

**INSTRUCTIONAL TECHNOLOGY AND STUDENT'S EDUCATIONAL  
ACHIEVEMENT: A CASE STUDY OF SELECTED  
SCHOOLS IN NKOZI SUB - COUNTY  
MPIGI DISTRICT, UGANDA**

**BY**

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### DECLARATION

I **TEBUKYEE**SAU declare that this report has been carried out as a result of my effort and has never been submitted in any other institution for the award of a Certificate, diploma and Bachelor.


Signed: .....  .....

Date: ..... 27/08/2019 .....

### **APPROVAL**

This is to confirm that this dissertation was under my supervision and is now ready for submission to the faculty of education open distance and e-learning.

Signature.....

Date: 

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### **DEDICATION**

I dearly dedicate this research to the Almighty God and my family for the support they rendered to me that gave me strength and courage to move forward and complete my degree. Thank you for being there for me.

### **ACKNOWLEDGMENT**

I wish to express my profound gratitude and thanks to the Lord Jesus Christ for His inspiration, protection and love. Also, my thanks go to my parents Mr. Samula G.W for the confidence they instilled in me and urged me to move on. I thank Mrs. Taligoola Deborah who is my supervisor of this wonderful piece of work. Moreover, I thank all the family members' and my young sisters and brothers for their endless love, support, cooperation and prayers. In addition, I express my gratitude to all friends who assisted and encouraged me directly and indirectly especially Walugembe Henry and Tebandeke Patrick

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### **ABSTRACT**

The purpose of the study was to find out the impacts of using of instructional technologies on students achievements in selected schools in Nkozi sub-county Mpigi district. the main objective of the study were; to find out the different forms and categories of instructional technologies used in the teaching and learning processes also, to examine the impacts and benefits of using instructional technologies in the teaching and learning process and lastly to find out the challenges both teachers and students face in coping up with the use of various instructional technology in the teaching and learning process. Chapter one talks about the Quality of education in a global concern virtually all societies, how it can be achieved, the efficiency and quality teaching needs to be employed. Chapter two of the study focused on the literature which was used for instructional technologies and student's achievement in the teaching and learning process. It highlights on a brief history on instructional technologies, the meaning of instructional technology, student's achievements, categories of instructional technologies, the use of instructional technologies in teaching and learning process, the availability and use of instructional technologies, challenges facing teachers and students in the use of instructional technologies. Chapter three highlights the Target population of 2 secondary schools and used simple random sampling. Chapter four was to analyze and establish the challenges faced by teachers and students in the use of instructional technologies in teaching and learning process in selected secondary schools in Mpigi district. Lastly chapter five was to make a summary of the findings based on the objectives of the study and make suggestions and recommendations for possible action and further research. This chapter therefore, consists of three sections namely; the summary of the findings, conclusion of the study and recommendations.



## **CHAPTER ONE**

### **1.0 INTRODUCTION**

Quality education is a global concern in virtually all societies. To achieve it, efficient and quality teaching needs to be employed. However, this may not occur without the use of instructional technologies. Instructional technologies play a vital role in teaching and learning process and have proved to have several inherent advantages when well utilized (Grabe 1998). Instructional technologies helps to provide students with the necessary experiences, concrete or simulated and integrate prior experiences as well (Dale 1969). Hence, a student who has an advantage of reacting to well-selected instructional technologies can learn more effectively than those who are provided largely through verbal information..

Clearly, the importance of instructional technologies in the teaching-learning process cannot be exhausted. Teachers awareness of these benefits can motivate them to appreciate, embrace acquire and use the technologies in their teaching. It can create one of the ingredients of developing a positive attitude by the teacher regarding the use of instructional technologies. It was for this reason therefore this study sought to establish the use of instructional technology and students achievements in selected schools. A case of secondary schools in Nkozi sub- County Mpigi district.

### **1. 1 Background to the Study**

Education the world over has, been recognized as an important means for promoting economic and social development both at individual and national levels. The growth of the global economy and the information based society has pressurized education systems around the world to use technology to teach students the knowledge and skills they need (UNESCO 2005). In Uganda, Learning institutions are under increasing pressure to use instructional technologies for student's achievements; in imparting knowledge and skills needed in the 21st century. The challenge confronting our educational system

is how to transform the curriculum and teaching and learning process to provide students with the skills to function effectively in continuously changing environment. Even after the teacher's initial fear of getting involved with technology has been overcome, serious challenges still remain in terms of providing enough technical support that teachers will not be discouraged by equipment failure or software behavior that they do not understand (IJEDICT, 2007).

The use of instructional technologies for student's achievement provides chat facility (text messages) so that learners make use of it, exchange their ideas and views and get clarification of any topic with different experts, practitioners so as to broaden their information base. Instructional technologies assists teachers to provide variety in the presentation of content which improves upon learners ability to concentrate, and long retention of information. The learners get opportunities to work on live projects with counterparts from other countries. (Omwenga, 2008). The use of instructional technologies actually provides flexibility to learners which are denied by the traditional process and method.

On the internet, many Websites are available freely which are utilized by students and teachers to develop reasoning, critical thinking, analysis and problem solving hence helping them in sharing instructional technologies paramount to learning achievements. Instructional technology also helps teachers to engage students through production work (Dale 1969). To make learning more meaningful to students; teachers often try to involve them in creating their own technology based products. Instructional technologies promote learning by linking students to information resources. This lets them access the materials, obtain information and have experiences that they wouldn't have had. They also help students visualize problems, solutions and link students to learning tools especially when using computers (Newby et al. 2006).

Uganda is at an infant state in the use of instructional technology ( JEDICT 2007). Muriithi (2005) further notes that in Uganda like most developing countries, instructional technology usage is still limited. The pertinent question one would ask at this point is whether the schools in Uganda are benefiting from these emerging technologies. If not, then why are they not benefiting from these emerging technologies? Therefore; this study be will set to establish the use of instructional technologies and student's educational achievement in the selected schools in Nkozi sub – county Mpigi district.

### **1.2 Statement of the problem**

As-much as instructional technology is important for student's achievement, Many research studies on technology integration into classroom instruction have shown that there can be a significant, positive impact on student achievement (Cakir et al., 2009; Tamim, Bernard, However, most of the research studies did not cover schools in Nkozi sub county Mpigi District. There is a need to move beyond assessment of participants' perceptions and focus on actual student achievement in technology integration efforts (Smolin& Lawless, 2011). A rigorous evaluation that can provide information with which to make decisions and guide the deployment of various interventions is important. This research fills a gap by providing information on the impact of the various educational technology interventions on student achievement in selected schools in Mpigi district.

### **1.3 Purpose of the study**

The purpose of the study was to find out the impacts of use of instructional technologies on students achievements in selected schools in Nkozi sub-county Mpigi district.

### **1.4 Objectives of the study**

- i. To find out the different forms and categories of instructional technologies used in the teaching and learning processes.

- ii. To examine the impacts and benefits of using instructional technologies in the teaching and learning process.
- iii. To find out the challenges both teachers and students face in coping up with the use of various instructional technology in the teaching and learning process.

### **1.5 Research Questions**

- i. What are the different forms and categories of instructional technologies being used in teaching and learning processes?
- ii. What are the impacts and benefits of using instructional technologies in the teaching and learning processes and overall student's education achievement?
- iii. What challenges do: teachers and students face in the use of instructional technology in the teaching and learning processes?

### **1.6. Scope of the Study**

The purpose of the study was to find out the impacts of use of instructional technologies on students achievements in selected schools in Nkozi sub-county Mpigi district, with focus on; finding out the different forms and categories of instructional technologies used in the teaching and learning processes; examining the impacts and benefits of using instructional technologies in the teaching and learning process; and finding out the challenges both teachers and students face in coping up with the use of various instructional technology in the teaching and learning process. The study was conducted from May 2018 to August 2019.

### **1.7. Significance of the Study**

The findings of the study was helpful in the following ways:

- i. The findings of the study were serve as a useful reference material for teachers, policy makers of education, schools administration to embrace

the new move of using instructional technology and support it by providing computers and other instructional technologies.

- ii. The Teachers Service Commission to deploy instructional technology specialists and all persons interested in the use of instructional technology. The instructional technology specialists were also appreciate the need for developing and infusing learning instructional technologies in teaching learning process which will be accommodated in the changes in the syllabus when they occur hence improving educational performance and the Ministry of Education to develop programmes and in-service courses to sensitize its office bearers.
- iii. The study was able to stimulate further research in the area of education involving the use instructional technologies for student's achievements. Further, the study provided information on the extent to which the use of instructional technologies prepares both teachers and students for the world of technology.

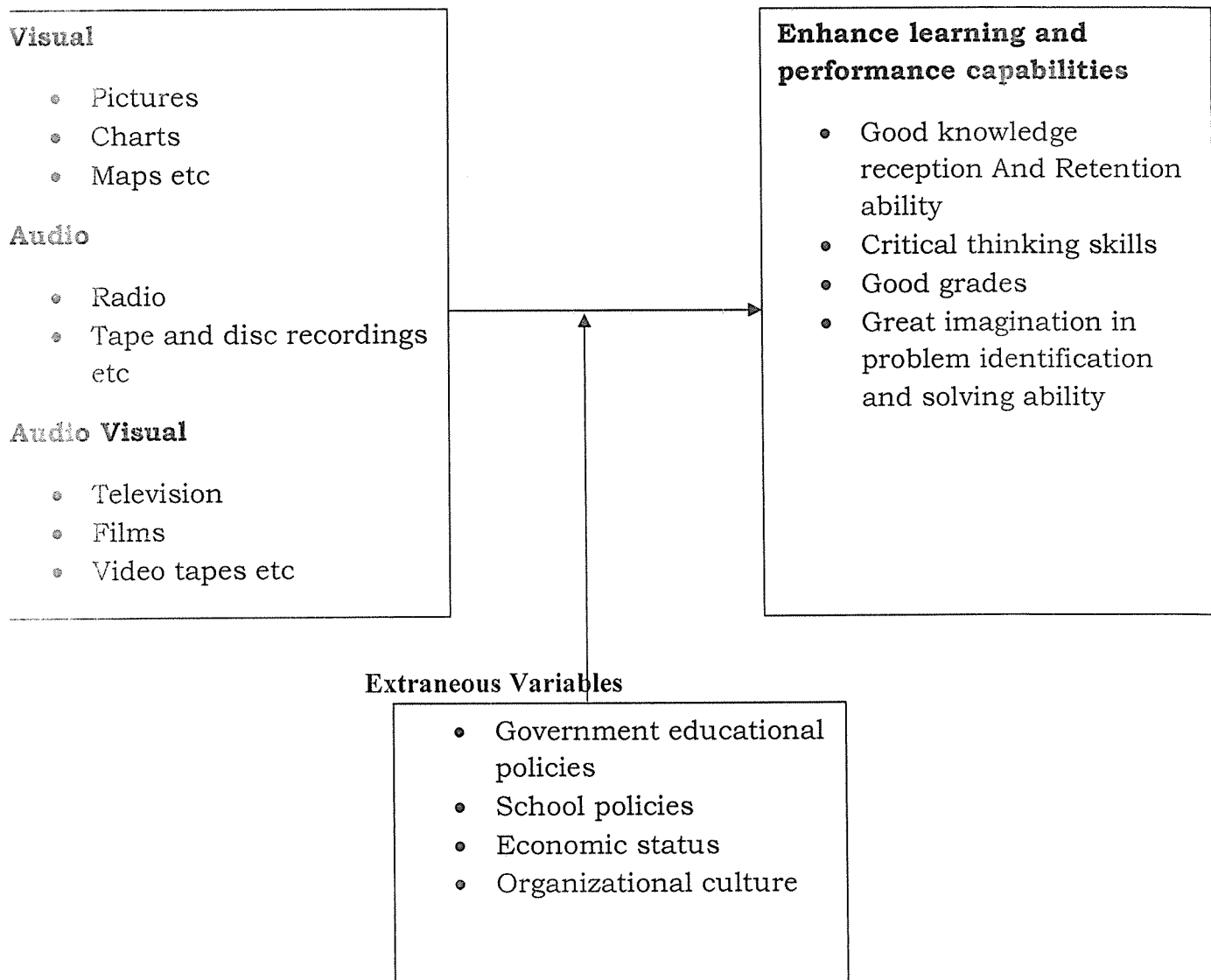
### 1.7 Conceptual Framework on the use of instructional technologies and students achievement for teaching and learning.

**Independent Variable**

**Dependent Variable**

**Instructional Technology**

**Students Educational Achievement**



**Source:** Synthesized from Theoretical Framework



### **1.8 Definition of terms**

In this study the following words were used for the purpose and with the intention as explained below:

**Instruction** – Is the purposeful, orderly, controlled sequencing of experiences to reach specific educational goals.

**Instructional technologies** – Complex, integrated process involving people, procedures, ideas, devices and organization ,for analyzing problems and evaluating and managing solutions to those problems in situations in which learning is purposive and controlled.

**Achievements**-attainment of a desired goal, aims or objectives

**Integration**:-The adoption, inclusion and use of resource materials/ equipments to aid instruction in the teaching and learning process.

**Pedagogy**- Is the study or science of ways and methods of teaching.

**Preparedness**-The readiness, knowledge and skills teachers have in using instructional technologies.

**Technology**- Is a planned systemic method of working to achieve planned outcomes a process not a product. Technology is the applied side of scientific developing a systematic body of facts and head teacher related to a comprehensive practical and useful end.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This section of the literature review focused on the use of instructional technologies and student's achievement in the teaching and learning process. It highlights on a brief history on instructional technologies , the meaning of instructional technology, student's achievements, categories of instructional technologies, the use of instructional technologies in teaching and learning process, the availability and use of instructional technologies, challenges facing teachers and students in the use of instructional technologies: A case of selected secondary schools in Nkozi sub-County, Uganda just as Atchison (1998) notes that the literature search should show what has been done in relation to the problem being investigated.

#### **Theoretical Framework**

The study were based on the theoretical formulation of the ACTIONS model making decisions about the use of pedagogic technology and planning lessons that the technology enhanced. This model was developed by Bates (1990) for making decisions about the use of technology and it suggests factors to be considered when using the model so as to enhance effective teaching and learning.

ACTIONS are an acronym for the description of a set of tasks central to the informed selection and use of instructional technologies in classroom teaching.

The tasks are;

A – Accessibility

C – Cost

T – Training

I – Interaction

O – Organization policy

N – Novelty

## S – Speed

In this case the “A” stands for accessibility which deals with how accessible is the resource to the teachers- students or learner to learner. How accessible is the technology in your school. This first step is based on the recognition that some factors such as administration and storage may interfere with how well the students and teachers utilize instructional technologies. The “C” stands for cost meaning capital and recurrent fixed and variable in variable budgeting. In most cases the resources are expensive and the schools are not able to afford it. Cost is a key thing in deciding on the technology. This can be overcome by proper management of both internal and external publics by the school managers if the school goals and guidelines on teaching and learning process have to be realized meaningfully. The “T” stands for training/teaching function. A pertinent question to ask is, do teachers use instructional technologies in their teaching? Are they trained to use the technology? What are presentational requirement of the subject? What are the required teaching and learning approaches? This can be overcome by in-servicing the teachers. The “I” stands for interaction, that is, what kind of teacher and student interaction will be possible? Is it teacher -student or student - student interaction in the use of the technologies? Are they able to interact with instructional technologies or there is no Learning Resource Center or laboratory? Or the instructional technologies are kept in the head teacher offices? The “O” stands for organization what changes in the organization will be required to facilitate the use of instructional technology or a particular technology? Do policies in the school assist or inhibit the use of resources? Is there bureaucracy in the use of instructional technology? This can be possible if there is “openness” in resources and use proper communication flow. The “N” stands for novelty meaning, how new are the instructional technologies? Will the “trendiness” newness of the technology stimulate funding and innovation? This can be possible if the staff is involved in decision making on the purchase of new

equipment and resources and networking of the instructional technologies available in the school.

The “S” stands for speed. This looks at how quickly and easily materials can be updated and changed? How fast can we launch teaching using these technology resources?

ACTIONS model is just one strategy in the attempt to effectively integrate instructional technology into the curriculum. However, Patel (1986) argues that the availability of the materials does not guarantee the realization of stated objectives. The material should be presented in an orderly manner at an appropriate time and in a conducive environment. Doing so poses a lot of challenges to both teachers and students which this study seeks to investigate and thus make recommendations on how to overcome the challenges.

### **Conceptual Framework**

This study was conceptualized to contribute to the improvement of Ugandan Secondary Curricular instruction through the use of instructional technology for student’s achievements.

Human learning is naturally an active mental and social process (Hung & Khine, 2006). Students must interact with their environment and manipulate objects so as to determine proper interpretations of phenomena. For teaching and learning to be meaningful, instructional technology must be incorporated in the process which is geared towards the student’s interests, abilities and readiness to become involved in the teaching and learning situations. Dale (1969) notes in his „cone of experience“ that for learning to be meaningful, there must be interrelated learning experiences through the use of instructional technologies so as to make learning as interesting as possible. There must be connection between symbolic (words), observation of phenomena and participation that make up the foundation of learning. Bates

(1990) calls this an informed selection and use of educational technology in classroom teaching as demonstrated in the ACTIONS discussed in the theoretical framework above.

Relevant strategy, instructional technology and methods must be employed in order to achieve the intended objectives (Grabe and Grabe 1998). Learners begin their learning of specific matter with a broad base of direct experience in action. Gradually they omit these specific, firsthand, concrete occurrences and impressions as they come to rely on iconic substitutes or pictorial representations. At both stages the learners develop a summarizing idea or symbol. Dale (1969) illustrates these important ideas by indicating the broad base that directs experiences provides for students learning and communication. It classifies various types of instructional technologies according to the relative degree of experiential concreteness that each can provide. The cone suggests the interrelated interdependent nature of learning experiences and use of instructional technologies; hence making mediated learning simple, enjoyable and stimulating for the learners. Bates' ACTIONS model therefore becomes handy if this has to be realized.

The teacher observes the learners behavior and measures the success of the instructional process as the learners receive from instructional technology (use of it) and reacting to them as well. This gives the teacher a clear feedback and helps in assessing the learning outcomes which is the new trend in modern teaching (Newby et al. 2006). Patel (1986) notes that, effective use of instructional technologies should be guided by; learning needs, quality of materials and possibility of combination of materials. The teacher should select instructional technologies that will accomplish the task of meeting the learning needs by helping learners to achieve the specific objectives constructed for specific content, hence the technological pedagogy in teaching and learning for student's achievement .

According to Grabe and Grabe (1998), an effective and meaningful teaching-learning process must provide for reflective practice. It should pave way for core educational activities through which students will acquire determined skills and a myriad of diversified learning opportunities as provided technology. It will be easy to design and plan of a common activity and at the same time cater for individual differences of students (Hung & Khine 2006). According to the Ministry of Education, Science and Technology (2005) seasonal paper, teachers should be provided with a variety of instructional technologies as these are tools that facilitate effective teaching. In an individualized approach, the students are encouraged to undertake tasks from which it is possible to understand whether they reach the required level of performance related to a specific activity (task given). However, optimal use of instructional technologies can be embedded in unavailability, inadequacy, inaccessibility, cost, lack of knowledge to operate the equipment among other reasons. As stipulated in the cone of learning experience, teachers must therefore refine the techniques for effective use of instructional technologies if maximum contribution of instructional technology to learning is to be accomplished.

### **History of instructional technologies**

Missionaries came to Uganda; they introduced western education which was associated with modernization. The same was emphasized by colonialists when they later came in the 18th century. Western education emphasized both academic and vocational education. This meant that indigenous African education had to undergo some changes to cope with challenges of development and modernization (Bogonko, 1992). The traditional methods of education were to be modified and improved so as to bring schools to close harmony with the requirements of a modern society (Mukwa 1979). In order to realize this goal, several countries turned to the application of the process and instructional technology development involving the use of instructional technology in education to conform to changes with time.

Over the years, the traditional role of the teacher in the classroom has changed. The vision for technology-supported reform-oriented classroom is one in which student groups work on long-term, multidisciplinary projects involving challenging content that is interesting and important to them with the support to instructional technology (Newby et al. 2006). Making this vision a reality poses many challenges such as Providing adequate technology access, equalizing technology access involving a majority of teachers and providing technical support for technology use and maintenance (UNESCO, 2008). However, when instructional technologies are provided, the teacher becomes the facilitator of a learning experience. He/she must learn how to use technology as part of instructional technology not merely to enrich or supplement the present methods of instruction but giving high quality technologic experiences to students who would have less access to technology in their homes.

There is no single precise definition of instructional technologies; however, according to Dahiya (2004), unhappily the terms “instructional technology” to many suggests a world of whirling gears, tools and machinery, assembly an line, time clocks, computers, depersonalizations. Indeed; to some teachers, administrators and curriculum specialists consider technology only as “machines”.

Brown et al. (1973) defines instructional technologies as a systematic way of designing, carrying out and evaluating the total process of teaching and learning, using a combination of human and non-human resources to bring about effective instruction. One can therefore generally define instructional technology as “a combination of resources including people, materials, machines, facilities as well as purposes and processes that support effective and meaningful facilitation of learning”.

## **2.1 The different forms and Categories of instructional technologies used in the teaching and learning processes**

Different educational technologists have attempted to classify instructional technologies as follows:

Dale (1969) categorizes instructional technologies as visual, audio and audio visual materials. The visual materials include; illustrated books, pictures, photographs, flashcards, charts, maps, posters, exhibits, self instructional materials, flip books, bulletins boards, magnetic boards, 25 flannel graphs, dioramas, models, mock-ups, filmstrips, slides, transparencies, silent films, chalkboards, drawing and cartoons. Audio materials include; radio, language laboratories, tape and disc recording, telephone, and sound distribution system and audio visual materials comprises of television, films (8mm, 16mm, 35mm) video tapes, sound filmstrips printed materials with recorded sound, study trips and demonstration.

In this study, the researcher proposes to categories instructional technology into three broad categories namely; print materials, display materials and ICT materials. The print materials comprises of books, magazines, brochures, newspapers, journals, periodicals and school pamphlets, display materials include, model, diorama, globe, diagrams, maps, graphs, charts, pictures, photographs, posters and paintings while ICT materials will include televisions, videos, live radio broadcasts and computer/internet. This categorization is justified due to the fact that these are the most commonly used materials for teaching and learning in most secondary schools (Grabe and Grabe, 1998).

Great teachers have instructional technologies used effectively and this is an indication that teachers can also use them today to make their teaching effective (Anglin and Gary 1995). From the above classifications by different



scholars; one is justified to argue that there is no uniformity in classification of instructional technologies.

## **2.2 The impacts and benefits of using instructional technology in the teaching and learning process**

Properly designed learning materials inspired by technology and delivered technologically add value to a teaching environment in which contact hours are limited but balancing between the potential of technology and the careful grooming and attention students sometimes require is critical observe Moore et al. (2003).

Technologically inspired teaching materials should create a “cognitive apprenticeship” they should help develop underlying thought processes such as critical thinking, analysis and problem solving. Instructional technology can do other things as well. New materials delivered via the internet that help with the repetition necessary for developing reading, writing and listening in English can eliminate drudgery for educators and can be entertaining. Because of their lifestyles, entertainment value is a key consideration for students in media-rich environments urges Vygotsky (1978) and Grabe and Grabe (1998)

According to the republic of Uganda Report on education sector strategy (2007-2010), knowledge evolves. It is always a new trend; Uganda is now poised to infuse ICT in all her subject areas. This then demands of an increase in number of professional organizations through which teachers can acquire new knowledge in their respective subject specializations. According to Newby et al. (2006), secondary schools’ teaching and learning ICT can be incorporated in Computer Assisted Instruction (CAI) and Computer Managed Instructions (CMI). In addition, the use of internet, electronic mail, the conferencing file transfer and topic searching have provided access to information that covers a variety of topics in research, Science and technology.

As a means of facilitating teaching and learning in schools, instructional technology is not just a means of transforming knowledge, but the most important thing is, an extension of both the teacher and the chalkboard Newby et al. (2006). In this case, the curriculum or the syllabus can apply instructional technology with ease and students can be comfortable with minimal assistance. Instructional technologies increase interest, comprehension and retention. Instructional technologies add concreteness to the teaching situation and increase motivation.

The use of instructional technology greatly depends on their functions. One of Zayed University's publicly articulated missions is to lead education in the United Arab Emirates through teaching, learning, research and outreach and to achieve this leadership in a technologically advanced environment. In fulfilling this goal, the university actively promoted instructional technology application among faculty, staff and students delivery (and completion) of lessons through advanced technology; use of sophisticated software and information gathering via internet (Moore et al. 2003). Though the hope was that information technology could add a powerful punch to the modern educational environment, many educators in the United Arab Emirates have found that it is the proper use of available instructional technology rather than the presence of that technology advances learning (Moore et al. 2003). Even longtime favorite pencil and paper and the overhead projector still have a place in the well-rounded modern classroom Grabe and Grabe (1998). Whether old or new, each technology has unique qualities (or "affordances") of which advantage can be taken (Moore et al. 2003). They make instructions real and spice the teaching and learning processes (Hung & Khine, 2006).

According to IJEDICT (2007) report, incorporating ICT into the educational curriculum has promoted a key step in bridging the digital divide in Ugandan schools in recent years and the sacrifices made to finance these there have been

of great effectiveness. Further the article by Padraig Wims and Mark Lawler “investigating ICTs in educational institutions in developing countries; an evaluation of their impact in Uganda” describes research that seeks to redress this by examining in Uganda revealed tangible benefits to students from exposure to ICT. It was also found that exposure to computers in schools influenced the career choices of former students. Muriithi (2005) has argued that in Uganda like most developing countries, ICT usage is still limited to computer literacy training. She contends that the present ICT curriculum merely ideals with “teaching about computers” and not how computers can be used to transform teaching and learning in our schools. In her thesis, she says that integration should consider learning pedagogy, the pattern of student use of ICT, and the extent of use in teaching and learning programme. A wide range of instructional technologies should be selected and incorporated into the teaching and learning program. However, the study failed to look into other instructional technologies and challenges facing both the teachers and students in the use of those instructional technologies in secondary schools which the researcher of this study seeks to investigate.

### **2.3 Challenges facing teachers and students in the use of instructional technology**

Grabe and Grabe (1998) notes that if teachers want to search for more effective learning experiences for their students, they need to have some general ideas about productive learning experiences that are capable of integrating instructional technology but this gap often exist, most teachers lack knowledge on use of technology integrated teaching and learning processes.

Misoy (1987) reveals that instructional technologies for teaching and learning processes are either inadequate or unavailable. Some of the resources are available but inadequate examples manila papers, brochures, journals, pamphlets and pictures. However, audio-visual resources such as films, slides,

radios, television and tapes are always almost not available especially in rural schools. Models and specimen are not available and yet they can be improvised. However, under the system of education in Uganda, teachers have a lot of content to cover within limited time allocations. Teachers continually complain of inability to cover the syllabus in time and adequately prepare students for the Uganda National Examinations; yet the use of instructional technology can help them reduce the length of time for instruction as most instructional technologies contain and can assist in presenting a lot of content in summary form (Kemp and Dyton 1985). 1998). However there are many undocumented challenges being faced by both teachers and students which the researcher seeks to investigate.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

This chapter highlights the following: Research design, Locale of the study, Description of the Target population, Research tools, Sampling procedures and Sample size, Pilot study, Procedure used in data collection and Data analysis techniques.

#### **3.1 Research Design**

The study was conducted by using a descriptive survey design. Sproul (1995) states that; a survey research design collects background information. He recommends the technique for research where attitudes, ideas, comments and public opinion on a problem under investigation. It helps a researcher gain insight in generalizing a situation without utilizing the whole population. It is suitable in determining reasons or causes for the current status under study. This is supported by Bless and Higson (1995), Mugenda and Mugenda (1999). By involving a broad category of stakeholders, the proposed study was fitted with the cross sectional sub-types of descriptive survey study design. This study was both quantitative and qualitative techniques in collecting and analyzing data. Quantitative involved the collection of numerical data in order to explain, predict and or control phenomena of interest: data analysis was mainly statistical. Qualitative technique involved the collection of extensive narrative data in order to gain insights into phenomena of interests: data analysis included the coding of the data and production. It was studying of the phenomena as they were in natural setting (Gay, 1996 and Locke et al. 2004). To achieve this, the researcher employed different methodologies and data collection strategies.

### **3.2 Variables**

A variable is a quantitative or qualitative entity which can take on different values or levels (Nkpa 1997). Variables interact to bring about an outcome. There are two types' variables to be used in this study. Independent variables which included the resources, equipments, charts, and computers, academic qualification of teachers and years of teaching experience, while the dependent variable was the effective use of.

### **3.3 Target Population**

This is a complete enumeration of all items in the population as used in a study. Thus, it is the population to which the researcher intends to generalize his/her findings (Nkpa 1997 and Orodho 2008). The target population for this study was comprised of 2 secondary schools in Nkozi sub - County. The researcher targeted teachers and students in these 2 schools. The head teachers of the selected secondary schools were also part of the target population.

### **3.4 Sampling Procedure and sample Size**

#### **3.4.1 Sampling procedures**

Sampling is the process of selecting individuals for study. A sample is any group on which information is obtained (Fraenkel and Wallen 1993) or part or section of a population (Nwana, 1981). The target population was 2 secondary schools. This population was generally too large for a research study. The researcher was interested in having a deeper understanding of the phenomena being studied and how teachers differed in using instructional technologies for student's achievement.

After choosing the two schools, the researcher used form three (3) students for the study because they were better placed, have longer experience in the school, they were focused as they had have already chosen subjects based on career and therefore were focused to achieve their targets Since these schools have about three streams of form three classes the researcher used simple

random sampling to pick one streams from each school of the sample. The researcher used all the students in each of the selected stream for the study. The subject teachers for the selected streams in the two schools and heads of departments in the schools are part of the study. In case of where a teacher was a head of department and a subject teacher in the selected stream, the researcher took the subject head or substitutes the stream.

### 3.4.2 Sample Size

This means the sample population for the study. The researcher targeted 150 students from the sample schools however he worked with 5 teachers and 70 students because some students were sent home for school levies and others delays from half term due to personal reasons thus the researcher got information from those who were available and who fully represent the targeted population as shown below:

**Table 1.1 a table showing the sample size**

Sample schools	No. of streams	sampled streams	Average no. of students
St. Balikudembe S.S.S	1	1	40
Nkozi S.S.S	1	1	30
total	2	2	70

### 3.5 .0 Research Instrument

According to Wellington (2000), in carrying out a research, a researcher should use methods which provide high accuracy, generalizability and explanatory power with minimum management demands with administrative convenience. Mwiria and Wamahu (1995) note that: "the qualitative researcher uses multi-techniques for data collection in order to obtain holistic view of the respondent". Data was collected using three instruments namely; the questionnaire, interview schedule and observation schedule. The instruments

were supplemented each other to close the gap which may be left if one instrument only used as Travers (1973) sensitize that optimal strategy is to use a variety of instruments.

### **3.5.1 Questionnaire**

Questionnaires were the main instrument for data collection in the study. According to Kothari (2004), some of the merits of the questionnaire are; low cost, freedom from the Interviewer reduces bias as answers are in respondents' own words and that it gives respondents adequate time to give well thought answers.

These questionnaires were divided into three categories one for the teachers, Heads of departments and students. These questionnaires had three sections i)Biographical information, ii) closed ended questions weighted on a Likert scale of 1-5 with questions on Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree, iii) Open ended type of questions. The questionnaires were developed to address specific objectives just as Orodho (2008) notes. This type of questions saves time, they were direct in analysis and they ensured that the respondents have a similar range of options to chose from, thus making coding more convenient on using instructional technology and student's achievement in teaching and learning process as they allowed respondents to choose from the available alternatives provided.

### **3.5.2. Interview Schedule**

Kane (1995) states that, interviews can be modified to fit needs of the situations, they can convey empathy, build trust, collect rich data and provide a clear understanding of the respondents view. However, the researcher chose interview technique because it gives him an opportunity for in-depth-data, ensuring high response rates and it encouraged naturalness. Thus ensuring that more information was obtained just as Stone et al. 1984) and Bell (1993) notes. These were for the head teachers of selected secondary schools.



### **3.5.3 Observation Schedule**

Orodho (2004) state that observation schedule is a method of collecting data in which a researcher notes things or occurrences as they occur naturally. Mugenda and Mugenda(1999) sensitize that observation schedule record what the researcher observes during data collection. In the study the researcher prepared observation schedules containing instructional technologies such as audio, visual and audio-visual which could be used in the teaching learning process in secondary schools. The researcher then observed and recorded the available instructional technologies in the targeted schools as Gay (1996) acknowledges.

### **3.6.1 Validity of the instruments**

Validity is the extent to which an instrument measures what is supposed to measures what it is supposed to measure. That is asking the right question and framed accordingly. For the instrument to be valid the content selected and included in the questionnaire and interview must be relevant to the variable being investigated. Validity also refers to the extent to which differences found with a measuring instrument reflects a true difference among those being tested (Kothari, 2004).

### **3.6.2 Reliability of the instruments**

Reliability is the ability of the tools to return same responses after repeated administration. This is concerned with the degree to which a particular measuring procedure gives similar result over a number of repeated trials (Orodho, 2004). According to Best and Kahn (2000), reliability of an instrument is the degree of consistency that an instrument demonstrates. To determine the extent to which the content instruments were consistent in eliciting the same responses, the researcher employed Spearman rank order correlation coefficient. A correlation coefficient of more than 0.5 and above meant that the instrument was reliable and was considered high enough to judge the reliability of instruments used Any inaccurate responses, inconsistencies, blank spaces

and other weaknesses noticed in the pretest were rectified. Piloting enabled the researcher come up with suitable research instrument which were well polished.

### **3.7Data collection Procedures**

Before going to the field, the researcher obtained permission from the head Of education department authorizing him to carry out the research. The researcher then visited the sample schools to establish report, get permission from the school head teacher and arrange with subject teachers and class teachers of the randomly sample form 3 classes to arrange for when to give out the questionnaires. Data was collected as discussed below.

#### **3.7.1 Teachers questionnaire and heads of department**

The researchers seek permission from the head teacher of the selected schools. The permission was granted and the researchers met the teachers and explained the purpose of the research and reassured them of confidentiality. Administer the questionnaires and agreed on the time to pick them at a central place within the schools.

#### **3.7.2 Students' questionnaire**

The researcher asked for the permission from the schools administration. And the permission was granted, the researcher discussed with the teachers of the chosen classes on the venue and time to administer the questionnaires. The researcher came on the agreed date and time, met with the students in the agreed venue; he explained the purpose of the study and went through the instructions and let the students fill the questionnaires. The researcher then collected the questionnaires after the student's gone through. The same procedure was followed in each school for the 2selected schools for the study.

### **3.7.3 Interview schedule**

The researcher arranged with the head teachers of the two (2) schools when to administer the interview schedules. Then, the researcher agreed with them on the convenient time for the interview schedules to be collected. The researcher then administered the interview schedules as agreed with the above respondents.

### **3.8 Data Analysis**

The study was descriptive survey. Data was analyzed using the SPSS programme. The analysis was systematically done as per the objectives of the study. Quantitative data was collected using questionnaires for the students, teachers and heads of departments were processed by coding the closed questions and entering the data into the computer to run descriptive analysis including frequencies, percentages and graphs. In the case of open ended questions in the questionnaires and data was collected from the interview schedules for head teachers the data was categorized, themes established, the data coded and entered into the computer and analyzed descriptively. After the descriptive analysis, the researcher reported and discussed the findings using charts and tables. Finally, summary, conclusion and recommendations of the study was done

### **3.9 Limitation of the Study**

The limitations of this study was included: the size of the sample which was limited within selected schools in Nkozi sub -County as it gave only a generalization according to Murray and Lawrence (2000) of challenges teachers and students face in the using of instructional technologies in the selected schools. The study used form three students. This is because they are better placed, have a longer experience in the school, they are focused as they were already chosen their subjects based on career and therefore they are focused to achieve their target unlike form two students who are still contemplating on

which subjects to register for; form ones were new and haven't been oriented and form four were very busy preparing for the national examination.

The sampled secondary schools in Nkozi sub-County were not the representative of all secondary schools in Uganda, but it is the sample population to which the researcher were intended to generalize his findings. Thus, this study was treated as a trend but not a definite conclusion. Further, the study was not interested in looking at specific subjects but the researcher observed any subject that is taught in the randomly selected form three streams on the use of instructional technology.

Last but not least, teachers and students face challenges but this study limited itself to the challenges faced in the use instructional technologies for student's achievement in the teaching and learning processes.

Apply technology to increase productivity's). Teachers use technology to enhance their productivity and professional practice by: Using instructional technologies to engage in ongoing professional development and lifelong learning.

Continually evaluates and makes reflection on professional practice to make informed decisions regarding the use of instructional technology in support of student learning.

Apply technology to increase productivity

Teachers understand the social, ethical, legal, and bu-man issues surrounding schools and apply those head teachers in practice. Teachers should:

Promote safe and healthy use of instructional technology.

Apply instructional technology to enable and empower learners with diverse backgrounds, characteristics, and abilities.

Facilitate equitable access to instructional technology for all students.

Teachers use technology to enhance their productivity and professional practice by:  
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Apply technology to increase productivity.

Teachers understand the social, ethical, legal, and human issues surrounding schools and apply those head teachers in practice. Teachers should:

Promote safe and healthy use of instructional technology.

Apply instructional technology to enable and empower learners with diverse backgrounds, characteristics, and abilities.

Facilitate equitable access to instructional technology for all students.

Parents and communities surrounding the schools were fully sensitized on the importance of instructional technologies especially those within their environment that can be used for education instruction purposes. This enhanced positive attitudes and co-operation by the community and parents; thus providing and preserving these instructional technologies.

## **CHAPTER FOUR**

### **DATA PRESENTATION AND ANALYSIS**

#### **4.0 Introduction**

The purpose of this study was to establish the challenges faced by teachers and students in the use of instructional technologies in teaching and learning process in selected secondary schools. More specifically, the study was:

To investigate the type of instructional technologies used in the teaching and learning processes,

To examine factors which influence the effective use of instructional technologies in teaching and learning processes?

To establish the challenges both teachers and students face in coping up with the use of various instructional technologies in teaching and learning processes. The data was analyzed as per the objectives and the findings are reported and discussed below.

#### **4.1 Type of instructional technologies available**

Objective one of the study was to investigate the type of instructional technologies used in the teaching and learning processes. An item inquiring on the availability of instructional technologies was administered to (5) teachers in the sampled schools. The teachers' responses were analyzed as follows:

**Table 4.1 Teachers responses on the availability of instructional technology**

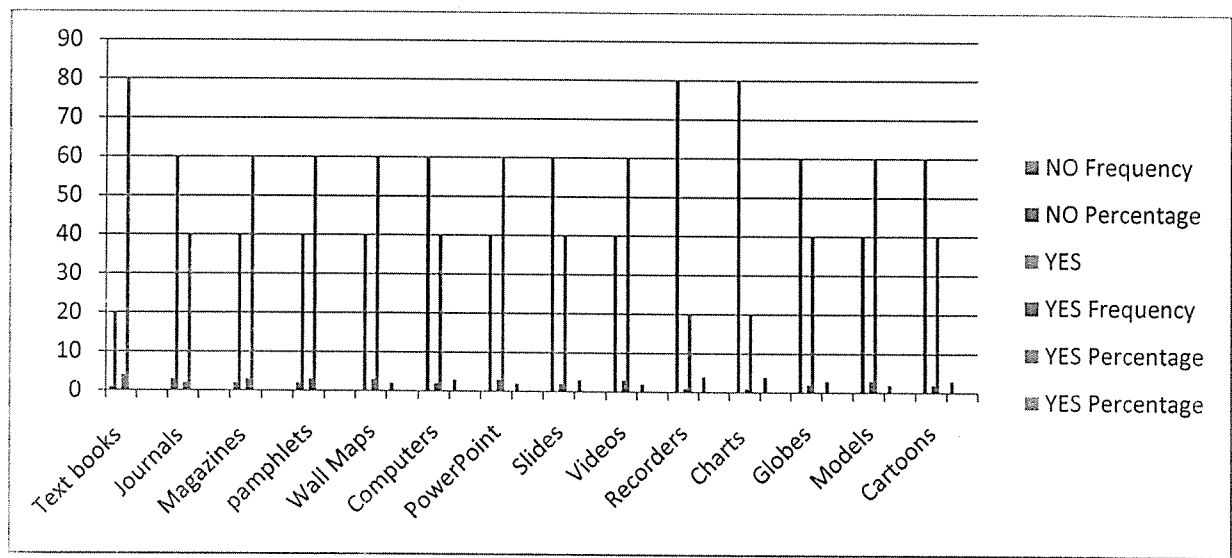
Items	NO		YES	
	Frequency	Percentage	Frequency	Percentage
Text books	1	20	4	80
Journals	3	60	2	40
Magazine	2	40	3	60
pamphlets	2	40	3	60
Wall Maps	2	40	3	60
Computers	3	60	2	40
PowerPoint	2	40	3	60
Slides	3	60	2	40
Videos	2	40	3	60
Recorders	4	80	1	20
Charts	4	80	1	20
Globes	3	60	2	40
Models	2	40	3	60
Cartoons	3	60	2	40

**Source: Primary Data 2019**

According to the above table 4.1, out of 5 respondents, 4(80%) reported the availability of textbooks while 1(20%) said there were no text books available, 2(40%) reported the availability of journals while 3(60%) reported non-availability of journals, 3(60 %) revealed availability of magazines 1(20%) reported non-availability of magazines , 4(60%) reported availability of school pamphlets while 1(20%) reported non-availability, 3(60%) reported the availability of wall maps

while 2(40%) reported non-availability,2(40%) reported the availability of computers while3(60%),reportednon-availabilty,3(60%) reported the availability of power point while 2(40%) reported non-availability of power point,2(40%) reported availability of slides while 3(60%) reported non-availability of slides,3(60%)reported availability of videos while 2(40%) reported non-availability of videos, 1(20%)reported the availability of charts while 4(80%)reported non-availability of charts, 1(20%)reported availability globeswhile4(80%) reported non-availability of globes,2(40%) reported availability of models while 3(60%)reported non-availability of models and 3(60%) reported availability of cartoons while 2(40%) reported non-availability of cartoons. From the percentages shown above, out of the total number of respondent 5, it seems that the largest group of respondents conform 4(80%) the availability of textbooks in the school which shows that they were the most commonly available instructional technology. Figure 4.1 below further illustrates the distribution of table 4.1.

**Figure 4.1 Teachers’ responses on the availability of instructional technologies**



Source: Primary Data 2019



The researcher wanted to find out whether whatever was self reported by teachers was so, therefore, in regard to this objective, the researcher sought information from students.

**Table 4.2 analyzes students" issued with all textbooks as follows.**

**Table 4.2**

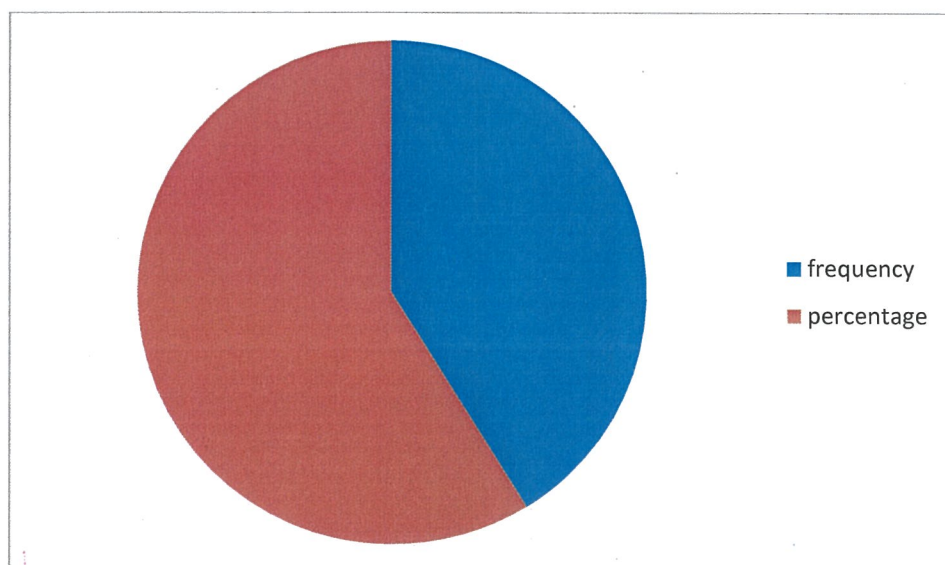
No.	frequency	percentage
1 yes	45	64.3
2 no	25	35.7

**Source: Primary Data 2019**

N/B: Percentages are based on the number of responses given.

According to table 4.2, out of 70 respondents, 25(35.7%) reported that they were not issued with all textbooks whereas 45(64.3 %) reported that they were issued with all textbooks.

The pie-chart (figure 4.2) below emphasizes the distribution of students" responses on how they were issued with all textbooks.



**Source: Primary Data 2019**

Further, the researcher wanted to know why students were not issued with all text books; an item in the students' questionnaire asked for reasons why they were not issued with all textbooks. The respondents gave various responses. Table 4.3 analyzes various student responses as follows:

**Table 4.3 Reasons why students were not issued with textbooks**

<b>Reasons why students were not issued with text books</b>	<b>frequency</b>	<b>percentage</b>
School lacks funds for buying enough text books	45	64.3
School does not issue hence parents buy	50	71.4
Too many students	35	50
School library low equipped	64	91.4
Limited books in library	68	97.1
There are enough books in library	65	92.9

Source: Primary Data 2019

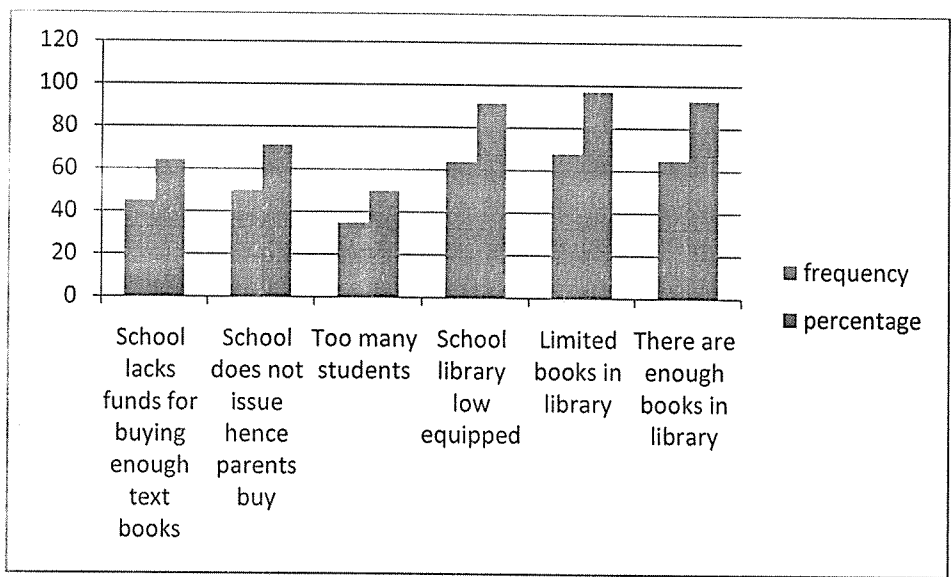
N/B: Percentages are based on the number of responses per each item

From table 4.3, out of 70 respondents, 45(64.3%) of students reported that the school lack funds for buying enough textbooks, 50(71.4%) reported that parents buy a few copies, 35(50%) reported that there were many students(over enrolment) in the classrooms 64(91.4%) reported that the schools libraries were not quipped, 68( 97.1%) reported that there were limited books in the library and 65(92.9%) reported that there were no enough books in the

library. Others reported that they were not issued due to poor management, it was the school policy, and that there was fear of the books getting lost, some schools provided a few copies but the percentages were negligible. The heads of department and the head teacher both confirmed the availability of instructional technologies in all sampled schools. Printed instructional technologies and chalkboard were the most available. This confirms with table 4.1 which revealed that textbooks were the most available.

Figure 4.3 further emphasizes the distribution of students’ responses on reasons why they were not issued with textbooks

**Responses why students were not issued with text books**



**Source: Primary Data 2019**

It was revealed that the most commonly available instructional technologies were textbooks, pictures, charts, maps, newspapers and magazines. Many of the teaching-learning resources were inadequate, with an acute shortage of audio-visual resources.

### 4.3 Interactivity and effective use of instructional technologies

Objective two of this study was to examine factors that influence interactivity and effective use of instructional technologies in teaching and learning processes. It is obvious that for teaching and learning to be effective and meaningful, the use of instructional technologies was inevitable. The instructional technologies also determine the instructional method the teacher will employ in the teaching and learning process. Since the researchers was to examine the factors that influence effective use; it was necessary for her to first find out the availability of the instructional technologies in the sampled schools. Apart from that, the researcher was to find out whether the instructional technologies used for in other countries in the world were available in Uganda. This was with good intentions to finding whether teachers and students in the country benefited from teaching the same way those other parts of the country and world do.

**Table 4.4** analyzes factors that influence teacher's interactivity and use of instructional technologies N/B: Percentages are based on the number of responses for each item

Table4.4 factors that influence interactivity and use of instructional technology

**Table 4.4 factors that influence interactivity and use of instructional**

<b>Factors</b>	<b>Frequency</b>	<b>Percentage</b>
Availability of instructional technologies	3	60
Skills and knowledge of technology to use	4	80
Importance of the instructional technology	2	40
If readily available in the school	4	80

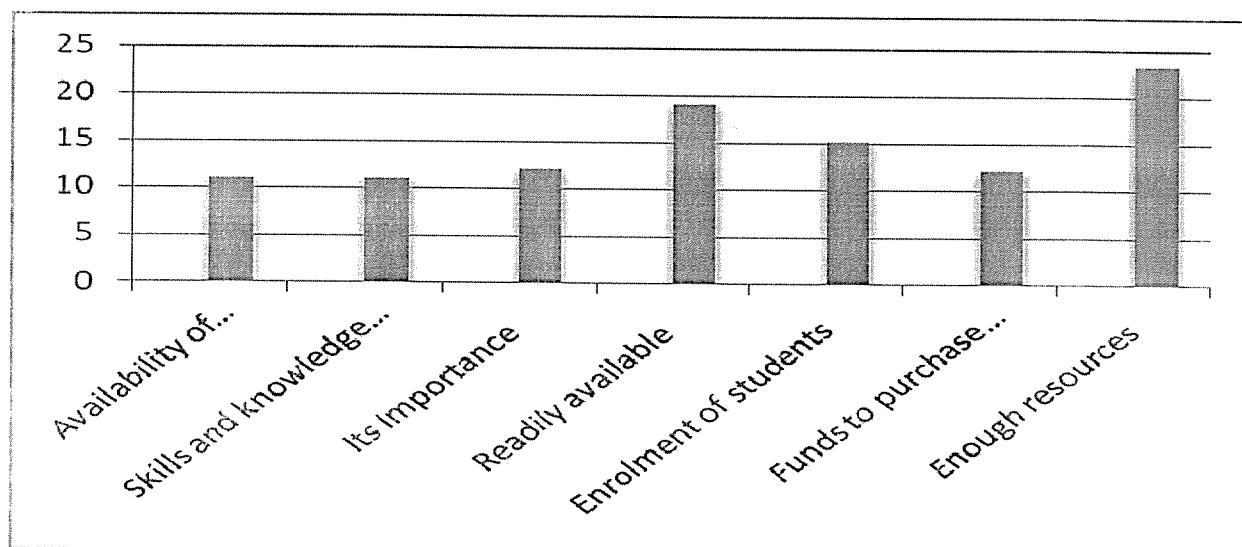
Enrolment of students in a particular class	3	60
Availability of money to buy instructional technologies	2	40
If the resources are enough for the enrolment in class	3	60

**Source: Primary Data 2019**

From table 4.4, out of 5 respondents, 3(60%)of the teachers revealed that they were influenced by the availability of the instructional technologies, 2(40% ) revealed that they were influenced by knowledge and skills on use,4 (80%) of the teachers were influenced by the importance of the instructional technologies to teach the topics , 4(80%)of the teachers were influenced if the instructional technologies were readily available, 3(60%) of the teachers were influenced by enrolment of students in a particular class, 3(60% ) of the teachers were influenced by availability of funds to buy the needed materials,2(40% ) of the teachers were influenced if the resources were enough for the enrolment in class while other teachers in negligible percentages revealed that they influenced by the time available to prepare for the technology, versatility of the instructional technologies, reliable power supply, if involved in the procurements process, attention given by the administration, if instructional technologies are provided by the school, availability of spacious room, veracity of the technologies, the importance of the instructional technologies in teaching the topics, students level of understanding and, accessibility to the instructional technologies, syllabus requirement, load of the subject and freedom of use and the cost of instructional technologies.

**Figure 4.4** below further emphasizes the distribution of teachers' responses on factors that influence teachers' interactivity and use of instructional technologies respectively.

**Figure 4.4 Factors that influences the teachers' interactivity and use of instructional technologies**



Source: Primary Data 2019

Apart from textbooks, an item in the teachers' questionnaire asked how often instructional technologies were used for learning process.

**Table 4.5 analyzes the responses as follows:**

Items	No		Yes	
	frequency	percentage	frequency	Percentage
Maps and diagrams	39	55	31	44.3
Globes	30	42.9	40	57
Charts	55	78.5	15	21
Magazines	60	85.7	10	14
Journals	63	90	7	10
Radio	68	97	2	2.8
Television	49	70	21	30
Video recordings	67	95.7	3	3.8
Computer	42	60	28	40

Source: Primary Data 2019

N/B: Percentages are based on the number of responses for each item

According to this objective, table 4.5 shows that out of 70 respondents; 31(44.3%) of students reported the use of maps and diagrams for learning process whereas 39(55%) reported that they never used Maps and diagrams, 40(57%) reported the use of the globes whereas 30(42.9%) reported that they never used globes, 15( 21% ) reported the use of charts whereas 55(78.5%) reported that they never used charts, 10( 14%) reported the use of Magazines whereas 60(85.7%) reported that they never used Magazines, 7(10%) reported the use of Journals whereas 63(90%) reported that they never used Journals, 2(2.8%) reported the use of Radio whereas 68(97%) reported that they never used radio, 21(30%) reported the use of television whereas 49(70%) reported that they never used television, 3(3.8% ) reported the use of video recordings for learning whereas 67(95.7%) reported that they never used Video Recordings, 28( 40 % ) reported the use of computers for learning whereas 42(60%) reported that they never used computers for learning. On the other hand, the heads of departments confirmed that teachers' interactivity and use of instructional technologies was influenced by their availability even though some of the instructional technologies' use posed a big challenge to some teachers.

The study used the observation schedule to confirm what was given by both teachers and students. The researcher decided to investigate further whether the instructional technologies were adequate for both teachers and students in order to make fair judgment about interactivity and use of instructional technologies in the sampled schools. The research confirmed interactivity and use of instructional technologies though use of some instructional technologies were challenging to some teachers. The head of departments also confirmed interactivity and use of instructional technologies though they were inadequate.

#### 4.5 Challenges faced by both: (a) teachers and (b) students on use of instructional technology

According to this objective, an item in the teachers and students questionnaires asked both (a) teachers and (b) students to state the challenges they face in using instructional technologies. Table 4.6 analyzes teachers' responses as follows:

**Table 4.6 Challenges facing teachers on use of instructional technologies**

Challenges faced by teachers	Frequency	Percentage
Limited skills on use of some instructional technologies	1	20
No enough instructional technologies	4	80
Unavailable funds to buy instructional technologies	4	80
Limited time to use various instructional technologies	3	60
Lack of support from administration/educational authorities	2	40
Many students	3	60

Source: Primary Data 2019

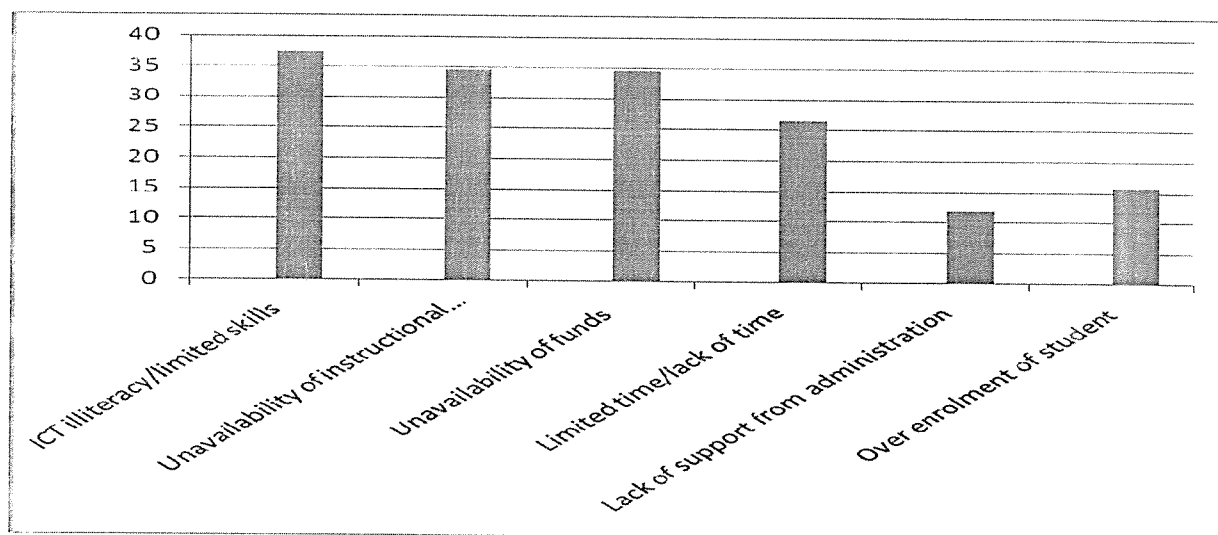
N/B: Percentages based on the number of responses given

According to this objective; from table 4.6, out of 5 respondents, 1 (20 %) of the teachers reported that they had limited skills on use of some instructional technologies, 4 (80%) of the teachers reported that instructional technologies were not enough, 4 (80%) of the teachers reported unavailable funds to buy instructional technologies , 3 (60%) of the teachers reported that they had



limited time to use the various instructional technologies as the syllabus was so wide that they may not cover it, 2(40 %) of the teachers reported that they lacked support from school administration as some head teacher locked some instructional technologies in stores and made very strict rules for anybody who wished to use them, 3(60 %) of the teachers reported that there were many students in classes which made it impossible to use some instructional technologies, other teachers in negligible percentages reported that they were not consulted in the procurement process, no time to improvise instructional technologies to use, some teachers reported that some teachers were lazy and did not bother to use the instructional technologies,

**Figure 4.6 Challenges faced by teachers in the use of instructional technology**



Source: Primary Data 2019

Further, an item in students' questionnaire required students to state challenges they faced when instructional technologies were used.

Table 4.7 analyzes student's responses as follows:

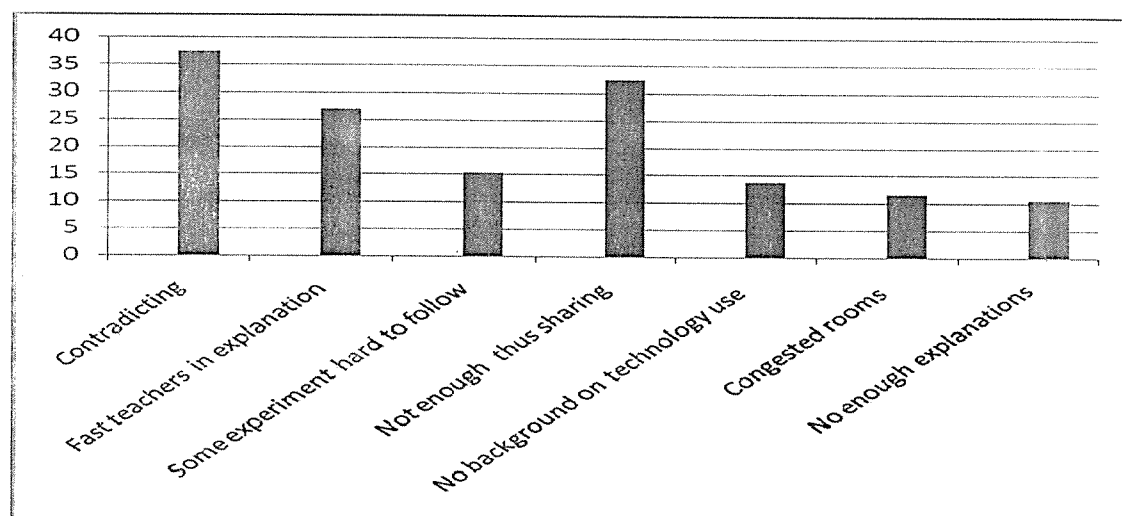
<b>Challenges</b>	<b>Frequency</b>	<b>Percentage</b>
Some instructional technologies can't be easily understood	30	42.9
Some teachers are fast when explaining	40	57
Some experiment/science procedures are hard to follow	60	85
Instructional technologies not enough thus lead to sharing of computers in the lab and lab equipment	66	94.3
Some students are illiterate on use of some instructional technologies	45	63.4
Small and congested rooms	56	80
Not enough explanations by teachers when using some instructional technologies	40	57

**Source: Primary Data 2019**

According to this objective, table 4.7 shows that out of 70 respondents, 30(42.9%) of the students reported that some instructional technologies could not be easily understood, 40(57%) of the students reported that some teachers were fast when explaining which made them not to comprehend the lesson, 60(85%) of the students reported that some experiment procedures were hard to follow when done once thus they needed more practice which was denied due to inaccessibility to the science laboratories during their free time, 66(94.3%) of the students reported that some instructional technologies were not enough thus led to sharing of computers in the lab and lab equipments hence limiting individual accessibility and practice, 43(64.3%) of the students reported that they were illiterate on use of some instructional technologies, 56(80%) of the students reported there were small and congested classrooms, 40(57%) of the students reported that some experiment procedures were hard to follow. Other students in negligible percentages reported lack of

accessibility to some instructional technologies during their free time, lack of skilled personnel to provide assistance especially from some teachers and laboratory assistants, some students steal the resources for others not to use, while others felt that the use of some instructional technologies waste time and others said some subject teachers use instructional technologies while others don't use at all. Figure 4.9 emphasizes further the distribution of students' responses on challenges faced by students on use of instructional technologies.

**Figure 4.7 Challenges faced by students on use of instructional technologies**



**Source: Primary Data 2019**

To verify the information given by teachers and students, the research sort information from the head of departments and head teachers whereby there was an item asking those challenges teachers and students faced and they both confirmed what was given by both teachers and students.

The teachers and students were further asked to give suggestions regarding the challenges they experienced when using instructional technologies.

**Table 4.8** shows teachers' suggestions on how to overcome the challenges faced.

<b>Suggested ways of overcoming the challenges faced</b>	<b>Frequency</b>	<b>Percentage</b>
Train teachers how to handle instructional technology (ICT)	4	80
School to buy more instructional technologies	4	80
School organize harambees/donors to assist buying materials	3	60
Government to ensure electrification in all schools	2	40

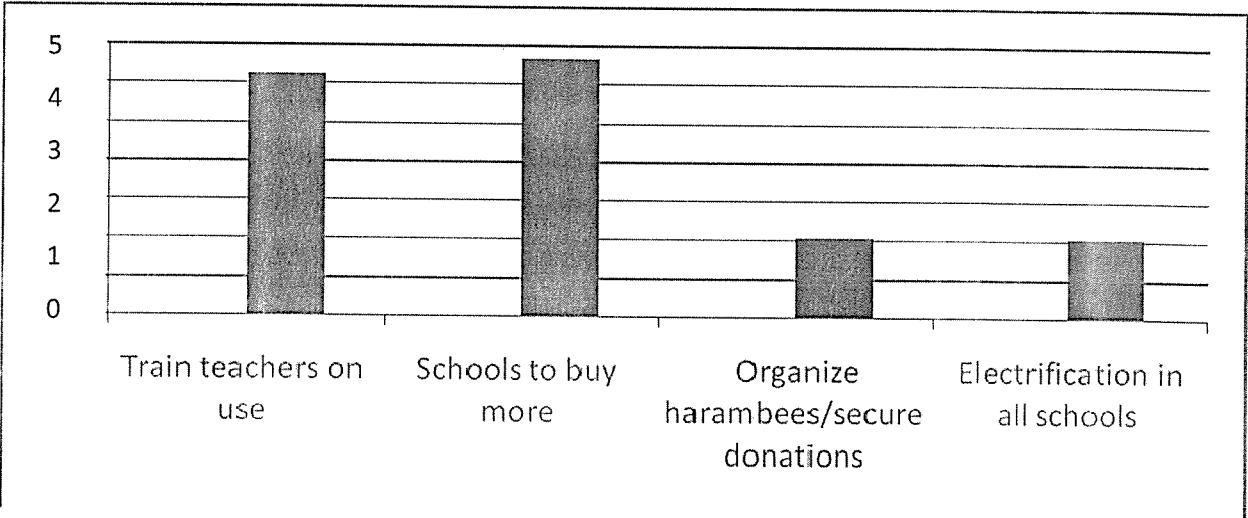
**Source: Primary Data 2019**

N/B: Percentages are based on the number of responses for each item

From table 4.8 above, out of 5 respondents; 4(80%) of the teachers suggested that teachers should be trained on how to handle /use instructional technologies such as computers /ICT, 4(80 %) of teachers suggested that the schools buy more instructional technologies to cater for swollen classes, 3(60%) of teachers suggested that the schools should request donors to assist in buying instructional technologies, 2(40%) of teachers suggested that the government should ensure there is reliable power supply in all schools,. Other teachers in negligible percentages suggested that the schools should put up infrastructure for computer installation in classes, buy modern computers/renovate and repair facilities, acquire enough instructional materials, have other power alternatives, provide security and stores for keeping facilities, management to collaborate with teachers on material requisition, admit manageable number of students, develop INSETS for teachers to replenish their skills on use of instructional technologies, provide internet to enable them share what other teachers are doing in the world,

employ more teachers especially those with technical skills to reduce teachers’ work load, equip the laboratories as a long term project, motivate teachers for improvisations and the government to help schools to purchase more materials by providing more funds. The figure below (figure 4.10) further emphasizes the responses given in the above table.

**Figure 4.8 Teachers’ suggestions on how to overcome the challenges.**



Source: Primary Data 2019

**Table4.9 Suggested ways of overcoming the challenges**

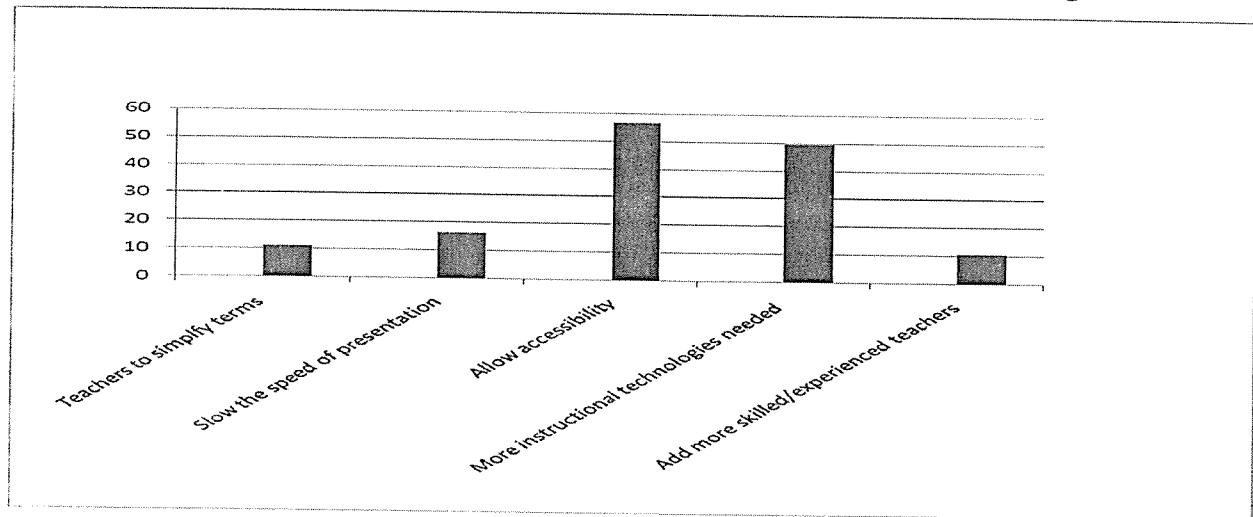
Suggested ways of overcoming the challenges	Frequency	Percentage
Teachers to use simple terms when teaching	55	78.6
Teachers to slow the speed of presenting when using some instructional technologies	60	85.7
Allow students use computers &	58	82.9

science labs freely for practical during their free time		
Buy enough and quality computers & other instructional technologies	69	98.6
Add more skilled and experienced teachers	53	75.7

Source: Primary Data 2019

N/B: Percentages are based on the number of responses for each item From table 4.9, out of 70 respondents, 55 (78.6 %) of students suggested that teachers to use the simple terms when teaching using some instructional technologies, 60 (85.7%) of students suggested teachers should slow down the speed of presenting, 58 (82.9%) of students suggested that students should be allowed to use computers and science laboratories freely for practice during their free time, 69 (98.6% ) of students suggested that schools should buy enough instructional technologies such as quality computers and other instructional technologies, 53 (75.7%) of students suggested that the schools should add more skilled and experienced teachers on use of instructional technologies. Other students suggested in negligible percentages that the schools should build bigger rooms/laboratories to accommodate the enrolled population, connect computers to the internet, be exposed to technology early, have generators in case of power failure, update/hire laboratory technicians with modern technological skills, allow students to access available materials freely and expose them fully to the resources, government to implement policies that it can meet especially on provision of instructional technologies and modify classes to be compatible with instructional technology facilities. Figure 4.11 below emphasizes the results shown on the table above, and the percentages show students' suggestions on how the challenges can be overcome.

**Figure 4.9 Students' suggestions on how to overcome the challenges.**



**Source: Primary Data 2019**

The findings revealed a myriad of challenges facing both teachers and students in the use of instructional technology. This concurs with Mogeni (2005) in a study on factors influencing the utilization of resources in the teaching of Kiswahili in Jinja district where as Msei (1985) in a survey of teaching resources for teaching and learning of Kiswahili in schools in Nkozi sub county , Jinja District found out that most teachers in schools did not use teaching resources partly due to ignorance of their importance and called for the organization of seminars, symposia and workshops to help equip the teachers with the skills and awareness to effectively use instructional resources. to use even simple teaching aids.

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS AND DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS.**

#### **5.0 Introduction**

The main purpose of this chapter is to make a summary of the findings based on the objectives of the study and make suggestions and recommendations for possible action and further research. This chapter therefore, consists of three sections namely; the summary of the findings, conclusion of the study and finally recommendations.

#### **5.1 Major findings and implications**

ii) To examine?

iii) To establish the challenges both teachers and students face in coping up with the use of various instructional technologies in teaching and learning processes.

##### **5.1.1. The type of instructional technologies used in the teaching and learning processes,**

According to objective one of this study, most of the instructional technologies were widely available for teaching and learning process. These includes: textbooks, journals, magazines, school pamphlets, wall maps, computers, videos, charts, globes and models. Many of the available instructional technologies were inadequate in terms of quantity. Not all the available instructional technologies were easily accessible to both teachers and students for teaching and learning process.

##### **5.1.2. Factors which influence the effective use of instructional technologies in teaching and learning processes**

According to objective two of the study, the choice of instructional technologies was influenced by their availability, how the instructional technology will



enhance teaching, technical knowledge and skills on how to use an instructional technology and time available to prepare. Other factors include: reliable power supply, procurement process, attention given by administration, if the technologies are provided by the school, availability of the room, versatility of the technology, their importance in teaching the topic, students' level of understanding and enrolment, accessibility to the instructional technology, syllabus requirement, teachers' load and the cost of the instructional technology.

### **5.1.3. Challenges faced by both teachers and students in the use of instructional technologies in teaching and learning process.**

Some teachers had limited skills/unskilled in the use of some instructional technologies,

- Instructional technologies were not enough/unavailable, unavailability of funds to buy instructional technologies, limited time to use the various instructional technologies as the syllabus was so wide that they may not cover it,
- Lack of support from school administration, some head teacher locked instructional technologies in stores and made strict rules for anybody who wished to use them, some teachers were not consulted in the procurement process thus they are overtaken by events,
- No time to improvise instructional technologies to use, some teachers were lazy and did not bother to use instructional technologies,
- Unreliable power supply,
- Lack of infrastructure,
- Lack of opportunities to apply technology,
- Low equipped laboratories and
- Some teachers still believed that if they explained the information well, the students would understand even if the teacher did not use the instructional technologies.

- Students reported that:
- Some instructional technologies could not be understood thus they were contracting,
- Some teachers were fast when explaining,
- Instructional technologies not enough which made them to keep on sharing thus hindering accessibility and individual practice for competence,
- Lack of knowledge and skills on use of some instructional technologies, congested classroom due to over enrolment,
- Limited time to access and use instructional technologies,
- Lack of enough explanations from teachers,
- Some students felt that the use of instructional technologies wasted time and some teachers never use instructional technologies at all.
- Teachers suggested the following solutions to the challenges they faced in the use of instructional technologies: That;
- Teachers should be trained on how to handle/ use instructional technologies such as computers/ICT,
- Schools to buy more instructional technologies to cater for swollen classes,
- Schools to organize for fundraising and ask donors to assist in buying enough instructional technologies and
- The government to ensure reliable power supply in all schools and those students should be exposed to the use of technology early.

**Students suggested that:**

- Teachers should use simple terms when teaching, slow the speed of presentation,
- Students be allowed to use computers and science laboratories freely for practice during their free time,

- The schools to buy enough instructional technologies such as quality computers and
- Those schools should employ/add more skilled/experienced teachers on use of instructional technologies.

## **5.2 Conclusion**

The main question that this study endeavored to find was an answer to what challenges faced teachers and students the in use of instructional technologies.

Based on the findings of the study, the following conclusions were made:

Print resources were the most commonly available instructional technologies in the selected secondary schools in Mpigi district. However, many of the available instructional technologies were inadequate in both quality and quantity; despite their being accessible to teachers and students. Though schools provided a few, parents were the main providers of instructional technologies for teaching and learning process. However, teachers were sparingly consulted or involved in the procurement process.

The teachers appreciated the role played by the use of instructional technologies in teaching and learning process. However, they hardly use most of these instructional technologies available in their schools. They mainly use textbooks, chalkboards and laboratory equipment for Chemistry, Biology and physics. The instructional technologies that were preferable to the teachers in teaching learning process were charts, Globe, maps models audio cassettes, handouts, class readers (books), pamphlets, radio, news papers, diagram. Some schools had computers but they were mainly used for computer studies subject and the Liquid Cristal Display (LCD) was rarely used by SMASE teachers (Mathematics and Science) during their teaching.

Although many teachers in the selected secondary schools in Mpigidistrictwere academically and professionally qualified, they had very limited post-training on the use of instructional technologies. Very minimal instructional

technologies were being prepared locally by teachers for teaching learning process; thus students were hardly involved in the preparation some of the instructional technologies. This was mainly because schools lacked enough funds to buy the raw materials and provide storage facilities while on the other hand; administration does not allow students to assist in preparing instructional technologies.

The major challenge teachers expressed as impeding their effective use of instructional technologies were that:

Some instructional technologies made them spend a lot of time in teaching topics; Rigid administration in provision and providing storage facilities and the suitability of the instructional technologies to suit topics being taught and; Scarcity of some instructional technologies and especially lack of modern efficient instructional technologies in the schools, lack of trained personnel such as technological assistants and lack of sufficient knowledge on use of these technologies made the teaching and learning process very difficult; This research will give educators a better understanding of the importance of functional, usable, communicative, and aesthetically appropriate use of instructional technologies.

### **5.3 Recommendations of the study**

The following recommendations were made based on the findings of the study: The study findings revealed that the instructional technologies available in schools were barely enough and some were outdated ( The Ministry of Education, Science and Technology 2005).

Further, the Ministry of Education, Science and Technology should:

Organize seminars, workshops and any other in-service courses frequently to familiarize and sensitize with a wide range of instructional technologies and

their potentials. This could trigger teachers' creativity and innovation in the use of instructional technologies in teaching and learning process.

Regularly review the teacher training course by integrating technology with a view of improving the trainees' skills and attitude on the use of instructional technology.

Use highly qualified experts as resource people whenever it organizes seminars and workshops to teach the teachers about the importance of instructional technologies in teaching and learning process. This will motivate teachers to take the seminars and workshops seriously and to implement whatever learnt.

Have regular visits to the schools, through the Quality Assurance Officers (QUASO), to assess the availability, state and utilization of instructional technologies. This will make teachers alert and prompt them to prepare and use the instructional technologies frequently.

Work hand in hand with parents, sponsors and other stakeholders in education to prioritize the provision of adequate instructional technologies to ease the problems of inadequacy of instructional technologies in public secondary schools.

Provide some of the instructional technology to schools to subsidize their costs and encourage the local publishers/authors to produce more affordable instructional technologies. This should also trigger teachers to be innovative and initiative to produce instructional technologies locally or improvise the existing ones to suit their varied needs.

Ensure that the authors and publishers avail the necessary new instructional technologies especially textbooks in the market and schools promptly whenever the syllabus is revised. This will ensure that schools acquire and use the

current instructional technologies and adequately prepare students for the national examinations.

Establish instructional technologies centers as close as possible to teachers including instructional technologies mobile services.

The school administration should be sensitized on the importance of instructional technologies in order for them to provide them in their school budget and provide storage facilities. The administration should involve teachers in acquisition of the instructional technologies and encourage them to use technologies in teaching.

Secondary schools should establish spacious instructional technology rooms/libraries and equip them accordingly. This will, encourage teachers to prepare for there is safety and will further, encourage the use of bulky and cumbersome instructional technologies with little movement.

d).Planning and designing learning environments and experiences. To achieve these teachers should.

Design developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners.

Apply current research on teaching and learning with technology when planning learning environments and experiences.

iii).Identify and locate instructional technologies and evaluate them for accuracy and suitability.

Plan for the management of instructional technologies within the context of learning activities, as well as strategies to manage student learning in a

technology-enhanced environments. Because planning helps teachers to determine instructional technologies they will use. Instructional plan plays a critical role in directing the selection and use of all other tools within the learning environment (Newby et al.2006).

Plan teaching, learning, and the curriculum which apply technology to maximize student learning. To realize this teachers should:

- Apply technology to develop students' higher-order of skills and creativity.
- Facilitate technology-enhanced experiences that address content standard standards and student technology standards.
- Manage student learning activities in a technology-enhanced environment. Use technology to support learner-centered strategies that address the diverse needs of students. Teachers use technology to enhance their productivity and professional practice by: Using instructional technologies to engage in ongoing professional development and lifelong learning.
- Continually evaluates and makes reflection on professional practice to make informed decisions regarding the use of instructional technology in support of student learning.

Apply technology to increase productivity). Teachers use technology to enhance their productivity and professional practice by: Using instructional technologies to engage in ongoing professional development and lifelong learning.

Continually evaluates and makes reflection on professional practice to make informed decisions regarding the use of instructional technology in support of student learning.

Apply technology to increase productivity

g). Teachers understand the social, ethical, legal, and human issues surrounding schools and apply those head teachers in practice. Teachers should:

Promote safe and healthy use of instructional technology.

Apply instructional technology to enable and empower learners with diverse backgrounds, characteristics, and abilities.

Facilitate equitable access to instructional technology for all students.

f). Teachers use technology to enhance their productivity and professional practice by: Using instructional technologies to engage in ongoing professional development and lifelong learning.

Continually evaluates and makes reflection on professional practice to make informed decisions regarding the use of instructional technology in support of student learning.

Apply technology to increase productivity.

g). Teachers understand the social, ethical, legal, and bu-man issues surrounding schools and apply those head teachers in practice. Teachers should:

Promote safe and healthy use of instructional technology.

Apply instructional technology to enable and empower learners with diverse backgrounds, characteristics, and abilities.

Facilitate equitable access to instructional technology for all students.

h). Parents and communities surrounding the schools should be fully sensitized on the importance of instructional technologies especially those



within their environment that can be used for education instruction purposes. This will enhance positive attitudes and co-operation by the community and parents; thus providing and preserving these instructional technologies.

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## APPENDIX A

### TEACHERS' QUESTIONNAIRE

Welcome and thank you for sparing time to fill this questionnaire. I am undertaking a bachelors Degree in arts with Education at Kampala international University. The purpose of this questionnaire is to find out the different forms and categories of instructional technologies used in the teaching and learning processes of selected Schools in Nkozi sub - County Mpigi district. Please complete each section as instructed. All information provided will be highly confidential.

#### II SECTION A: Teachers Biographical Data

Please tick your chosen ( ) where response ( ) appropriate.

1. Sex: Male [ ] Female [ ]
2. Age: a) 20 –30 years[ ] b) 31 –40 years[ ] c) 41 - 50 years[ ] d) over 50 years [ ]
3. Which subject do you teach?  
\_\_\_\_\_
4. For how long have you taught those subjects? ----yrs.  
Less than 12months [ ]  
. 1-5 years [ ]  
. 6-10 years [ ]  
. 11-15 years [ ]  
. 16-20 years [ ]  
. 21 and above years [ ]

**SECTION B: –Availability and use of instructional Technology.**

5. Which of the following categories of instructional technologies are available in your school?

Printed: Textbooks [ ], Journals [ ], Magazines [ ] School Pamphlets [ ],

Wall Maps [ ]

Projected: Computers, [ ] Power point [ ], Slides [ ], Videos [ ], OHP[ ]

Non-projected: Charts [ ], Globe [ ], Models [ ], Cartoons [ ]

Any (Specify) \_\_\_\_\_

6. How often do you use the following instructional technologies to teach your subject (s)?

Resources	Every time	Once a week	Once a month	Once a year	Never
Printed					
Projected					
Non-projected					

8 a) Are the instructional technologies you use adequate in teaching your subject?

Yes [ ] No [ ]

## SECTION C

### Challenges faced in the use of instructional technology.

Indicate by using the following Keys: Strongly Agree (SA), Agree (A), Undecided (UD),

Disagree (D) and Strongly Disagree (SD). Tick as appropriate.

STATEMENT	SA	A	UD	D	SD
There are inadequate text and reference books					
There is lack enough time for improvising Resources					
In my opinion students lack interest when instructional technology are used.					
There is unreliable electricity supply					
There is lack of knowledge in use of some resources					
There are insufficient computers					

There is lack of knowledge in the use of some resources					
There are insufficient computers					
There is no internet connection in the school.					
There is lack of technical assistance					
There is over-enrolment of students in our School					
There is lack of support from the school authorities in instructional technology					

22.) In your opinion, what are some of the challenges facing you as a teacher in the use of instructional technology?

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23.). Suggest ways in which the above challenges can be overcome.

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**Thank you.**

## APPENDIX B

Indicate Class: \_\_\_\_\_

### **STUDENTS' QUESTIONNAIRE**

The following questionnaire seeks to obtain information on the impacts and benefits of using of instructional technologies in the teaching and learning process of selected Schools in Nkozi sub - County Mpigi district. Kindly tick [ ] Your response where appropriate. Information provided will be strictly confidential. You may not sign in your name.

#### **SECTION A: Biographic data.**

- 1  
Sex: Male [ ] Female [ ]  
2 Age a) 14-18  
years [ ] b) 19-23 years [ ] c) 24 -8 yrs [ ]

#### **SECTION B: Availability and use of instructional technology.**

3. a) We are issued with all the textbooks for the subjects we do?  
Yes [ ] No [ ]

- 4  
How do you acquire the text books? Tick all choices that apply

- . Parents buy [ ]
- . Given by the school [ ]
- . Donations from well wishers [ ]
- . From Siblings [ ]

Any other (Specify) \_\_\_\_\_

5. Are the textbooks adequate/ enough for the subjects you do?



Yes [ ] No [ ]

6. Apart from textbooks, which other instructional technology do you use for Learning Process?

b. If your answer is yes in (7a) above, state by ticking appropriate areas where you use your computer skills to enhance learning.

Browsing the internet	[ ]
Exchanging ideas through e-mail	[ ]
Typing assignments	[ ]
Any other (specify)	_____

c. Challenges facing the use of instructional technology

challenges	Yes	No
Limited time	[ ]	[ ]
Computers not enough	[ ]	[ ]
School Administration	[ ]	[ ]
No internet connection in the school	[ ]	[ ]
Any other (Specify)	_____	
	_____	
	_____	

8. Are students sometimes asked by teachers to assist in preparing some instructional technology? Yes [ ] No [ ]

If the answer is yes, in (8a) above, indicate by ticking ( ) where appropriate the type of Instructional technology they help in preparation.

Charts	[ ]
Maps	[ ]
Models	[ ]
. Diorama	[ ]
Video show	[ ]
. Power point presentation	[ ]

Any other (Specify)\_\_\_\_\_

### SECTION C

Respond to the following statements to the best of your knowledge by ticking in the appropriate box using the following keys: Strongly Agree (SA), Agree (A), Undecided (UD), Disagree (D) and Strongly Disagree (SD).

STATEMENT	SA	A	UD	D	SD
1. There are inadequate textbooks for the subjects taught					
2. There is lack of variety for textbooks in the school library					
3. Some students are unwilling to use textbooks for fear of losing them					
4. I enjoy a lesson where a teacher uses a computer/point in teaching.					
5. Very much understand the content taught with the charts and use of maps aids.					
6. I enjoy listening to radio/television lessons					
7. Television/videos are exciting and interesting to acquire and use.					
8. I like than power point books.					
9. I am good at using a computer to type my work					

<b>10.</b> I like browsing the internet to learn and get more information					
<b>11.</b> I know how to make computer programs and how to use Power Point					
<b>12.</b> There is unreliable power supply in the school					
<b>13.</b> We do not have enough time for using the resources					
<b>14.</b> We are not allowed to access school computers at our free time.					
<b>15.</b> Teachers are unwilling to use some resources, e.g. computers, charts, maps, Journals and PowerPoint					
<b>16.</b> The school lacks technicians to assist with electronics resources					
<b>17.</b> The Lab Technicians are incompetent with the modern technology					

27). in your opinion, what are some of the challenges facing you as a student when teachers use instructional technology to teach?

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28) .Suggest possible ways of overcoming the challenges you are facing.

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## APPENDIX C

### HEAD TEACHERS INTERVIEW SCHEDULE

The purpose of this interview is to find out the challenges both teachers and students face in coping up with the use of various instructional technology in the teaching and learning process.

All information provided will be highly confidential

1. Sex: Male [ ] Female [ ]

2. Age: a) 19 - 23 years s [ ] b) 24 - 28 years [ ] c) 29 - 33 years[ ] d) Over 33 years[ ]

3. What are the administrative challenges you are experiencing in your school as regards the use of instructional technologies?

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4a). Does your school have enough instructional technologies? And If yes, which kind?

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b. If No, which ones do you think you are missing for your school?

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5). Who provides these instructional technology?

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6. How well is the school equipped with instructional technology for use in

teaching and learning?

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7. To what extent are your teachers trained to use some of the instructional technologies?

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8. What are your views on the use of instructional technology for classroom teaching and learning of students?

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9. Given the current state of the use of instructional technology in schools, what are some of the challenges hindering its widespread use?

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b) How have you tried to overcome some of these challenges affecting your school?

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10 How do your teachers improvise instructional technologies for teaching?

b) In which subjects do they usually improvise use? \_\_\_\_\_

c) How do the teachers involve students when they are improvising the use of instructional technology?

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11). In your opinion what can you comment on challenges facing a) teachers, b) students in the use of instructional technology in teaching and learning process?

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12). How can school teachers and students overcome the current challenges facing the use of technology in schools?

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**APPENDIX E**  
**OBSERVATION SCHEDULE**

	<b>Instructional Technologies</b>	<b>Adequate</b>	<b>Inadequate</b>	<b>Comments</b>
<b>A.</b>	<b>PRINTED RESOURCES</b> 1. Pure Sciences 2. Social Sciences 3. Applied Sciences			
<b>B.</b>	<b>AUDIO-VISUAL RESOURCES</b> 1. Overhead Projector			
	3. Videos 4. Television 5. Filmstrips 6. Slides 7. Computer			
<b>C.</b>	<b>OTHERS</b> 1. Chalkboard 2. Wall maps 3. Charts 4. Globes 5. Models 6. Lab equipment 7. White boards			