamental to all including learners with hearing impairment especially the deaf. Hearing provides a basis for almost all kinds of learning. From the time a child is born, s/he is at least, after some weeks expected to respond to sound stimuli**.** The ability to communicate and interact in one's environment largely depends on hearing. Loss of

hearing sense if it occurs before or after birth can create difficulties in the person's communication, adjustment and learning. So, deaf learners experience hearing complications to the extent that communication is affected(Hutchinson, & Reinking, 2010).Deaf learners who have access to appropriate ICT solution that they need are more likely to be successful in their educational programs.

Hameed, (2009) reported that excellent learning opportunities for the student with deafness are created when they use visual forms of ICT which are less dependent on written language. There are search engines which are popular among persons with deafness and finding new facts specially those that are available in visual form is easy. The deaf persons are able to discover their own world through internet and in this process they learn new words and concepts. Deaf learners integrate in their communities through the text messages using mobile phones and emails with hearing community through sharing information and ideas. Deaf persons are finding new facts by using internet resources but also learning how to communicate. The multimedia in ICT makes learning experiences very attractive, flexible, none threatening personalized and effective. The two way engagement and interactive nature of man to machine is crucial for their Meta cognitive development and communication. It provides ample opportunity to adopt the best route to learning. ICT accelerates learning process in many folds. This interaction must be ensured at an early age as possible so that the child does not lag behind others in language development or acquisition.

A key factor in use of ICT is sufficient computer labs and ICT equipment. This is to ensure that subject teachers are easily accessed to ICT tools whenever needed (Hennessy, Ruthven,

& Brindley, 2005).Lack of adequate ICT equipment and internet access are key problems that schools specifically in rural areas face. Even in schools with computers, the learner-computer ratio is high. Turel&Johnson, (2012) reports that technical problems become a major barrier for teachers. These problems include low connectivity, poor communication, virus attack and malfunctioning printers. However, for Uganda this may not be possible as there is inadequate use of computers to improve the teaching and learning of deaf learners. According to teachers in the special schools where the study was conducted it revealed inadequate skill and lack of time to use ICT.

1.3 Statement of the Problem

The use of information and communication technology has gained prominence worldwide with empirical literature by scholars pointing at its roles in education. The government and NGO's have supported and invested heavily in ICT with the purpose to deepen literacy in education sector. The government school's adoption of ICT and the need for computer literate workforce has lagged behind (Buabeng-Andoh, 2012). In Uganda, education of Deaf learners in using ICT has not been met as in the schools of study. Teachers claim that they never trained in ICT so they fear using ICT devices and don't want to be seen as failures in front of their learners. Although students teachers' have been exposed to technology Twidle et al., (2006)have identified that they do not feel ready to use ICT in school activities because of the lack of technical skills. Such perceptions and attitudes explain behavior or self-belief or interest an individual teacher has developed towards something. Lack of training in ICT has made teachers and learners to lag behind.

According to Hutchinson &Reinking, (2011)this may become an obstacle in teachers' use of ICT in classroom teaching and learning as it is in the special schools for the Deaf in Kampala City. The teachers don't use ICT in teaching and learners don't acquire ICT skills in schools. Bennett&Maton, (2010)cited the earlier the use of ICT in primary education curriculum, the earlier the learners will develop digital literacy for general life, work skill and empowerment in their ongoing learning through many and different levels of education. It is therefore imperative for the study to be done on teachers' perceptions on the use of ICT in teaching deaf learners in special schools in Kampala City; Uganda.

1.4 Purpose of the Study

The purpose of the study was to explore teachers' perceptions on the use of ICT in classroom teaching and learning process of deaf learners in Uganda in the two Special Schools for the Deaf in Kampala City. It was intended to create more awareness among teachers about the role of ICT in teaching of Deaf learners, be a source of information to other researchers about the use ICT in classroom teaching and enlighten the policy makers and implementers on the need to enforce use of ICT by subject teachers to enhance the teaching of Deaf learners.

1.5 Specific Objectives

The study was guided by the following objectives:

1. To analyze teachers' views on the use of ICT in the teaching of Deaf learners
2. To identify the roles of ICT in classroom teaching of Deaf learners

3. To identify the challenges teachers encounter when using ICT in teaching Deaf learners.

1.6 Research Questions

The following research questions guided the study

1. What are the teachers' views on the use of ICT in the teaching of deaf learners?
2. What are the roles of ICT in teaching?
3. What challenges do teachers' encounter in using ICT during teaching?

1.7 Study Scope

The scope of the study entailed the content scope; geographical scope and time scope as below;

1.7.1 Content Scope

The study focused on the teachers' perceptions on the use of ICT in teaching and learning of Deaf learners in primary schools.

1.7.2 Geographical Scope

The study was done in two selected schools. The schools are located in Kampala capital City. The identity of the two schools was concealed for ethical reasons. They were corded school A and B

1.7.3 Time Scope

The study was carried out from period of September 2018 –August. 2021.

1.8 Significance of the Study

Understanding teachers' perceptions on ICT can inform the creation of schemes or training for teachers to start implementing ICT use in their classrooms and personal life on a daily basis. Data gathered from this study is also useful for Educational Institutions in terms of making decision regarding training of primary school teachers and funding in this sector. It is expected that study findings will make contribution of knowledge to the faculty of Special Needs and Rehabilitation, strengthen the source of knowledge for further researchers in the discipline, and develop findings to inform policy makers and implementers on the perceptions of teachers on the use of ICT in classroom teaching of deaf learners.

1.9 Justification of the Study

Given the background of the study, it has been identified through the literature review that primary teachers lack access to ICT. It was envisaged that this study contributes to an understanding of circumstances surrounding successful use of ICT in primary schools. The study was relevant because it shed light to the study and whose best solution to be sought to address challenges and eventually develop recommendations to bridge the gaps that do exist.

1.10 Theoretical Framework

ICT has become a change operator around the world. All round the globe people are using information and computer technology (ICT) as a well spring of learning and data.ICT grows our openness and comprehension of the world. ICTS can address the needs of the individuals if integrated into the studies it will motivate learners towards learning and makes them active learners (Hashmi, Dahar& Sharif, 2019).This study was guided by diffusion of innovations

theory by(Rogers, 2010).Rogers' theory of diffusion of innovations is the process of innovation communicated with participants to create and share information with one another in order to reach an equal understanding over time. Whereas Rogers, (2003) describes innovation as un certainty reduction process pp.232, and he proposes attributes of innovation that help to decrease un certainty about innovation. Rogers, (2010) gave characteristics of events that take place in the process of persuading an individual to adopt an innovation as: compatibility, complexity, triability, observability and Relative benefit and in Rogers, (2003) he highlighted attributes as: relative advantage, compatibility, complexity, observability, and triability.

All these attributes hold the same attachment in persuading the client to adopt the innovation. In this case is the teacher of deaf learners in the process of trying to adopt ICT in the teaching of deaf learners in primary school. The independent variable in this study is teachers perception which includes his views about ICT use, attitudes which may be negative or positive, benefits from ICT use; dependent variable is the outcome from the use of ICT in the teaching and learning process and finally the extraneous variable; social system in and outside the school. ALL these variables affect the innovation process by the teachers and at the end affect the learners in the class.

1.11 Conceptual Framework

IV-Teachers of Deaf learners DV- outcomes from ICT education

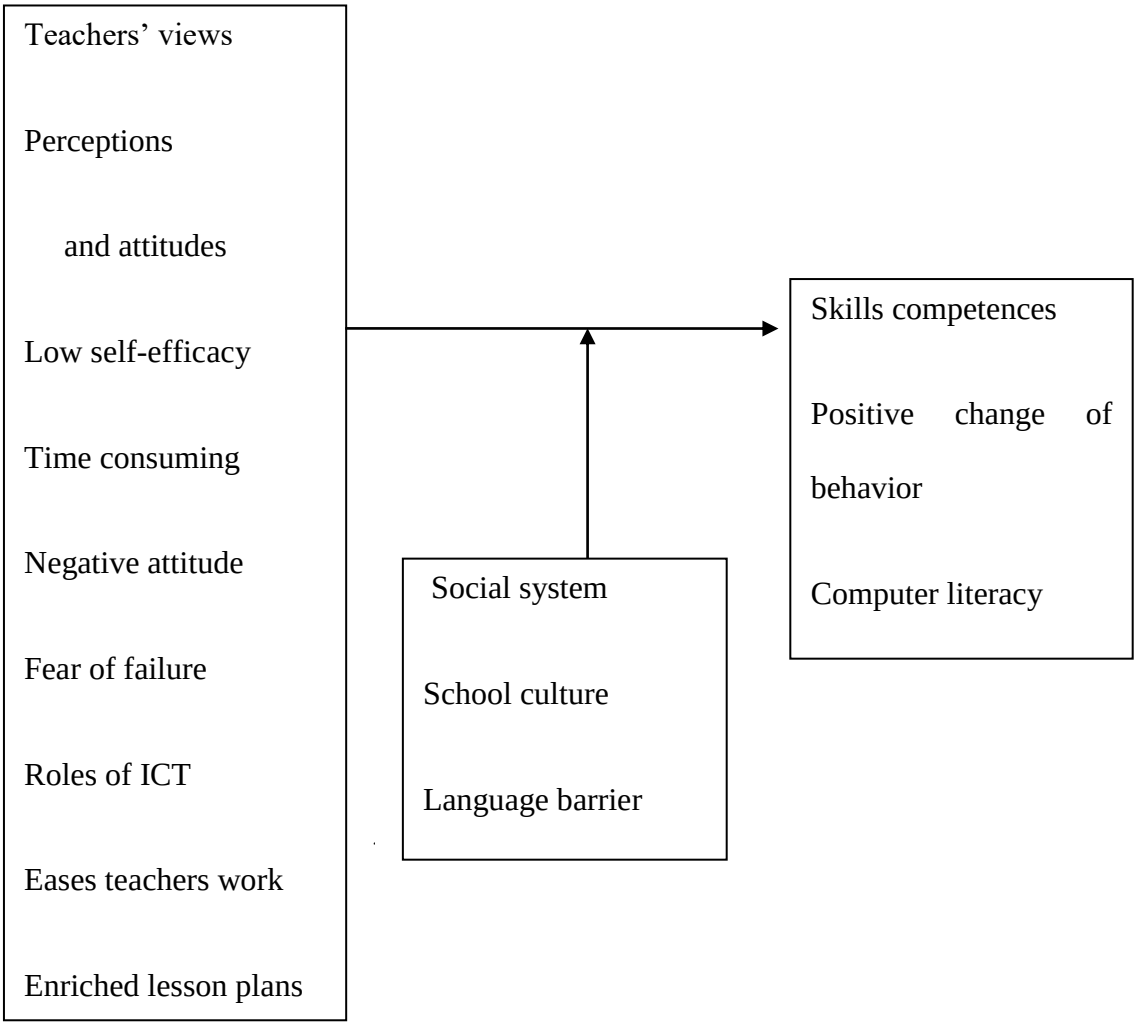

Figure 2.1: source: self formulated

Knowledge and perception will affect the perceived usefulness and easy use of ICT. The factors embedded in the conceptual frame work have been meticulously inter laced, so that the interrelationships among them constitute to measure their effectiveness in ICT integration

by the teachers However, perceptions and attitudes by the teachers as the main variable supplements the key elements in the above frame work. Low self esteem, fear of failure, not skilled low self efficacy, poor infrastructure, insufficient skills, inadequate tools and school culture, school policy and finally skills competency, knowledge sharing. In addition, the intention of teachers to use the technology is strongly influenced by their perception on the use fullness (roles) of the system as well as perceived ease of use (skills, knowledge) and determines their actual use of ICT. The proposed frame work has guided this research in investigating the teachers' perceptions in the use of ICT in the teaching of deaf learners.

Teacher's perceived negative attitude on the use of ICT will affect its use because they lack skills to manipulate computers in teaching. If the attitude is positive to using ICT, the teachers will be able to adopt it in teaching to enhance teaching and learning in class. A successful implementation of ICT mostly depends on the attitude of educators (Albirini, 2006). If the learners lack opportunities to access and use computers because of the administrative structures and poor infrastructures at school, both the teachers and learners will not access ICT devices. Once teachers use ICT to make richer lesson plans it will allow free interaction and communication of pupils hence skills and knowledge development of learners and there will be a great change of behavior among learners and teachers and preparedness of afterschool work skills. A decision of full use of ICT is a process in which innovation is communicated through social systems at schools or society following communication channels in the social systems.

However, school cultures, language barriers, school policies, class enrolments and the level of education of the stake holders can highly influence the teacher's perception of using ICT in the teaching and learning process of learners who are deaf. For instance, a big class may not attend computer lessons if the devices are few, likewise, if the school culture like academic excellence and academic performance, a subject teacher may perceive using ICT as wastage of time and hence prefer drilling the learners to produce results as needed by their superiors.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Chapter two presents a review of related literature on the teachers' views on the use of ICT in the teaching of Deaf learners, the role of ICT in classroom teaching and learning of deaf learners, and challenges teachers encounter when using ICT in the teaching and learning of deaf learners. It presents a review of literature relevant to measures aimed at improving teachers' perceptions on the use of ICT in the teaching of Deaf learners, benefits accruing to using ICT in teaching and learning of Deaf learners and challenges faced in using ICT in teaching.

To the attention of the reader, the said objectives of the study are reproduced as follows: teachers' views on the use of information and communication technology in classroom teaching; the roles Information and Communication Technology has played in classroom teaching and learning; and challenges teachers encounter in using Information and Communication Technology during teaching and learning. This takes into account the background and the related competences that teachers possess in education and teaching in the context of Uganda.

2.1 Teachers' views on the Use of ICT in Teaching Deaf Learners

2.1.1 Perceptions and Attitudes

Teacher's views in this study will cover perceptions and attitudes. Perceptions and attitudes are explained as behavior or self-belief or interest a person has developed towards something. Teachers' perceptions in this research study is explained as attitudes or beliefs teachers have developed towards the use of ICT and the perceived obstacle associated with the use of ICT (Hutchison & Reinking , 2011) .More so the views on the use of ICT can inform anyone the beliefs teachers have including self-efficacy in ICT usage in teaching. According to teachers' perceptions on the use of ICT can be described as the way in which teachers understand and interpret the use of ICT in teaching. Although students teachers' have been exposed to technology Twidle et al., (2006)have identified that they do not feel ready to use ICT in school activities because of the lack of technical skills. A study investigated on teacher's perceptions of the use of ICT in teaching and learning in Namibian primary education, the findings indicated that teachers can conduct teaching at anytime and anywhere with the use of ICT (Jatileni& Jatileni, 2018). Teachers in Namibia have expressed interest and willingness to integrate ICT in their teaching and learning situations (Waiganjo & Paxula, 2020). In Ethiopia, a study done on assessing teachers' perceptions of integrating ICT in teaching and learning process found out that, the majority of the teachers are unable to use hardware in the teaching and learning process due to many shortages of resources (Gebremedhin, & Fenta, 2015).

According toEmbi & Lubis, (2013) , attitude is a susceptibility to respond positively or negatively to an issue or area of concern. For teachers to successfully integrate ICT in teaching and learning learners including the Deaf strongly depends on teachers' support, attitudes and beliefs. Attitudes toward ICT influence teacher's acceptance of the usefulness of technology, and also influence whether teachers integrate ICT into their classrooms. Dawes, (2001) asserts that teachers attitude towards the use of ICT are strongest predictors of technology integration, the impact of their beliefs and confidence in using ICT should not be disregarded either. School culture plays an important role in successful technology integration (Tezci, 2011).

Similarly, teachers with positive attitude towards using and integrating ICT in their teaching feel more comfortable using it and usually exploit it in their teaching (Kaarakainen, Kivinen, & Vainio, 2018). Effective ICT integration depends on the perceptions of teachers and vision of school leaders rather than teacher's ICT skills. The use of ICT tools is perceived to work hand in hand with different changes; such as the teachers' roles in teaching and learning environment as well as changes in curriculum delivery and application (Pelgrum & Law, 2003). This was cited by researchers who were studying teachers' perception on ICT integration in (Munyengabe et al., 2017). Research has shown that teachers' attitude towards technology contributes to the teachers' acceptance of the usefulness of ICT in teaching. This was cited Buabeng-Andoh, (2012)in his book of co temporally education technology referring to the views of Teachers computer experience relates more positively to their computer attitudes. The more the experienced the teachers are, the more the positive attitude and the more likely hood of using ICT in teaching. Teachers' attitude towards ICT and

perception of ICT effectiveness plays an important role in making use of ICT in their teaching and assessment activities in the classroom (Khokhar & Javaid, 2016).

Resistance to change and negative attitude is not easy thing to take place smoothly because it is something unusual and frightening. Old teachers who are comfortable with traditional methods of teaching do not want to change to new innovations in methods of teaching. They are stuck with face to face teachings and teaching centered methods which make them to feel powerful in front of the learners (Tedla, 2012 and (Makgato, 2012). Some teachers who resist ICT in teaching and learning believe that ICT have no benefit for themselves and the learners.

2.1.2 Inadequate ICT Facilities

Infrastructure problems, such as the lack of computers in working condition, unreliable electricity or lack of access to the internet are major challenges (Hennessy, Harrison, & Wamakote, 2010).In support of the above, it's noted that, in accessibility is another complex barrier that discourages teachers from integrating new technologies into classrooms (Bingimlas, 2009). Access to technological facilities is one of the effective ways to teachers' pedagogical use of ICT in teaching. Access to hardware and software use of suitable tools and programs to support is important to the teaching and learning of all learners including the Deaf(Embi & Lubis, 2013).

2.1.3 Fear of failure

Self-efficacy in teachers: Teachers belief that they cannot perform using a computer in the class (Guma, Faruque, & Khushi, 2013). Fear or failure and lack of knowledge have been

cited as one of the challenges that stop teachers from using ICT in their teaching Munyengabe et al., (2017)and ICT is perceived to be “a mediator or bridge “among factors intervening the teaching and learning. Teachers’ “fear of failure” causes lack of confidence (Egaga & Aderibigbe, 2015). On the other hand, limitations in teachers’ ICT knowledge makes them feel anxious about using ICT in the classroom and thus not confident to use it in their teaching.

2.1.4 Lack of Knowledge

Knowledge is the fact of knowing about something; general understanding or familiarity with a subject, place, and or situation. Only a small percentage of teachers had adequate technical ICT skills in using the new ICTs; their pedagogical thinking and their self-reported practices, (Embi & Lubis, 2013). Furthermore lack of initial training of teachers was a serious obstacle to ICT implementation.

In his study of ICT in education, Tinio, (2003), stated that teachers need to feel confident in to facilitating students learning with technology into their classroom and called for more professional development as a requirement focusing on increasing teacher’s skills so that they are able to overcome apprehensions associated with using technology.Tedla, (2012), argue that Lack of technological knowledge and skills to use ICT prevent teachers from implementing ICT in their teaching. Fear or failure and lack of knowledge have been cited as one of the challenges that stop teachers from using ICT in their teaching Farrell, (2007) and ICT is perceived to be “a mediator or bridge “in intervening the teaching and learning.

Reports from scholars highlighted the potentials of ICT in improving the quality of education and it is taken as major tool that builds knowledge in the communities/societies (Sangra & Gonzalez-Sanmamed, 2011). Pelgrum& Law, (2003) claimed that particularly at the school level, ICT is a mechanism that can give way to rethinking and redesigning the education system and processes. This leads to quality of learning by facilitating access to resources, services, collaboration as well as remote exchange. The knowledge explosion has become unimaginable by the individuals and the deaf learners must not be forgotten in this information seeking human race (Pelgrum & Law, 2003). Besides the lack of adequate training teachers get affected, their comfort level with the use of technology (Fajebe, Best,&Smyth,2013).According to Khokhar&Javaid, (2016) some schools in Asia do not have an ICT program to train teachers if they lacked knowledge and skills in this area. Training is essential to the integration of ICT in education when teachers lack training it leads to the lack of skills.

Teachers lacked training in ICT pedagogy because they don't have time to learn and incorporate ICT skills and tools into lessons (Isaac, Kazembe, &Kazondovi, 2018). Also during ICT training for most teachers have expressed fear because of the limited knowledge they had which cannot be used to integrate ICT in teaching. Factors such as lack of knowledge and skills on how to use and integrate ICT affect teachers' perceptions and beliefs towards ICT integration into the curriculum (UNESCO, 2002).

In a survey of teachers in 12 countries in Sub-Saharan Africa and South America, scholars found out that teachers who participated in a training programs on how to integrate computers

into their instruction were much more likely than non-participants to report that their students engaged in a variety of innovative pedagogical practices, such as gathering data for a research project, collecting information about another country or culture, and collaborating on a project with students from another country (Klein et al, 2008).

2.2 Role of Information and Communication Technologies in Teaching

The roles of ICT in supporting education globally were acknowledged by several scholars. The roles of ICT in education provides both students and teachers with more opportunities in adopting learning and teaching individual needs, facilitates the acquisition and absorption of knowledge in developing countries by offering efficient opportunity to embrace education for all, improves policy formulation, and execution and widen the range of opportunities for business and the poor. It has the potential to open access to knowledge in ways unimaginable (Hashmi, Dahar & Sharif, 2019). Souter, (2014)values the role of ICTs in providing universal access to education, equity in education quality in learning and teaching as well as teachers professional development.ICT policies, technologies and capacities allow, education management, governance and administration can also be improved by means of ICTS. Increasing in reading, writing, language and numeracy reviewed as part of a broader concept of key competences, including ICT's which require sustained learning and updating instead of being perceived at a standard alone set of skills to be developed and completed in a school time frame, literacy and numeracy are increasingly seen as fundamental components of a complex set of fundamental basic skills.

Jatileni and Jatileni, (2018) affirmed that organized access to ICT helps individuals to compete globally through; creating a skilled work force and facilitating social maturity. Information and communication technology in the education system has a multiplier effect through; enhancing learning and new skills, improving the reading standard to students who are in rural areas and can have access to ICT and finally improves the training of teachers and minimizing costs which are associated with the use of traditional instruction.

Using ICT in teaching and learning enables both the teacher and the learner to access information in classroom and outside classroom. (Suryani, 2010).Moreover (Moyle, 2006) confirms that ICT in education will make students passively learn the teaching material and be actively involved in the learning process thus the use of ICT to encourage and facilitate the teaching and learning process. ICTs increased student motivation to learn with deafness, could have negative effects in the literacy skills of deaf student, the deaf learner may include improving student literacy and communication skills since computers multimedia software can give visual feedback which makes it easier for the student to understand auditory input (Alotaibi & Almalki, 2016).Besides, special soft ware for auditory training students may improve speech perception-ability. Other benefits may include improved learning outcomes Lidström & Hemmingsson, (2014), enabling students to learn independently.

Ertmer and Otternbreit-Leftwich (2010) reviewed the existing literature on the necessary elements to enable pre-service and in-service teachers to apply ICT as a meaningful pedagogical tool. They recommended that schools provide teachers with solid evidence

supporting the positive impact of technology-based and student-centered instruction on student learning and achievement on standardized tests.

Teachers use ICT in order to make lessons more interesting and engage learners according to their needs and abilities. The tremendous flexibility of technology enables teachers to differentiate their instruction in ways that were not possible where restricted traditional classroom technology integration in SNE (UNESCO, 2014).Tedla (2012) confirms that teachers use ICT tools in order to make lessons more interesting and engage learners according to their potentials. The exposure in utilizing the various digital tools also encourages learners to reinforce the learned material in their own ways of understanding.

The internet possibly is the largest store of information on this planet everybody can be part of it (Ciccarelli et al., 2011). ICT provides opportunities for communication between teachers and learners and it helps the learners to develop problem solving skills, cooperation, development of knowledge and skills. They further found out that teachers in primary schools have to use pedagogical skills to make ICT effective. It is widely agreed that the most effective way of Information and communication technology (ICT) use with deaf children is highly visual but not relying on the written word or sound. Deaf children enjoy interactive smart boards to explain and share the work with fellow children (Hasselbring & Glaser, 2000). Many deaf learners require the knowledge and utilization of Information and Communication Technology (ICT) to participate in, and benefit from educational programs (Ouma, Awuor & Kyambo, 2013).

A range of technology solutions are available to support student performance, achievement and independence in the aid to daily living. Learners who have access to appropriate information and communication technology solution that they need are more likely to be successful in their educational programs (Pelgrum & Law, 2003).As in the use of sign language it is a good tool for communication in teaching because it involves the use of touch and seeing. It is useful in integrating of subjects' benefits a lot through practice using assessment of learners doing preparation of lesson plans and learning basic skills to both teachers and learners in ICT.

Teachers use ICT in order to make lessons more interesting and engage learners according to their needs and abilities. The experience got from utilizing various ICT tools also encourages and motivates learners to reinforce the learned material with the individual learning styles (Hasselbring & Glaser, 2000).The same writer in the study on the use of ICT in teaching discovered that the use of drill and practice in mathematics enables learners to understand basic computation and arithmetic skills and immediate feedback is worked upon as motivational source for more engagement in the learning activities.

Studies showed that ICT use strengthened traditional practices and they found out that it is difficult for teachers to develop innovativeness by taking advantage of what technology has to give them. ICT is mainly used by teachers to develop low level teaching and learning processes, suggesting teacher centered models (Sangra & Gonzalez-Sanmamed, 2011).

According to (Egaga & Aderibigbe, 2015) in the journal of education and practice affirmed that Information and communication technology (ICT) assists the learners with deafness by

providing them with ability to access knowledge using digital media medium. More so it plays a very important role of helping the deaf learners to communicate with fellow learners' thereby promoting collaboration and social learning environment. The writer goes on to say that ICT helps the learners to read and write through the hearing and seeing processes.Some teachers have not yet understood the possibilities of using ICT to students as a means of complementing their traditional work (receiver role with that of producer transmitter). Networking is based on the communication opportunities that technological systems are making easier and that promoting a positive attitude towards a collaborative and a constructive learning perspective (Sangra & Gonzalez-Sanmamed, 2011). They affirm that teachers are less confident in using ICT to promote the development of very important skills for navigating the net and for taking advantage of various information available, a more complex teaching and learning process, such as ways to analyze, synthesize, evaluate and organization skills Khokhar & Javaid, (2016); Salaudeen, (2015) argued that ICT assists people with hearing impairment by providing them learning capacities and also increase their learning potentials.ICT makes children with hearing impairment proficient by providing them with the help of suitable digital media, It also plays an important role in helping the children with hearing impairment communicate with peers, then by promoting collaborative and social learning environment.

The use of ICT helps children to understand the goal and expected results and the teacher is able to lead and motivate successfully and create a lively active learning environment. The same writer says that ICT gives access to nontraditional information sources, raises effectiveness of self-education, promotes creativeness and brings to realization of education

forms (Skär, 2002).The internet helps teachers to collect a variety of information about special needs which are current. The writers went to say that Internet facilitates learning resources from which teachers can use to facilitate the teaching and learning. Internet usage helps the teacher to cater for the unique needs of learners in class. It provides an array of powerful tools that are used to transform the present teacher isolated presentation to pupil centered and text bound classroom teaching to a rich student focused and interactive learning environment (Egaga & Aderibigbe, 2015). ICT integration in the curriculum helps learners develop cognitive learning abilities and problem-solving skills by providing access to interactive enquiry- based learning resources. Secondly, it trains teachers to become facilitators of learning rather than sources of knowledge (Wisdom et al, 2007).

There is substantial evidence that Information and Communication Technology improves the quality of education, it expands learning opportunities and makes education accessible too (Copley & Ziviani, 2004).Craddock, (2006) stated that technology removes educational boundaries between the teachers and the learners, by collaborating in real time using advanced technology such as instant messaging, video-conferencing and social networks websites . Although the grammatical aspect of a languages sign system is different from the oral version, the internet simplifies these aspects; making written literacy easier for the deaf individuals (Johnston & Napier, 2010).As a result this useful means of communication provides a visitation of new opportunities for the deaf communication. One of those opportunities is the possibilities of engaging with a wide range of other people through social media with it. This group is now able to communicate with others on a level that will not necessarily differ from that of hearing person. According to Anttila et al, (2012), ICT helps

teachers to work in teams and share ideas related to school curriculum. The whole world is currently connected to improved technology. When teachers and learners are connected to the technology they are provided with appropriate information that will empower them in and out of classroom (Silva et al, 2012).

2.2.1 Gender

Gender disparity can also be seen in the area of ICT. According to Klein et al, (2008) observed that many feminists believe that western technology embodies patriarchal values. The writers further argue that most women are reluctant to go into technology because of the sex-stereotyped definition of technology as an activity appropriate for men. More male teachers use ICT than female teachers, and male teachers use it more often than female teachers. In order to encourage all teachers and deaf learners irrespective of gender, policy makers, administrators and other persons in leadership of schools should ensure that all teachers use ICT efficiently and effectively; for example, Malaysia, The Ministry of Education (MOE) has included ICT into the national curriculum for primary and secondary school, as one of the transformation shifts in Education.

2.2.2 Professional Qualifications and Development

Teachers' professional development is a key factor to successful integration of ICT in teaching. Egaga & Aderibigbe, (2015),revealed that whether beginner or experienced, ICT related training programs develop teachers' competences in computer use, influence teachers' attitudes towards computers as well as assisting teachers reorganize the task of technology and how new technology tools are significant in teaching. Teachers when given time to

practice with the technology, learn, share and collaborate with peers, it is likely that they will integrate the technology into their teaching. Beliefs, skills and knowledge, awareness and insights are acquired through effective training in ICT for effective use in their teaching (Fullan, 2013). Ouma, Awuor & Kyambo, (2013) cited that teachers should have a range of different technical communication skills which include using chartrooms, word processing skills, web page authoring and using various kinds of ICT tools.

2.3. Challenges Teachers Encounter in Using ICT during Classroom Teaching and Learning

Regrettably many challenges have affected ICT since its inception in Uganda. Begin with policy, the supplement of all the ICT hardware and soft ware facilities, continues by readiness and skills of teachers to integrate into pedagogical processes. The ministry of education has challenge of training teachers in ICT (Waiganjo & Paxula, 2020). Although in the ICT policy of education under staff training stated that there will be a program planned to train teachers and school principals, the staff training remains a challenge. Kenya did by appointing technical digital native, to support teachers' training as champions in the schools. Inaccessibility due to poor organization of resources, poor quality hardware and inappropriate software was identified as one of the challenge for teachers to use ICT in teaching and learning in classroom (Bingimlas, 2009).

Previous research has indicated that both external and internal factors influence ICT use in education. They gave external factors as: access to computers& software; insufficient time for course planning; and inadequate technical and administrative support while internal

factors were identified as teachers' attitudes, confidence and beliefs in ICT use (Sang et al., 2010; Klein et al, 2008; Tezci, 2011).Several internal factors also influence technology integration outcomes (Sang et al., 2011). Internal factors like: understanding of ICT use; beliefs, which may conflict with the application of ICT; attitudes toward technology integration; perceptions, including intention or motivation to use ICT; self-confidence and knowledge; technology skills; readiness to use ICT; and technology self-efficacy (Al-Ruz & Khasawneh, 2011); Chen, 2008);Lin,Wang& Lin, 2012); Sang et al.,2010). Sometimes schools lack priority while planning when they get a donation; they have no option but to take it. Lack of structural implementation has made the ICT implementation in teaching lag behind (Pelgrum & Law, 2003). This in a way has caused teachers not to access ICT laboratories because of not having a laid program for implementation from the school. These devices end up getting damaged from the stores or rooms where they are kept. Teachers' negative perceptions and attitudes are said to be important obstacles in the use of ICT in teaching and learning process.

Isaac, Kazembe &Kazondovi (2018) stated that teachers lacked training in ICT pedagogy due to lack of time to learn and incorporate ICT skills and tools into lessons. Teachers do not use ICT in class to help the learners to learn and they cannot integrate technology effectively into the lesson because of negative attitude towards this technology (Tezci, 2011).

Technological changes challenge the teaching professional at two levels: teachers to develop their own digital competences, secondly to develop instructional activities that equip all the learners with competences needed to succeed in the digitalized world. Teachers as they

support traditional literacy they also support literacy skills in the digital setting. Teaching profession seems to face challenges regarding the digital skills critically, e.g. they possess weaker problem solving skills for technology rich elements (TRC) than adults working in other sectors (Söderström, 2009).

Sangra & Gonzalez-Sanmamed, (2011), reports that teachers are not confident in using ICT to uplift the development of a broader teaching and learning processes such as strategies of synthesis, analyzing, evaluation and organization. Remarkably these are very crucial skills for net navigation and for a wide range of information available.Tedla,(2012)lack of technological knowledge and skills to use ICT prevents teachers from implementing ICT in their teaching. ThusSilviyanti & Yusuf, (2015), stated that teachers needed support when using ICT especially when technical problems when using ICT for teaching. Teachers are sometimes short of time to prepare ICT resources for lessons. Time is also needed for teachers to become acquitted with ICT use. That's handling software and hardware materials. Lack of time exploring ICT and preparing these resources is a teacher-level barrier in the uptake of ICT in primary schools Almekhlafi & Almeqdadi, (2010);Mandasari & Theng, (2014), support of other writers affirms that teachers have no sufficient time to master new software or integrate ICT during a class period Teachers are sometimes short of time to prepare ICT resources for lessons. Studies contend that ICT use strengthens traditional practices and it was found out that it is difficult for teachers to develop innovation by taking advantage of what the current technology has. Lack of computers and hard ware resources in schools as well as lack of access to internet in Saudi Arabia adversely affected the use of ICT in teaching; this was cited by (Sangra & Gonzalez-Sanmamed, 2011).

There's no country in East Africa that has a curriculum for teaching ICT as discreet subject for teaching in primary level even though some private schools may be doing it is not examined by UNEB. Though some schools may expose their teachers to ICT training and use it. This is for their curiosity but there will be no set examinations at end of primary level (Sangra & Gonzalez-Sanmamed, 2011).

Teachers who are positive about using computers or new technology will adopt its use so fast but if it's negative, teachers will not want to associate themselves with technology in use (Guma, Faruque, & Khushi, 2013). Information and computer technology competence has been highlighted as big challenge inhibiting computer use in primary schools. Teachers are not able to handle a wide range of different computer applications for various purposes. According to teachers, computer competence is a major blow to using ICT in classroom teaching (Guma; Faruque; & Khushi , 2013).

Self-efficacy in teachers: Computer self-efficacy is explained by Christensen & Knezek, (2006) as confidence in using computer with competence in different classroom teaching and assessment settings) Guma, Faruque&Khushi (2013) cited teachers as having a belief in them that they cannot perform using a computer in the class. This belief will stop the teachers to have confidence to perform using ICT in class room teaching because they feel insecure and not competent. Fear of failure and lack of knowledge stop teachers from using ICT in their teaching. Just the same like Uganda teachers who were never exposed to computers during high school or at University or got initiative to take a course on computer training they have remained computer illiterate which means they will not be able to use computers while

teaching. It is so disappointing to teachers once they have prepared to use computers and only to find that they do not work, this affects both the teachers and the children who were set to benefit from them. This is the order of the day at the school of study.

Sangra& Gonzalez-Sanmamed show that ICT integration processes are hard and complex and that are affected by internal and external factors. They cited characteristics of the school organization and the staffs as main internal factors, ICT infrastructure policies, staff training, and relationship with the context were pointed out as external factors that affect the use of ICT. Traditional cultures of schools were reflected by Sangra& Gonzalez-Sanmamed as one of the main handicaps to develop education potentials of using ICT teaching (Sangra & Gonzalez-Sanmamed, 2011). Research results from Gumbo, Hasselbring & Glaser, (2000) in the study on the use of ICT indicated that teachers do not use ICT because of the fact that they are afraid of the innovation and change and are technophobic despite the availability of ICT in teaching and learning. The same writer went on to say that, teachers shun the use of ICT and continue to use traditional methods of teaching and learning and as such limit the use and importance of ICT.

Mia & Haque, (2013), cited lack of essential knowledge and skills about ICT tools and negative attitudes do not promote continuous use of ICT tools by teachers especially for education purposes, lack of access has continued to be a complex barrier to the utilization of ICT especially students with disabilities which include those with deafness, lack of access to ICT recourses and lack of internet connectivity is another complex barrier in some Nigerian schools, computers are shared and therefore need to be booked in advance.

Alazam et al.,(2012), age, lack of ICT skill and lack of training are obstacles to ICT integration as well. Old educators do not prefer to use ICT tools in their teaching in comparison to young teachers. The same writers have also found out a high significant, high correlation between young teachers and a high level of ICT skills in resulting in way ICT tools are used in higher frequency in relation to older educators. It could be described as that the teachers are operating at the novice state as described by Dreyfus and Dreyfus, (1980)in their model of skill acquisition.

2.4. Conclusion

The literature reviewed above shows studies carried out in Uganda and other different parts of the world, on the issues affecting the education of Deaf learners. The available literature is mainly focused on the education of Deaf learners in the area of ICT in special schools which in most cases are located in Kampala City. The schools where the learners are enrolled have mandate to expose the learners to ICT skills because it is the trend which the world has adopted. The new technology policy to adopt the use of ICT in teaching and learning in order to achieve vision 2030 of the UN development goals is hoped to be achieved by then. Teachers believed that in the added value of implemented ICT in teaching and learning process but at the same time they realize that there is still a long way to go for optimizing the use of ICT in teaching in order to support students knowledge construction process, can serve different aspects of teaching learning that support the theoretical background of differentiation. It can meet up to the student interests.

Various factors have been established to hinder the achievement of the same. These factors range from inadequate ICT tools, lack of ICT skills by the teachers, lack of budget to maintain the devices in the schools, negative attitude by the teachers, insufficient ICT facilities, lack of internet connection, poor infrastructure, lack of time table to include all children at schools, the language of ICT instruction in the schools. There exists a gap in the literature on how the education for the Deaf learners should be integrated using ICT in teaching and learning in Uganda. The findings of this study have helped in closing the gap by providing recent data on the teaching using ICT education for the Deaf learners. The next chapter addressed the methods that were used to collect data for this study.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

Methodology describes how the whole chapter was conducted In this chapter therefore, the study design, Research Paradigm, the variables that guide this include; teachers views, role of ICT, and challenges of using ICT; as independent variable, outcomes from ICT education as dependent variables and School culture Language barrier, School policies, enrolment of the learners and level of education as extraneous variables, the target population, the study sample size, and sampling techniques, data collection instruments, procedures for data collection, data processing, data quality management, data analysis and limitations are described.

3.1 Research Design

According to Cohen, Manion, & Morrison, (2004), a research design is a logical and systematic plan prepared for directing a research study. A case study design was used to explore teachers' perceptions on the use of ICT in the teaching of deaf learners in special schools in Kampala City. The case study is "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident (Walliman, 2016).Since the case study design is conducted in a natural setting with the intention to comprehend the nature of current processes in a previously little-studied area, a case study design was adopted for this study on the topic on: Teachers' perceptions on the use of ICT in the teaching of learners who

are deaf. The study was qualitative in nature because the researcher wanted to study the situation in its natural settings. It was assumed that the situation in other schools for deaf learners was different from the schools of study. Qualitative approach was used to gather information with the help of semi structured interview guide. According to Bacchi, (2013), qualitative data provides details to a greater depth. Qualitative approach was used because it aided in discovering the perceptions and what teachers thought and how they felt about teaching deaf learners using ICT.

3.2 Research Paradigm

The researcher used constructivism paradigm for teaching and learning which bases on ideas that human learning is constructed and that learners build new knowledge on the foundation of previous learning experiences. It approaches learning by holding people that they learn actively building and creating their own understanding and that actuality is determined by the experiences of the learner (McLeod & McLeod, 2015). In this theory he believes that individuals learn by accomplishment of tasks and experiences they get exposed to and under pin student centered teaching methods and techniques which construct with experiences.

3.3 Area of Study

The study was done in two primary schools for Deaf learners and/or Hard of hearing. One school is located in Nakawa division and another one located in Kawempe division. Both schools are located in Kampala City. These schools were selected because they are historical Special Schools and have inventory of some information and communication technologies.

The researcher believed that these schools had rich information about teachers' perceptions on the use of ICT in the teaching in of deaf learners.

3.4 Study Population

In this study, the target population comprised of 18 Special Needs Education teachers teaching in transition class (P4), Primary5-7 and 2 ICT personnel that were identified from the two selected schools.

3.5 Sample Size

The study selected 15 participants from 2 special schools for deaf learners and (1) ICT personnel in the schools of study. The respondents were professionals working with deaf learners and had the characteristics the study needed to generalize information from. This category of people was chosen because they are the technical people concerned with the teaching and learning activities of the students in the schools. However, for the ICT personnel they needed to have minimum diploma in ICT and only those with minimum experience of two years working with learners who are deaf. They were therefore considered to be well equipped with pertinent information regarding support using ICT to learners who are deaf available in the process of teaching learners who are deaf with using ICTs.

Each of the class was expected to have at least three or two teachers in the two schools selected school "A" lacked teachers so teachers were few. School A had seven teachers that handle classes P4-P7. The list of the teachers was accessed from the head teachers of the two schools. The teachers were those who particularly handle deaf learners in class and who had a

minimum qualification of a diploma in special needs education or diploma in education and had a certificate in a special education in the deaf blindness.

Table.3.1: The sampling frame for the study

Category of population	Target population	Sample size	Selection method
SNE Trained teachers-A	8	6	Purposive
SNE trained teachers-B	8	8	Purposive
ICT personnel	2	1	Purposive
Total	18	15	

The table 3.1: shows that there were fifteen respondents who were interviewed of whom eight were from school B, six from school A and One ICT personnel from school B.

3.6 Sampling Techniques

Purposive sampling technique was used to select the participants for the study. It was used because the participants were directly involved in the education of deaf learners and, the learners because they are the beneficiaries (recipients) of the provision. This also helped the researcher to get first-hand information. Purposive sampling is appropriate when the participant has the relevant information for the study and participants are sampled on the basis of their typicality, or because they are satisfactory to the research needs (Cohen,

Manion, & Morrison, 2004).In other words, they are sampled on the basis of assumption that they have the information being sought of because they are the only ones in their respective categories. In this particular study, teachers handling primary four to primary seven from the two selected schools were a point of focus). In purposive sampling the respondents chosen were likely to give the required information about the topic at hand.

3.7 Data Source

Data was collected from teachers who were trained in Special Needs Education to give primary data. In this case data source was from teachers supporting deaf learners in class. However, data about experience, age, years in the service and education level was accessed from the teachers' records which were accessed from the administrators of the selected schools. This was in addition to interview questions given

3.8 Method of Data Collection

In this study, the researcher used qualitative instruments of data collection. The instruments were interview guides and observation.

3.8.1 Interview

An interview is a conversation initiated by interviewer for specific purposes of obtaining research relevant information and focused by him on contents specified by the research objectives of specific description or explanation (Cohen, Manion, & Morrison, 2004; Njuki et al., 2011).Interviews can be formal where questions are asked and answers recorded on a standardized schedule, less formal in which the interviewer is free to modify the sequence of

questions, change the wording, explain them or add them. Interviews also can be completely informal where the interviewer may have a number of key issues which he raises in a conversational style instead of having a questionnaire (Cohen, Manion, & Morrison, 2004).

The instrument was semi-structured interview guides to collect data from participants. The teachers were interviewed basing on the objectives of the study. The interview composed of open-ended questions. In a semi-structured interview, the researcher works out questions in advance but can change the wording of questions, give explanations and may leave out questions which seem inappropriate with a particular interviewee or add new ones (Cohen, Manion, & Morrison, 2004; Njuki et al., 2011).

The study considered this type of interview important because it involves face to face interaction, it is flexible, adaptable, and can be used on many people. It was used to get an in-depth understanding of the general information about the teacher's perception on using ICT in teaching and learning of deaf learners, roles of using ICT in the teaching and learning, and challenges teachers encounter in using ICT in teaching deaf learners. It also helped the researcher to capture the non-verbal cues from teachers. All the respondents who participated in the study were contacted in advance to fix an appropriate date for interviews. Reasons for this arrangement were to create maximum co-operation and friendliness with respondents prior to the interviews (Mugenda & Mugenda, 1999).

3.8.2 Observation

Observation as a qualitative research method is described as the systematic description of events, behaviors and artifacts in social settings chosen for the study (Njuki et al., 2011). On

the other hand Amin, (2005) further explains that observation is a combination of sensation (sight, sounds, smell, taste, and touch) and perception. It also involves systematic close viewing of actions, recording of these actions and most importantly the analysis and interpretation of what has been seen (Amin, 2005). The study was guided by an observation checklist. Things like setting of the physical environment, computer lab, functional computers in the lab, accessibility of the computer lab to learners, allocation of computer lessons on the timetables, computer developed teaching and learning materials, and social and physical support to learners during lessons, availability of internet for learners and staff were observed. In this process, the researcher did take a position of a non-participant observer and recorded the items as they appeared on the checklist which was later interpreted and analyzed. This technique helps one to avoid report bias from individuals, overcoming language barriers, also to capture the naturalistic behaviors that are visible.

Observation method is also useful because it gathers naturally occurring data to gather firsthand information about social processes (Data & Silverman, 2011).They also offer opportunities for the analysis of nonverbal communication. Furthermore, the additional time spent in observation offers insights that are unlikely to have been gained from interviews alone. It also improves the quality of data collection and interpretation and facilitates the development of new research questions or hypotheses (DeWalt & DeWalt, 2011).

3.9 Procedure of Data Collection

The study developed early familiarization with teachers as they were colleagues from the same education setting and they knew the researcher. The study first interacted with the

teachers casually as colleagues and so it was not new because they knew that the researcher was studying. Some questions were reframed and others actual words were used. According to Cohen, Manion& Morrison (2004), an interview is a conversation initiated by interviewer to specific purposes of obtaining research relevant to information and focused by him on contents specific by the research objectives of specific descriptive or explanation. Interviews can be formal or informal. For this study Semi-structured interview with open ended questions was used to all respondents because it: permits repeated examinations of the interviewer's answers, allows more thorough examination of what people say and helps to limit the natural imitations of our memories and of the intuitive glosses that we might place on what people say in interviews.

Moriaty (2011) affirms that using interviews allow for the discovery of information on issues that the researcher may not have considered and meeting people in their work places in a natural setting. The introductory letter was taken to the identified schools so that the School administrators allow the researcher conduct the study in these schools. Participants were identified and interacted with. Of the eighteen teachers that were targeted only fifteen were interviewed two had issues and therefore could not be reached while one refused because she was not comfortable with audio recordings.

The teachers were interviewed from the classes individually after handling a lesson to avoid interruptions in the lessons. This was because it was almost one teacher per class. However, one teacher opted to be interviewed outside the classroom because of noise from learners that was being captured by the hearing aids. The estimated time was between 15-30 minutes per

teacher and each interview was audio recorded using a smart phone and the voices were later copied to a flash for storage.

3.10. Trustworthiness

The instruments were tested through a pilot study to ensure that they collect information they were meant to collect. To be sure of that, they were checked by the supervisor who has experience in research. To ensure credibility, the instruments were developed in line with the study objectives. The researcher made sure that steps were followed to ensure that the findings came from the data given by the participants and not from the researcher.

3.11. Validity and Reliability

3.11.1. Validity

Validity is important for effective research. If a piece of research is invalid then it is worthless (Cohen, Manion, & Morrison, 2004). Apart from ensuring that the study measured what it was purported to measure, validity was addressed through members checking the honesty, depth, richness and scope of data. This was achieved by ensuring that, as much as possible the researcher presented data as it was given and focused on the issues at hand, the researcher was objective as possible and was supervised by experts, who provided substantive guidance during the entire research. Bearing in mind that this was largely qualitative study, the subjectivity of the researcher her opinions, attitudes and perspectives as well as those of the respondents together contribute a degree of bias. Therefore, validity then should be seen as a matter of degree rather than as an absolute state (Cohen, Manion, & Morrison, 2004).

3.11.2 Reliability

Reliability is the consistency and trustworthiness of research findings; it is often treated in relation to the issue of whether a finding is reproducible at other times and by other researchers provided the variable does not change (Kvale & Brinkmann, 2009). For this study, the researcher consulted specialists like supervisors in the department to scrutinize the set questions in the research instruments. Before carrying out the interviews, the researcher tried out the instrument with sampled respondents from the school that was sampled for the study on different participants.

3.12 Data Analysis

Cohen, Manion, & Morrison, (2004)clarify that data collected is known to be raw information and not knowledge by itself. It therefore has to be organized in various stages. At the end of data collection process, the raw data collected was organized in order to correct and get rid of the unnecessary errors. Therefore, data were analyzed descriptively following qualitative research design basing on the research questions and carefully analyzed by the researcher. The data were analyzed into themes following objectives descriptively from data sources. Qualitative technique was used by coding the responses from the two schools A and B as; M for respondents from school A and N for respondents from school B. respondents from school A were coded as M1, M2…….M6 and school B were coded from N1, N2……. N9 according to the number of participants interviewed.

3.13Data Quality Management

Triangulation technique was used in order to gain confirmation or further qualification of data obtained from one source. Triangulation refers to the use of more than one approach to the investigation of a research question in order to enhance confidence in ensuring findings. Triangulation offers the prospects of enhanced confidence (Bryman, 2016).He continues to note that triangulation also refers to multi-method research in which quantitative and qualitative research methods are combined to provide a more complete set of findings that could be arrived at through the administration of one of the methods alone.

For this study, however, triangulation was adopted because some respondents were interviewed more than once to ensure reliability and validity. Therefore, the rationale for triangulation was to cross-check and cross-breed information gathered from different categories of respondents. As some information involved figures, after the interviews were transcribed and coded according to participants and regrouped by according to questions. The data were examined and assembled in order to identify the identical information or common views from the respondents. Triangulation also helped in coding information obtained through observation with what responses obtained through interviews. The findings were interpreted and discussed using emerging themes and categories supported by narratives of respondents. This led to analysis of some data using table, graphs and pie charts as some questions required figures that had to be quantified.

3.14 Ethical Considerations

The researcher obtained an introductory letter from the office of the research coordinator Kyambogo University. The letter was taken to the identified school administrators to allow the researcher to conduct the study in the schools. Permission was granted by the administrators of the two schools after showing them introductory from the university. Another letter assuring confidentiality of the information to be provided was designed by the researcher. The researcher visited the special schools for the deaf and presented these letters to seek permission. Through the guidance of managers and administrators of the schools, respondents were purposively sampled out and appointment made with them for the day the researcher can meet and interview them. The study also informed the teachers about the purpose of the study and the way it would be used as for research only nothing more. And more so they were informed that it was to be willingly done and if one opts to pull out was free and those willing were to sign consent form and to be audio taped for proper analysis.

3.15 Limitations and Delimitations

The study focused only on few teachers who handle deaf learners in class. The study was limited to two Special Schools for the deaf because one is a model school to the other which was its annex. The study relied on primary data basically to generate information from respondents. Records were used strictly for collecting demographic information.

Some participants refused to be recorded and this limited the number of participants that had been planned to be informants. Never the less the views and opinions gathered in this report are representations of the selected teachers' experiences.

The scope of study was narrow for this matter for instance the area of coverage which was two special schools in the city center. This is a smaller part of the region in the country. Therefore, findings may not be generalized to the rest of the regions of Uganda. It is therefore recommended that further similar research be done with a wider geographical coverage and content be covered to other far areas of the country.

Some participants kept confidential information; they were reluctant to volunteer to provide this valuable information to the study. This was minimized by thoroughly explaining to them the purpose of the study and assuring them that whatever information they shared would be kept confident.

The researcher experienced a problem of finances with respect to this study. Costs regarding this limitation included transport, printing, typing and photocopying of relevant materials. However, the researcher borrowed some money to cover up the gap. The researcher experienced time constraint in data collection, analyzing of data and in final presentation of report.

CHAPTER FOUR

DATA PRESENTATION AND DISCUSSION OF RESULTS

4.1 Introduction

In this chapter presentation and discussion of the findings of the study from the field are presented. The study focused on teachers' perceptions on the use of ICT in the teaching of deaf learners in selected schools in Kampala Capital City. The data analysis in this chapter was analyzed qualitatively and guided by the three research objectives as reproduced below: teachers' views on the use of ICT in the teaching of learners who are deaf, the roles ICT plays in class room teaching of learners who are deaf and the challenges teachers encounter in the use of ICT in the teaching of learners who are deaf in the two selected schools of study in Kampala Capital City Authority. Two categories of participants provided the data from which the analysis and presentation are made here. Category one is from schools- A and the second category from school B. The category of participants from schools; A- were given specific codes, such as: teachers M1, M2, M3…. etc. and participants from school B- were coded teachers= N1, N2, N3…. etc.

4.2 Demographic characteristics of respondents from the two selected schools

Demographic information was presented because the researcher wanted to show clearly characteristics of respondents to the readers, analysis of responses from participants involved (years participants have spent working with deaf learners, qualification, gender sensitivity, and experience in the profession). The study collected demographic information and is presented below;

Table 4.1: Gender Distribution of Participants

Gender	Respondents	Targeted number
Females	7	9
Males	8	9
Total	15	18

Source –primary data

This table illustrates that males were eight and females were seven. This made to be fifteen respondents instead of eighteen which was the targeted number.

4.2.1 Distribution of Age of Respondents

Age was distributed according to ranges of 25-39 which had five teachers; the ranges of 40-49 was sixteachers while those above 50's years were four teachers. This information was accessed by the researcher from the records availed to her by the administrator at the school.

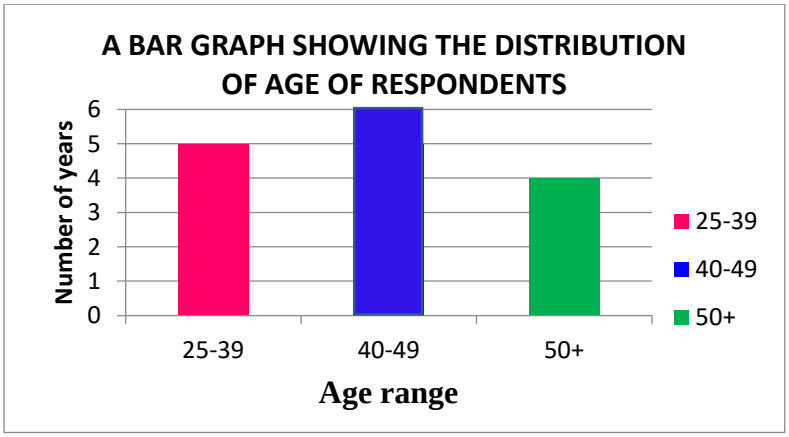

Figure 4.1: Age of the Respondents

4.2.2 Number of Years the Teachers had worked with Deaf Learners at School.

The number of years the teachers had worked with deaf learners was grouped in range of years of 1-10 who were ten teachers, 11-20 years were three teachers and 20-30 years were two teachers. The majority of the teachers were in the range of ten years. This may imply that teachers in this category do not have the interest in teaching using ICT and/or lack ICT skills to meet the current education systems. This is illustrated on the graph below.

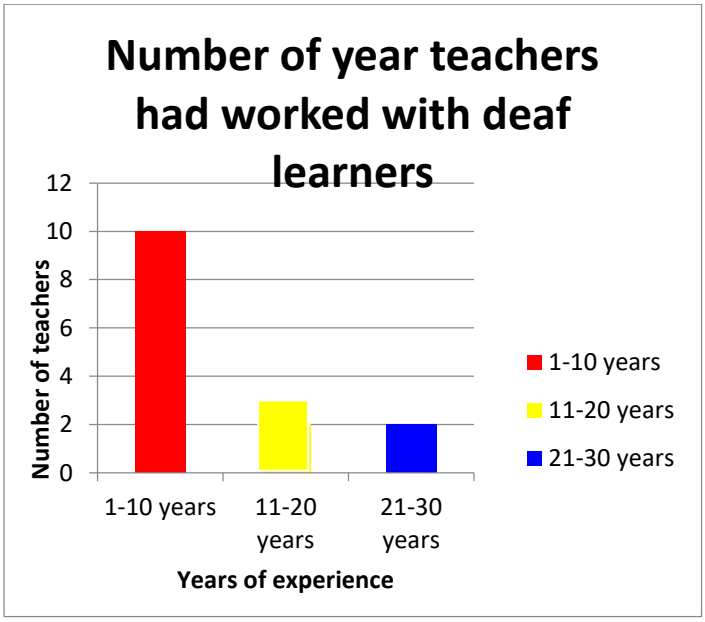

Figure 4.2: Number of Years the Teachers Worked

4.2.3 Level of Education of the Teachers

It was stated in the study that the level of education was to be diploma in education (Special Needs) or Ordinary Diploma but with a certificate in Special Needs Education; eleven

teachers had diploma in education (SNE), three had bachelor degrees, and lastly one had a diploma in information technology (ICT personnel). This information was gathered from interviews and files. For further research studies, schools for deaf learners should explore in detail the benefits and challenges of incorporating ICT in teaching deaf learners. This data indicates that these schools have qualified staff in Special Needs to teach deaf learners, however, if most of them have taught in these schools for more than ten years without any training in ICT and its relevance to education of the deaf learners in primary schools, then they may have challenges using it in teaching and learning hence affecting the performance of these learners.

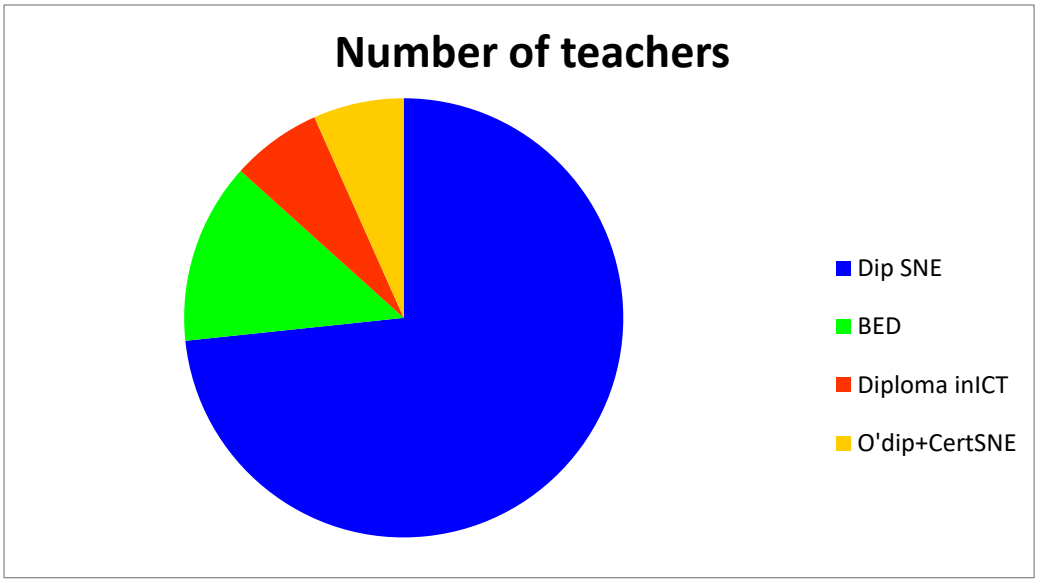

Figure 4.3: Level of Education

The chart on qualification of teachers above illustrates that majority of teachers had qualification of diploma in special needs education (ten teachers), three had bachelor degree

in special needs education, one had a diploma in ICT and finally the other one had ordinary diploma in education with an addition of a certificate in SNE.

4.3 Teachers Views on the Use of ICT in the Teaching of Deaf Learners.

The first objective of the study was to analyze the teachers' views on the use of ICT in teaching of Deaf learners. The views that are expressed by respondents give out perceptions and attitudes teachers have towards the use of ICT in classroom teaching and learning. The researcher used open ended questions to gather information from the respondents. Content analysis resulted in the identification of codes accorded to respondents who were interviewed as School -B =N1, N2, N3…etc... And school A= M1, M2, M3…etc. according to the schools for easy analysis.

Regarding the views of participants on the use of ICT in teaching Deaf learners, they gave varied information (M5, M3, M1, N1, N4, N3, M4) pointed out that they do not use ICT (.M4, M8) said ICT has been beneficial to them in teaching deaf learners and it motivates children.

Participant (M5) reported that it is good tool for communication in teaching because it involves use of touch and seeing and it's helpful in integration of subjects. In addition to the above (M7) said that it promotes memory; (reminds teachers and children once you project work on the screen. Participant (N3, N2) on how ICT is beneficial reported that:

It helps in assessment of learners, quickens or eases work for the teachers and saves time. The same participants went on to say that ICT is used to make science lesson plans, makes teachers work easy and finally the teachers and children learn the basic skills of using ICT.

Some participants (M1, M5) reported that they use ICT to make personal research to empower them to teach, they again find it as a method of teaching because it helps them to get work for teaching.

On how the teachers use ICT in teaching, specifically participants (N1, M1, and M3) reported that they have not yet started using ICT while participants (M4, M7, M8) said each class has its special day. In this view participants (M6, N6) mentioned that ICT is used once a week and not often.

When participants were asked on how they find using ICT in teaching deaf learners; participant (N3) reported: “I don’t use it in teaching but I get materials from computers”. *Participant (M1) reported that it eases my work”.* On the same issue participants (M2 and.M6) noted that it’s a bit difficult because of time since it’s not used in classroom; learners are just taken to the computer lab. Participant M8 mentioned that it is easy for the Lerner to understand and it’s effective and enjoyable. On the same issue M3 reported that: “it would be good to make my work easy and simpler.”

Participant (N1) particularly reported: “using ICT would be a good method of teaching but teachers are not yet equipped with skills in ICT we have at school. One participant

particularly N8 reported that some children miss out because computer is not time tabled for them (P4)"

Regarding availability of ICT in school participants (N2, N1, and N5) reported that there is no one to help the teachers or children to use ICT. While on the same issue participants (N8, M8, M1 and M4) said:

Computers are few, they have broken down, there is power shortage and outages, it's expensive to maintain because of power consumption". More so on the same issue participant (M6) reported that in case I don't want to write for leaner's ICT gives them skills for typing, I normally give them typing work.

4.4 Roles of ICT in the Teaching of Deaf Learners

Regarding roles ICT plays in the teaching and learning process of learners who are deaf majority participants said yes ICT play some roles as reported by respondents (M6, M8, N1) that it helps both teachers and learners to correct spellings of words, N1and M6 said computers ease work for teachers other than taking long time giving explanations. Particularly participant (N5) responded that the computer has helped me with some research work for the class and it makes the lesson lively to both the teacher and the learners. (N6) was sincere and said that it is important to learners but I have not yet used it in class but if given chance it would be important. Teachers find out what they do not know which is not in textbooks other than consulting friends Participant (N7) reported that computer is good it helps teachers not to be left out it makes teachers updated and not left behind the curriculum coverage and makes low achievers get interested and catch up. Particularly (N8) said that ICT

is important because children see what they learn and get involved and it prepares them for lifelong learning in the digital world.

Concerning how ICT has supported teachers in the teaching of deaf learners' respondents gave varying responses of which some are negative N5, M6 responded that;" It does not help me because I don't use it, it is not on time table, I have no skills to use it ,there is no one to help me". Respondents (N6, N2) reported that ICT supports teachers in getting information which one might not help you with, ICT is a new method which you consult and get feedback when there is internet. Respondent (M8) said that:

Information and communication technology simplifies and reduces signing by the

teacher and respondent (M6) said that," ICT helps in the way that most times I do not write for the learners".

Particularly (M3) reported that:

> "Information and communication technology supports teachers in taking short time get drawings which are easily accessed through the internet and are then photocopied for the children to draw easily."

Respondent (N3) said that ICT helps deaf learners to learn in a simple way because they learn by seeing. Respondent N5 said computer makes the lesson lively, it's satisfactory; children participate and show interest to learn. While respondents (N5) reported that it reduces on the time to be consumed, learner sees directly displayed work and pictures for them to draw and M4 said that children concentrate because deaf learners like things they can see and touch, it

builds ICT skills of both children and teachers it's a carry way home. On centrally however respondent (N4) reported that there is no much support because there is no helper.

Regarding the way teachers relate ICT and curriculum in teaching, responses varied according to individual participants (M1, N6, and M3) said that it is a complimentary to curriculum in delivering message. Respondents (N5, M6 and M8) said, every school should use computers because it is used to carry out evaluation and useful tool to roll out the curriculum. On the other hand, respondents (N4 and N3) reported that ICT coordinates the curriculum, it works hand in hand with curriculum and it teaches language. Participants (N2and N4) responded that they use ICT to make lesson plans and the curriculum wants you to do that and participantsN7 and N1said that ICT is a new method and it is a good way to go. Contrary to other participants' views participant (N8) reported:

since the curriculum does not have ICT component I do not see the relationship, it is the mandate of the school to pass on the ICT teaching and finally (M5) reported that currently it's not a kind of a need it's just a kind of integration but if it is put in the curriculum as well it's a basic kind of good item to work out.

4.5 The challenges Teachers encounter in using ICT in Teaching and Learning

Concerning whether teachers have ever been trained to use ICT in teaching deaf learners, majority of respondents (N4, N2, N5, N6, N7, M1, M4, M5, and N3) stated that:

“I have never been trained and lack knowledge on ICT skills” other participants (N8, M1, M2, M3) said, “Yes I trained in word typing and excel which are compatible with learners and teaching process.”

These responses depict challenges that teachers may face, for instance, being unable to effectively use ICT at an initial stage of lesson planning, designing interesting and attractive educational materials and guiding learners in computer lessons for learners**,** an act that hinder deaf learners from active participation, discovery and mastery of content.

Regarding how teachers have managed not to abandon the use of ICT in school respondents (M7, N5, M8, and N8) reported that: “use little that is more interesting, bring computer to motivate the learners and apply it as often as possible.”

Participants (M1, M6) mentioned that they try to take the children to the computer lessons if it is their time on the timetable. Another participant (N4) said that, ‘I have to adopt it because it is something to learn” and M1 stated that: “I encourage them and show them the importance of ICT; we are in digital world so old methods have to stop”. Respondent M3 noted that all children and the teachers should be involved in ICT use so as not to miss out. More to that respondent N1mentioned that I let them enjoy using ICT e.g. when we go for class I bring in games like play cards, or chess because they do not make them bored.

Additionally, about teachers not abandoning the use of ICT use in class (M5) said that: “illiteracy can make you abandon them but I make a time table and follow it and get a proper guide to help me not to abandon them.”

Regarding the state of infrastructure in place in terms of storage of ICT equipment at school, respondents (N4, N3, N2and, and N7) conformed that," it is fairly well maintained, well stored and there is no leakage". More to above response participants M4, M7reported that there is a computer room with "Askari "(security guard) on alert, but one times thieves broke into the school and stole solar panels and some computers. There is internet, electricity, and solar power for back up. Whereas respondent (M6) said that computers are arranged in such way that children are able to sit and concentrate on computer, space is enough for them. Participant (N5) reported that the ICT lab is safe and secure, storage is okay there are some few computers with ICT personnel dusting them.

Contrary to what the afore said respondents had reported about ICT infrastructure, other participants (N3) reported that the room is very small teachers take children in shifts in order to fit there and M5 said that the computer room is very small and has squeezed space which needs to be expanded .More so N1 said that the computer lab is temporal some things still miss there for example there is no carpet , storage is sufficient for the few that are there but once the number of computers increases the room will not be enough, maintenance is so bad the technician is generally there. While M3 reported that the computer room is very small, teachers take children in shifts in order to fit in the room. The lab is equipped with fifteen computers, well-functioning but the internet is on and off.

Regarding challenges teachers face in using ICT in teaching participants gave a number of challenges. Participants (N6, N7, and M1) mentioned that the school does not have enough computers. The teachers are not yet trained to use ICT in teaching. Respondents (N6, M5)

reported that people have fear to use computers both the teachers and the pupils where as participants (M5, M7) said that the room is not enough, the way of acquiring knowledge is hard if one is not conversant with it (N7) highlighted that maintenance of computers is not good. (N4, M3) reported as having no skills in ICT, N3, M6 noted that:" I am not conversant with computer, computers break down and make learning more fragmented there is no mechanic for the computers in the lab".

Finally, respondent (N1) reported a number of challenges as:

"There is no internet, computers are not functional, and only a few can work and are not enough. We use long time because of grouping the children to fit on computers and the room, the school has no money to buy megabytes (MB's) to load the internet. It's costly." Regarding participants giving suggestions on how to improve on the use of ICT in teaching, respondents (N4, M2, M3, M5, and M8 suggested that teachers should attend computer lessons to be able to use computers in teaching. Participants (N3, M1, and N6) gave a number of Suggestions like:

"Teachers need to be trained, there is a need to take computers to classrooms for better teaching, school should set aside money to repair school computers, and computers need to be controlled not to be removed from the computer room. Computers need to be serviced at the station and there is need for a bigger class."

Participants N6 and N7suggested that there should be free access to the computer lab both the teachers and the children. It should be made a routine for teachers and the children to use ICT

in teaching because if it is provided teaching and learning becomes easy. Respondent M5said that the ministry of education and sports along with ministry of information and technology should team and see that every school has computer lab and make a follow up to see that ICT is being used in these schools to roll out the curriculum because we are in a computer world. Other participants (N7and N8) suggested that teachers should be encouraged to use desk tops the same way they use their smart phones. Ministry of education should intervene and give computers to schools and give capacity building workshops for teachers.

Finally, (N2) suggested that there should be training for teachers so that they are brought on board to learn ICT skills, employ ICT technician who is overall and should be included on school or class teaching time table for computer lessons.

4.6 Discussion of Findings

4.6.1 Teachers' views on the use of ICT in Teaching Learners Who Are Deaf.

One of the findings reveals that many teachers are not using ICT in the teaching and learning process. Teachers do not have enough ICT skills and because they are not competent in ICT skills they fear to use ICT. Failure to use ICT in teaching can be attributed to the fact that most of them have taught for over ten years when ICT was not fully embraced by many educational institutions as indicated in Figure 4.2. While, for others, it could have been age of these teachers, figure 4.1shows age ranges of participants. Teachers in age bracket 40 – 49 and 50+ may experience challenges using computers as they may have not had the chance to access and use ICT during their years of study. When such category of teachers has no experienced person in ICT to help them use it in teaching and learning then they will have no

interest in using it as they may think it is wastage of time. The study agrees with several researchers Tedla, (2012) cited (Hasselbring&Glaser, 2000) in the study of teachers use of ICT in teaching which results indicate that teachers do not use ICT due to fact that they are afraid of new innovations and changes. They have fear (technophobia) despite the availability of ICT in schools.

The study findings revealed that some teachers who use ICT find it beneficial to them for example helping them to deliver subject matter and motivating learners in class. As in the use of sign language it is a good tool for communication in teaching because it involves the use of touch and seeing. It is useful in integrating of subjects' benefits a lot through practice using assessment of learners doing preparation of lesson plans and learning basic skills to both teachers and learners in ICT (Souter,2014).This category may be of age range 25-39 as indicated in table 4.1 which is a small age bracket compared to 40-49 and 50+, as they may have had chance to use it during their time of study and seen its benefits; therefore, it is easy for them to use it in teaching and learning. If such a group is not empowered by the school administrators to help the rest of the staff members, then learners will be at a disadvantage of improving on their performance in various aspects. The study concurs with Tedla,(2012 findings that ICTs provide knowledge which gives learners to know how to use internet that is used as a source of reference and means of communication.

The study un covered a gap between policy goals and teachers use of ICT in teaching with respect to knowledge and utilization of ICT. It's important to state that from the interactions with the respondents there seem to be contradictions in the data from teachers . For instance -

some say N1, M2the School has a well-equipped computer lab but they also say had no access to, the computers are not enough. On the other hand some classes have no access to the computers lab on their own, no one to help them, they were not taught how to use computers, not enough, skilled. Additionally the computers in the lab break down frequently. These contradictions could be explained

The responses from participants in the study discovered that the teachers interviewed were not yet well conversant with ICT skills and had no knowledge on how to use ICT and had never gotten any training in ICT. This was realized when some participants reported that;" I don't use ICT in teaching, I don't know how to use it, I have no access, I have not yet started using it, If I was using it…….". This reveals that it is difficult to use ICT in teaching when the teachers do not have the skills to use. This is supported by George &Ogunniyi (2016), who observed that professionals that work with deaf learners do not have enough skills to use for a proper optimized use of ICT.

Jatileni&Jatileni (2018) in the study of teacher's perception on the use of ICT in teaching and learning in Namibian primary education the findings indicated that teachers can conduct teaching any time anywhere with the use of ICT which contradicts with Ugandan teachers who do not use ICT due to fact that they are afraid of new innovations and changes. This is not yet possible in Uganda because of varying problems for example Zambian teachers are provided with smart boards connected to e-learning Management systems and collaborative with notes that are shared as it was cited by (Waiganjo&Paxula, 2020).This shows that Uganda is still behind dot com era at certain extent and teachers lack support from

government to organize such skills development trainings to the teaching professionals. This has made teachers not to use ICT in the teaching and makes learners also not to acquire knowledge from such developments and innovations in education.

On the state of computer lab teachers were not right to say “it’s well equipped. In fact some of the teachers had access to the computer lab to use the computers with or without internet connectivity provided it is class teaching time. However, not all computers in the lab were in good working condition. Some computers had broken down and had not been repaired for some time. Besides the teachers did not have private computers for private planning. This explains why the teachers said the computers are inadequate. The lab did not have standard ICT tools. Merely having a number of computers in the computer lab is not enough. The school should have functional computers with the requisite applications and software as well as internet connectivity to promote teaching and learning.

In terms of knowledge and utilization, it was not good as shown in the report most teachers reported as having no knowledge on the use of computer, which is consisted of booting and rebooting on and off, using computers under the guidance of no one not knowing how to manipulate the computer. It could be described as that the teachers are operating at the novice state as described by Dreyfus and Dreyfus (1980) in their model of skill acquisition.

More findings show that some teachers have no access to ICT labs. ICT is not on time table for some classes in school B, Primary 4 and so they miss out in this both the teachers and the learners are barred from acquiring ICT skills. This poses a challenge for teachers and the learners to learn and use ICT in the teaching and learning process. On the other hand some

teachers from the schools of study showed interest to use ICT just the same like the Zambian teachers did. They need to be supported in order not to abandon using ICT in teaching the same way Zambia has supported her teachers are positive and understand the benefits of incorporating technology in teaching and learning.

4.6.2 Roles ICT in the Teaching and Learning Process of Deaf Learners

One of the findings reveals that ICT plays roles in the class room teaching and learning process in that it helps both teachers and the learners to correct spellings of some words, research work for the class by teachers, makes the class lively and the learners enjoy the lesson. Some information is accessible by use of ICTs as they enable the user to search sources that would otherwise prove difficult to access without ICTS. Hasselbring &Glaser, (2000), whose findings of his research in education argue that ICTs provide opportunities to stimulate learning and increases motivation that enables teachers and students to interact productively with neighboring communities and global economy in a wider higher scope. These are in line with some teachers' responses in School A where they said that teaching using ICTs motivates learners and children get exposed to information.

Ciccarelli et al. (2011:270), findings they report that: "the net possibly is the largest store of information on this planet everybody can be part of it. It is one of the few places where races, creed, color, gender do not prejudice people against others in community is key… the net is people helping each other in worldwide community". ICT can also lead to better-quality learning student learning methodologies. This is in line with findings of the study .findings also revealed that ICTs via internet are a source of a vast amount of information that

is essential to teaching scholars .As it means; ICT in teaching simply means incorporating teaching and learning methodologies and technology to have innovative lessons in classroom. This is an encouragement to the teaching profession for quality teaching and learning. The deaf learners need this most because they are already vulnerable in language acquisition.

To realize this opportunity technology needs to be part of the curriculum. The implication to both the teachers is that they both become conversant with ICT skills well informed citizen who are able to reason critically, solve problems and are capable of contributing to the development of the country. Amongst the findings teachers viewed ICT as being compatible with existing teaching practices and that it is not complex but easy. This relates to Rodgers (2003), theory diffusion of innovation theory which stipulates that when educators acknowledge that the new technological innovation in education is compatible with existing teaching methods and not complex they are likely to adopt the technology. It is imperative that teachers deem the new technological innovation to be compatible with existing methods as this could mean that their attitude towards the new technological innovation is positive. It farther shows that there is a smooth transition from old methods to new ones.

Since responses revealed that they feel good about the use of ICT, they exhibit willingness to use it in classroom. Another key point revealed in the study that some teachers enjoy the use of ICT in teaching. Additionally, the study revealed that use of ICT encourages interaction and collaborative learning, learners are able to interact freely with teachers and fellow learners and the teachers act as facilitators but not as dictators in the lesson. As it was stated

that the use of ICT not only allows access to knowledge but also o the initial learning of sign language as a communication tool

4.6.3 Challenges Teachers Encounter in the use of ICT in Teaching Deaf Learners.

Study findings reveal that teachers are not trained in ICT, they lack knowledge, poor ICT infrastructure, squeezed rooms, inadequate computers, inadequate rooms with on and off internet, power cut offs. However, lack of training is the most reason given for not using ICT and misusing ICT as the pedagogical tool with pupils. The findings concur with the study of Rogers's theory of diffusion of innovations theory (2010). The teachers could be in the knowledge acquisition stage where persuasion is guided by the attitude to make a decision to use ICT's innovation or refuse to use it.

Lack of knowledge makes teachers to fear to use ICT and to be incompetence in front of learners who are 'net generation' have been cited by Guma, Faruque& Khushi, (2013) as one of the challenges that stop teachers from using ICT in their teaching. Just the same like Uganda teachers who were never exposed to computers during high school or at University or got initiative to take a course on computer training they have remained computer illiterate which means they will not be able to use computers while teaching.

Some schools in Uganda are not connected to internet and others do not have computers to use while teaching; even those that have the router(s) they are in the head teachers' offices or homes not in the computer laboratories. They are not performing what was meant for them in the school. This hampers ICT use in some Ugandan schools where it is happening. Currently, teachers face a challenge of teaching the Net generation which actually come to class well

equipped with different media which are costly in touch, motivated by and ever responding to ever changing words. These learners have abilities to use many technologies.

The findings reveal that computers are few in the schools, inadequate and insufficient. This is well elaborated by Hennessy, Harrison &Wamakote (2010) in the teacher factors influencing the use of ICT in sub-Saharan Africa. The use of ICT in education is generally difficult due to limited technology infrastructure especially internet access, frequent break downs of computers as well as insufficient internet connectivity. Besides the schools did not have requisite application and software for the computer.eg Mavis Bacon and Encarta which teachers did not know how to use.

These factors largely contribute to teachers lackof interest to use computers. The lower levels of ICT knowledge and skills were the result of lack of access to computers to learn privately, lack of guidance in the use of access. Instead interest does not have be automatic teachers have to be trained and guided in the use of ICT tools for teaching and learning. Teachers had developed negative attitude to use computers in the teaching and learning.

Lack of ICT facilities, available like computers, the software and hardware &ICT course available for deaf students, another challenge for using ICT was the professionally trained personals that have knowledge of not only software application to operate but also hardware procedure to operate the ICT. Thus Silviyanti& Yusuf, (2015), stated that teachers needed support when using ICT especially when technical problems when using ICT for teaching….

Lack of proper integration of ICT in the curriculum has posed a big challenge to the use of ICT in primary education. That is teachers are being scheduled to use ICT lab for only 30 minutes per week because the same devices are used to do something else. The variations in ICT use due to school regulations and rules has limited teachers and students to access the ICT lab for use and limits acquisition and use of information and communication technology skills in classroom teaching. Teachers' attitudinal factors strongly impact on technological use in teaching. Attitude towards computer is one of the most challenges in schools. Studies have shown that ICT effective use and implementation was very much related to the users' attitude towards computer or technology.

It is so disappointing to teachers once they have prepared to use computers and only to find that they do not work, this affects both the teachers and the children who were set to benefit from them. This is the order of the day at the schools of study. According to the study, it was revealed by teachers in both schools that, Computers are few, others have broken down and there is constant power shortage and outages. To the teachers, it is hard to rely on the use of ICT in preparing lessons and educational materials for Deaf learners or taking them for ICT lessons. Inaccessibility and unavailability of ICT in the schools have been identified as the key obstacles that hamper teachers from using ICT in teaching. Shortage of resources includes different factors, such as lack of access to hardware and software, poor quality hardware and inappropriate software. Effective adoption and integration of ICT into teaching in schools depends mainly on the availability and accessibility of ICT resources such as hardware, software, etc. If teachers have challenges of accessing and using ICT facilities especially for Deaf learners, then they will not use them in the teaching of deaf learners.

Although the computers are available in schools they are not enough to the extent that in school A; two learners are made to use one computer, in school B they divide the class to two groups so that the learners can fit in the computer room and share computers in small numbers. In this regard, the findings are similar to those other teachers have investigated about use of ICT in education institutions in developing countries. It is generally difficult due to limited technology, infrastructure especially internet access, band width, hardware and software provision. As a result, it is difficult to justify spending scarce resources and limited resources on ICTs when many institutions are still lacking basic amenities and education supplies. Due to this situation ICTs remain scarce teaching resources in Uganda's education.

Additionally, about teachers not abandoning the use of ICT use in class(M5) said that," illiteracy can make you abandon them but I make a time table and follow it and get a proper guide to help me not to abandon them." A teachers' time is extremely valuable and it is one of the most commonly cited barriers to integrating new technologies in the classroom placed time the most influential barrier to integrating new technologies. Almekhlafi&Almeqdadi (2010) in support of other writers affirms that teachers have no sufficient time to master new software or integrate ICT during a class period Teachers are sometimes short of time to prepare ICT resources for lessons. Time is also needed for teachers to become acquitted with ICT use. Generally as majority of respondents; (N3,M3,M5,N6,N7,N4,M1) confirmed schools have poor ICT infrastructure which needs to improved on for the better ICT utilization.

That's handling software and hardware materials. Lack of time exploring ICT and preparing these resources is a teacher-level barrier in the uptake of ICT in primary schools Mandasari&Theng (2014), the study found out that some teachers make time table for the learners to access ICT while others would want but the school did not include them in the program. This sabotages UN agenda for 2030 for countries to adopt the use of ICT for educational development and Education program for Universal primary education for all in Uganda of 1997.

Schools did not have frequent blackouts but school B had solar which did not extend to computers and the inverter it has was not functional. This relates to findings of Hennesseyet al. (2010), who assert that lack of electricity that is reliable was a major problem when it came to ICT use in developing countries. It is a potential challenge to schools that entirely depend on hydroelectric power. Schools intending to use ICTs could consider installation of solar panels for its power source as a solution to power cut offs since the schools use prepaid power and they have shortages of money.

Contrary to the findings of the study, responses such as:

there are some few computers with ICT personnel dusting them, it benefits me in a way that I get time to do other things, it is a bit difficult because of time since I do not use ICT in class room, I just take the learners to the computer lab.

Such responses are negative yet teachers' attitude is one of the most crucial factors that enhances or inhibits the use of ICT in classroom instruction. Teachers' attitude and

competence ensures ICT implementation and guarantees further ICT innovation. They also help to provide approaches, standards and harmonization of ICT tasks, awareness, ICT equity and utilization, and maintenance of ICT, implementation, training, assessment and development of ICT dissemination of pedagogical knowledge and professional development. In a nut shell the two schools of study didn't have functional computers with internet connectivity and adequate requisite applications and software. Again the schools of study did not have essential applications and software which could be used to support Deaf students with the teachers to improve their reading and writing skills and ultimately learning. The schools lacked appropriate infrastructure s to promote ICT knowledge and utilization by teachers and deaf learners.

Finally, it was impressive though many teachers did not have ICT skills they showed interest to learn and acquire ICT skill to use to teach the Deaf learners.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

In chapter four presentations and discussion of findings are provided. The summary, conclusion and recommendations in this chapter are therefore provided as guided by objectives in chapter one. The three objectives of the study that guided this chapter are reproduced below:

Teachers' views on the use of ICT in the teaching of learners who are deaf, the roles of ICT in the teaching and learning while the third objective was the challenges teachers encounter in the teaching of learners who are deaf using ICT

5.2. Summary of the Findings

5.2.1 Teachers views on the use of ICT in teaching Deaf learners

The study findings revealed that teachers consider ICT as a good method/tool to use in teaching and communication. The study realized that teachers recognize the roles ICT plays in education once it is used in the teaching and learning process. The study revealed that most teachers are not well equipped with ICT skills. The study revealed that ICT stimulates learning and increases motivation to teachers and learners and interact productively with neighboring communities. The study more so found out that some teachers have negative attitude about the use of ICT skills because of the statements they used.

5.2.2 Roles ICT lay in teaching and learning process

More findings revealed that ICT's help both the teachers and the learners to become well informed citizens who can reason critically, solve problems and capable of contributing to the development in the country. Use of ICTs encouraged interaction and collaborative learning. Learners are able to interact freely with teachers and fellow learners and teachers act as facilitators not dictators in lessons. Learners develop their vocabulary and learn spellings of words.

5.2.3 Challenges teacher encounter in the use of ICT in teaching

Many of the teachers interviewed were not conversant and do not have ICT skills to use. Some teachers were still reluctant to acquire and use ICT skills in teaching. ICT is not timetabled to some classes who would want to have access to use them. This hampers the utilization of and acquisition of ICT skills to both the teachers and the pupils. This not only affects the performance but also makes some of these teachers and learners to lag behind the technological era.

The study found out that some teachers have negative attitude about the use of ICT skills because of the statements they used. They did not mind about whether they use it or not to some the statements are: "I just take children to the computer lab because I want to have time to do my work, there is no one to help us yet the ICT personnel is present at school, I do not use it" The study also found out that the schools lack resources to repair the ICT equipment they have, to equip power to connect to the internet all the time" YAKA" is expensive to schools. As from the observation checklist is testifies that the computers break down and they

are inadequate for learners and teachers to use. The ICTs equipments at schools break down and are not repaired. This makes the lessons not to run smoothly because of power cut offs.

The study revealed that the education of these children accessed through ICTs is affected by limited funding because the schools seem not to have a set aside budget for repairs or restocking in ICTs laboratories. These affect the teaching and learning process in these schools of study.

5.3 Conclusion

5.3.1 Ways Teachers view use of ICT in the Teaching of Deaf learners

Not knowing how to use ICT, not yet started using it, I have no access were the most views captured on the use of ICT in teaching in schools. In the two schools of study majority of the teachers do not have ICT skills to manipulate these devices in teaching. The schools have inadequate computers for the teachers and the learners and kept in squeezed space.

5.3.2 Roles ICT play in the Teaching of Deaf Learners.

Most teachers who participated in the study recognized ICT as an important tool that plays essential role in the teaching and learning process because it is easily integrated to all subjects, helps to capture motivation of learners ,practice skills, increased grammar acquisition of information (tool) eases work for teachers and learners makes teachers and learners up-to-date with information, acquisition of typing skills, increases concentration of learners (breaks boredom),helps to coordinate the roll out of the curriculum, helps to break time.

5.3.3 Challenges Teachers Encounter in the use of ICT in Teaching Deaf Learners.

Teachers working with these learners face a challenge of not having skills to use in ICT, they are not equipped with skills in ICT. The schools have inadequate computers and few that are there are not in good working condition. Schools have a problem of power cut offs because of YAKA getting finished (YAKA when units are over) it) makes learning to be fragmented.

Computers break down and make learning fragmented. Teachers fear to use ICTs because of lack of skills in ICT, computers are in poor working conditions. Schools allocated the computers to small rooms. (Lack enough space to accommodate learners in one shift). This makes teachers to group the class in order to fit in the labs and on computer equally. Some classes cannot access computers because they do not have on their time table (limited use of ICTs in schools). Schools lack money to by Megabytes (MB's to load internet), YAKA to keep power for the computers to stay in use, Schools lack allocated budget to maintain and repair the devices.

5.4. Recommendations

To improve on education and quality of teaching using ICTs in the two schools: "A and B" the following recommendations were made basing on the findings and conclusions drawn.

1. Teachers should get exposed to ICT training as part of professional development.
2. Government should provide Information and communication Technological devices to schools as it provides other teaching learning materials to schools.

3. Ministry of education and science and technology should provide capacity building workshops to teachers on the use of ICTs in teaching and also train teachers in ICT skills.
4. There should be supervision in schools to monitor how ICT is being used in schools.
5. Servicing of Information and Communication Technology devices should be done regularly to avoid insufficiencies which interrupt the teaching and learning process.
6. Schools should budget and set aside money to maintain and repair the ICTs devices in the schools.
7. The government should employ ICT personnel in primary schools.
8. Schools with computers should be taken to classrooms for easy access by both teachers and learners during classroom situation.

5.4.1 In summary

The researcher concluded that the teachers did not have sufficient knowledge on ICT and skills to use creatively and confidently for teaching and learning**.** This was due to a number of factors ranging from poor infrastructure and slow implementation of policy. It was therefore recommended that the schools should improve on its stoke of quality computers in the lab, ensure that the computers have requisite application and software, as well as internet connectivity and training them in the application of ICT knowledge and tools to other subjects. In the long term, the ministry should review the policy directives to improve the use of ICT in the basic education in the country (SNE).

5.5. Suggested Areas for Further Studies

In the view of the study, the following areas are suggested for further research:

1. Explore the attitudes of primary school teachers on incorporating ICT in teaching of learners who are deaf.
2. Explore the roles and challenges in teaching using ICTs in the teaching of learners who are deaf in schools.
3. Teachers' perceptions on the use of ICTs in the teaching of learners who are deaf in primary schools.

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APPENDIX I: An Introductory Letter from Kyambogo University

KYAMBOGO UNIVERSITY

P. O. BOX 1, KAMPALA
FACULTY OF SPECIAL NEEDS & REHABILITATION
Tel: 0414-286237/285001/2 Fax: 0414-220464
DEPARTMENT OF SPECIAL NEEDS STUDIES

15th January, 2019

The DEO/DIS/Head teacher/Teacher/Community/Opinion Leader/Church Leader

.....

.....

Dear Sir/Madam,

RE: INTRODUCTION OF RESEARCH STUDENT ON DATA COLLECTION

This is to introduce the bearer Rev/Dr/Sr/Mr/Mrs/Ms KEIRUNGA JOY
Reg.No: 17/U/14808/GMSN/PE who is a bonafide student of Kyambogo University in the Faculty of Special Needs and Rehabilitation, Department of Special Needs Studies. As partial fulfillment of the requirement for the award of the Diploma/Degree/Master, he/she is required to undertake a research on the approved area of study.

The purpose of this letter is to request you to allow him/her have access to information from your office, school or area of operation necessary for the study.

Kyambogo University will be grateful for any assistance rendered to the student.

Yours faithfully,

Kyambogo University
19 JUL 2019
P.O. Box 1, Kyambogo
Special Needs Studies

Dr. Okwaput Stackus
HEAD OF DEPARTMENT

OS/aj

APPENDIX II: Consent Form

To whom it may concern

Dear participant,

I am grateful for your work for contributing to the education of deaf learners and please may God reward you in your endeavors abundantly. As you willingly accept to participate in this research interview it is free of charge. It will be of great importance to allow your voices to be recorded for proper analysis and you are at liberty if you wish to pull out. Your response will be handled with maximum confidentiality as it is for the purpose of research. It will be of great pleasure if you consented to sign on this letter for the purpose of research. As earlier communicated your information is for research purpose and nothing else and shall be handled confidential.

Name of the interviewee…….

Signature……. Date…….

Name of the researcher……. Date…….

Signature……. Tel. no…0772360213……

Reg. no 17/U/14808/GMSN/PE

Thank you for your cooperation.

APPENDIX III: Semi structured Interview Guide for Teachers

Teachers' Perceptions on the use of ICT in Teaching of Learners who are Deaf

Demographic information about respondents

Questions

1. What is your age range?
2. How long have you worked with deaf learners?
3. What is your highest level of qualification?
4. How long have you worked with this school?

Objective 1.Teachers' views on use of ICT in classroom teaching

1) How has ICT been beneficial to you in teaching?
2) How often do you use ICT in teaching?
3) How do you find teaching using ICT to deaf learners?
4) How do you find the availability of ICT in your school?

Objective 2. Roles ICT have played in classroom teaching and learning process?

1) Is ICT important to the teaching and learning of deaf learners? If yes in which ways do you find it important?
2) How has ICT supported you in teaching deaf learners?
3) How do you relate ICT and curriculum teaching?

Objective 3. Challenges teachers encounter in using ICT during teaching and learning in class

1) Have you ever been trained to use ICT in teaching deaf learners? If yes can you identify the areas, you were trained in?
2) How do you as a teacher avoid abandonment of ICT in school?
3) How is the state of infrastructure in place in terms of storage of ICT at school?
4) How do you find integrating ICT provided to your school with teaching?
5) Please can you identify challenges you face in using ICT in teaching?
6) Please can you suggest ways to improve on the use of ICT in teaching?

Thank you for your cooperation

APPENDIX IV: Interview Guide to ICT Personnel

Teachers Views on the use of ICT in Teaching

Demographic information

1. How long have you worked with this school?
2. What is your highest level of qualification?
3. How many computers do you have in school?
4. How many boys and girls do you engage per session?
5. What is their age range?

Objective 1: Teachers' views on the use of ICT in teaching

1. In your practice is the use of ICT beneficial to deaf learners and the teachers? If yes, how do you think is beneficial to them?
2. How do find using ICT to deaf learners?
3. How do you avoid abandonment of ICT in school?

Objective 2: Roles of ICT in teaching and learning process

1. How do you use ICT to deaf learners?
2. How has ICT supported you to and the deaf learners in class?
3. Using your experience do you think ICT is important in teaching deaf learners? If yes, in which ways is it important?

Objective3: Challenges encountered during teaching and learning

1. How is your experience with ICT and deaf learners?
2. How is the state of infrastructure in terms of storage at school?
3. Please can you identify challenges you meet as you instruct ICT with teachers to deaf learners?
4. How do you use ICT with teachers?
5. Which areas do they normally use with pupils?
6. How is ICT being used by the teachers?
7. How has been your experience with teachers and ICT for deaf learners?
8. Please can you suggest ways to improve on the use of ICT in school?

Thank you for your cooperation and time. God bless

APPENDIX V: Observation check list for special schools in Kampala Capital City

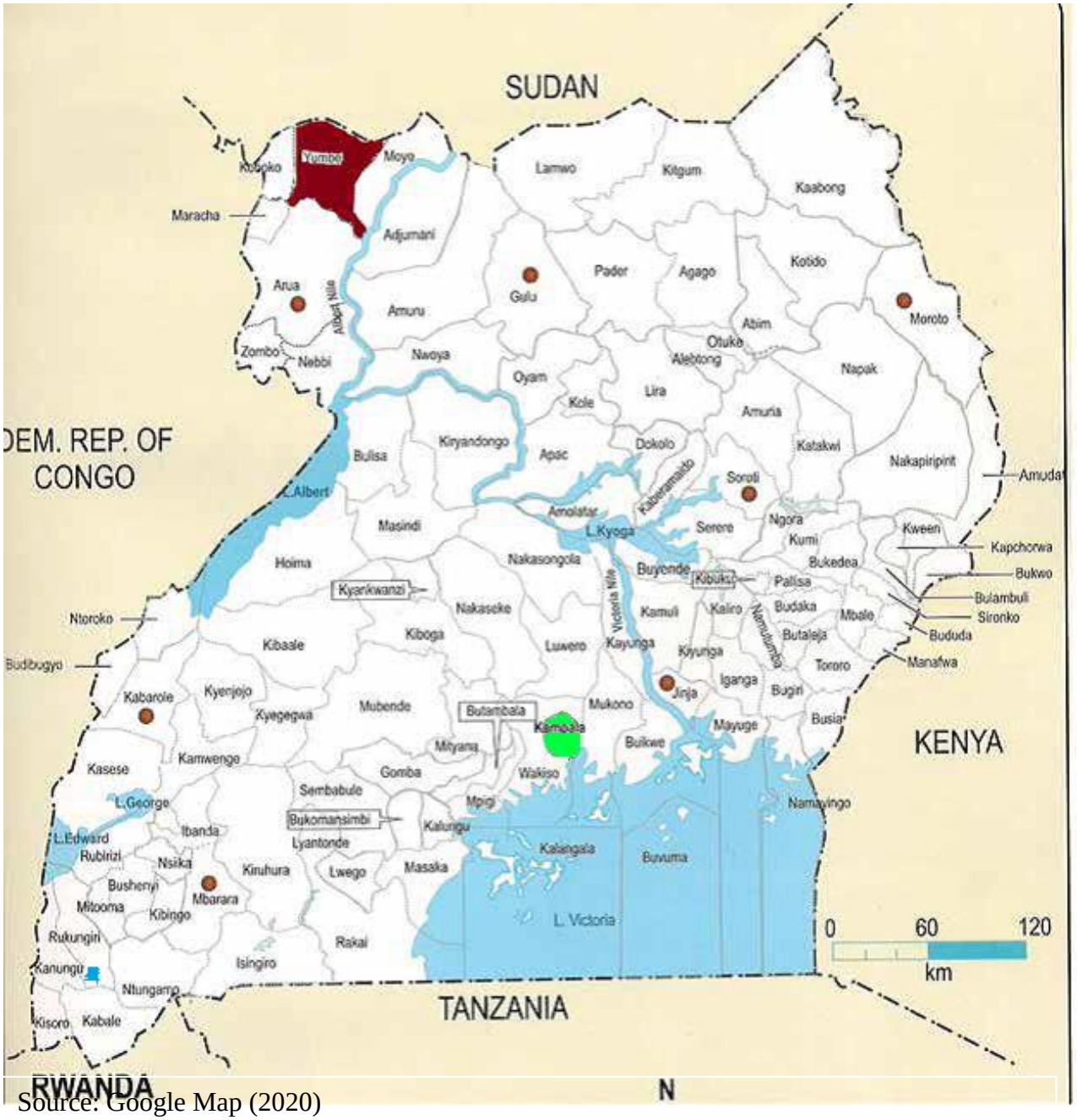
Organization Code | | Organization name | |

Categories of disabilities in the schools…….

ICT PROVISIONS AND USE

1. Availability of a computer lab…….
2. Number of computers…….
3. Functionality of computers …….
4. Internet connectivity…….
5. Allocation of ICT on timetables ……
6. Computer made materials……...
7. Assistance of learners during computer lessons……
8. Number of times learners access computer…….
9. Age appropriate programs for learners ……

APENDIX VI: Map of Uganda showing Kampala Capital City

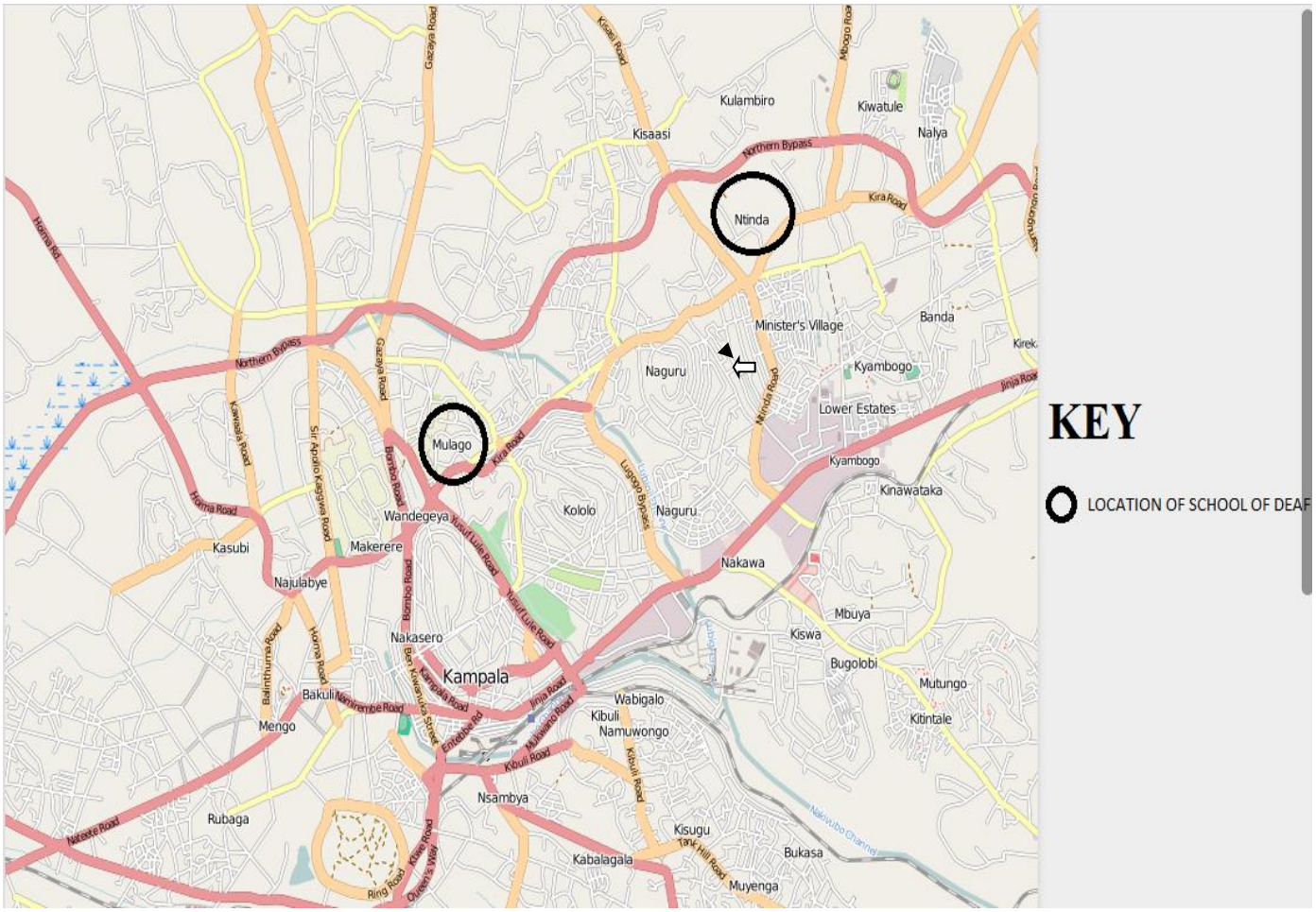


Source: Google Map (2020)

KEY

Kampala District

APPENDIX VII: Map showing Mulago School for the Deaf and Uganda School for the Deaf



APPENDEIX VIII: Observation checklist for ICT infrastructure in special schools in Kampala City

Data collected is provided below

1. Organization code : A and B

2. Name of school is confidentially concealed for the two schools.
3. Category of disabilities of learners in the schools is deafness.
4. Availability of computers lab at school: Both schools had computers.
5. Number of computers, School **A** had five desktop computers; school **B** had twenty desktop computers, one laptop.
6. Functional computers : school (**A**) had five functional computers ,school(**B)** had six
7. Internet connectivity: In both schools is on and off.
8. Allocation on time table weekly: In school **A** it is only from primary four once a week per class , while school **B** it is allocated from primary five once a week per class , primary four is left out on time table. Computer made materials: There was no computer made materials by learner that the study observed.
9. Assistance of learners during computer lesson: in school **A** assistance was got from Crane workers who had donated those computers and had finished a year without going there. In school **B** assistance was got from some experienced teachers at school and the ICT personnel at school who was employed by NGO that had donated some desk tops to the school.

10. Number of times pupils access computer: School -**A** waits for crane workers to come to then the use computers. They come with more to back up. Sometimes school **B**, they access the computers once a week or none.
11. Age appropriate programs for learners: School **A** had introduced some games .School **B-** had Encarta, typing lessons and games to reduce boredom.