**UTILIZATION OF ICT AND STUDENTS PERFORMANCE IN RURAL SECONDARY SCHOOLS, NEBBI DISTRICT**

**BY**

**KYATEREKERA GLORIA**

**2014/AUG/WKD/MIT/M1419**

**A DISSERTATION TO SCHOOL OF BUSINESS ADMINISTRATION AND**

**INFORMATION TECHNOLOGY IN PARTIAL FULFILLMENT OF THE**

**REQUIREMENTS FOR THE AWARD OF THE DEGREE OF**

**MASTER OF SCIENCE IN INFORMATION TECHNOLOGY**

**OF NKUMBA UNIVERSITY**

**OCTOBER, 2019**

# **DECLARATION**

This dissertation is my original work and has never been presented to any University or higher institution of higher learning for any award. Where the works of others have been used due acknowledgement had been done.

­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**Date**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Kyaterekera Gloria**

**2014/AUG/WKD/MIT/M1419**

# **APPROVAL**

This dissertation has been submitted for examination with my approval as the candidates supervisor

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**Date**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Mr. Ogere Bernard Ekemu**

# **DEDICATION**

I dedicate this dissertation to my dear family and friends who have supported me throughout my academics.

# **ACKNOWLEDGEMENT**

I would like to extend my sincere thanks to God Almighty that has kept and sustained me throughout my stay at the University. Heartfelt appreciation goes to my family and all my friends for the support, advice and encouragement.

My appreciation goes to my supervisor Mr. Ogere Bernard Ekemu, for the tireless effort and time he devoted to me and his invaluable input. Without his guidance I would not have been able to produce such work. Thank you so much for your advice, guidance and encouragement during my research.

# **TABLE OF CONTENTS**

[**DECLARATION** i](#_Toc22095197)

[**APPROVAL** ii](#_Toc22095198)

[**DEDICATION** iii](#_Toc22095199)

[**ACKNOWLEDGEMENT** iv](#_Toc22095200)

[**TABLE OF CONTENTS** v](#_Toc22095201)

[**LIST OF TABLES** ix](#_Toc22095202)

[**LIST OF FIGURE** xi](#_Toc22095203)

[**ABSTRACT** xii](#_Toc22095204)

[**CHAPER ONE** 1](#_Toc22095205)

[**INTRODUCTION** 1](#_Toc22095206)

[1.0 Introduction 1](#_Toc22095207)

[1.1Background to the Study 1](#_Toc22095208)

[1.2 Statement of the Problem 4](#_Toc22095209)

[1.3 Purpose of the Study 5](#_Toc22095210)

[1.4 Objectives of the Study 5](#_Toc22095211)

[1.5 Research Questions 5](#_Toc22095212)

[1.6 Scope of the study 6](#_Toc22095213)

[1.7 Significance of the Study 7](#_Toc22095214)

[**CHAPTER TWO** 8](#_Toc22095215)

[**STUDY LITERATURE** 8](#_Toc22095216)

[2.0 Introduction 8](#_Toc22095217)

[2.1 Literature survey 8](#_Toc22095218)

[2.2 Literature review 10](#_Toc22095219)

[2.2.1 ICT knowledge, skills and students performance in rural secondary schools 15](#_Toc22095220)

[2.2.2 Technical support and students performance in rural secondary schools 18](#_Toc22095221)

[2.2.3 ICT infrastructure and students performance in rural secondary schools 19](#_Toc22095222)

[2.3 Conclusion 21](#_Toc22095223)

[2.4 Conceptual Framework 22](#_Toc22095224)

[**CHAPTER THREE** 23](#_Toc22095225)

[**RESEARCH METHODOLOGY** 23](#_Toc22095226)

[3.0 Introduction 23](#_Toc22095227)

[3.1 Research design 23](#_Toc22095228)

[3.1.1 Research Approach 23](#_Toc22095229)

[3.1.2 Research Strategy 23](#_Toc22095230)

[3.1.3 Research Duration 24](#_Toc22095231)

[3.1.4 Research Classification 24](#_Toc22095232)

[3.2. Study Area 24](#_Toc22095233)

[3.3. Study Population 24](#_Toc22095234)

[3.4. Sampling Procedures 24](#_Toc22095235)

[3.5. Sample size 25](#_Toc22095236)

[Source: Field Data 26](#_Toc22095237)

[3.6. Sampling Techniques 26](#_Toc22095238)

[3.7. Sources of Data 27](#_Toc22095239)

[3.7.1. Primary data 27](#_Toc22095240)

[3.7.2 Secondary data 27](#_Toc22095241)

[3.8. Data Collection Methods 27](#_Toc22095242)

[3.9. Data Collection Instruments 28](#_Toc22095243)

[3.9.1 Self -Administered Questionnaires 28](#_Toc22095244)

[3.9.2 Interview guide. 28](#_Toc22095245)

[3.10. Reliability and validity of the research instruments 29](#_Toc22095246)

[3.10.1 Validity 29](#_Toc22095247)

[3.10.2 Reliability 29](#_Toc22095248)

[3.11 Procedure for data collection 30](#_Toc22095249)

[3.11 Ethical Considerations 30](#_Toc22095250)

[3.12. Data Analysis 30](#_Toc22095251)

[3.13. Limitations of the Study 31](#_Toc22095252)

[**CHAPTER FOUR** 32](#_Toc22095253)

[**BACKGROUND INFORMATION** 32](#_Toc22095254)

[4.0 Introduction 32](#_Toc22095255)

[4.2 Analysis of response rate 34](#_Toc22095257)

[**CHAPTER FIVE 35**](#_Toc22095258)

[**ANALYSIS OF THE STUDY IN RELATION TO ICT TEACHERS’ SKILLS AND PERFORMANCE OF SECONDARY SCHOOLS 35**](#_Toc22095259)

[5.0 Introduction 35](#_Toc22095260)

[**CHAPTER SIX** 42](#_Toc22095261)

[**ANALYSIS OF THE STUDY IN RELATION TO TECHNOLOGICAL SUPPORT AND PERFORMANCE OF SECONDARY SCHOOLS** 42](#_Toc22095262)

[6.0 Introduction 42](#_Toc22095263)

[**CHAPTER SEVEN 47**](#_Toc22095264)

[**ANALYSIS OF THE STUDY IN RELATION TO THE EFFECTS OFICT INFRASTRUCTURE ON UTILIZATION OF ICT IN EDUCATION 47**](#_Toc22095265)

[7.0 Introduction 47](#_Toc22095266)

[**CHAPTER EIGHT 53**](#_Toc22095267)

[**TOWARDS HARMONIZING THE UTILIZATION OF ICT AND STUDENTS PERFORMANCE IN RURAL SECONDARY SCHOOLS IN NEBBI DISTRICT 53**](#_Toc22095268)

[8.0 Introduction 53](#_Toc22095269)

[8.1 Discussion of findings 53](#_Toc22095271)

[8.1.1 ICT teachers’ skills and students performance in rural secondary schools 53](#_Toc22095272)

[8.1.2 Technological Support and students performance in rural secondary schools 54](#_Toc22095273)

[8.1.3 ICT infrastructure and students performance in rural secondary schools 55](#_Toc22095274)

[**CHAPTER NINE 57**](#_Toc22095275)

[**SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION 57**](#_Toc22095276)

[9.1 Introduction 57](#_Toc22095277)

[9.1 summary of findings 57](#_Toc22095278)

[9.1.1 ICT teachers’ skills and students performance in rural secondary schools 57](#_Toc22095279)

[9.1.2 Technological Support and students performance in rural secondary schools 57](#_Toc22095280)

[9.1.3 ICT infrastructure and students performance in rural secondary schools 58](#_Toc22095281)

[9.2 Conclusion 58](#_Toc22095282)

[9.3 Recommendation 59](#_Toc22095283)

[**REFERENCES** 60](#_Toc22095284)

[**APPENDICES**  63](#_Toc22095285)

# **LIST OF TABLES**

[Table 13.1: Sample Size Determination 26](#_Toc21341612)

[Table 24.1: Gender 32](#_Toc21341613)

[Table 34.2: Level of education 32](#_Toc21341614)

[Table 44.3 Marital status 33](#_Toc21341615)

[Table 54.4: Age group 33](#_Toc21341616)

[Table 64.1: Response rate of respondents 34](#_Toc21341617)

[Table 75.1: I think that ICT supported teaching makes learning more effective 35](#_Toc21341618)

[Table 85.2: The use of ICT helps teachers to improve teaching with more updated materials 36](#_Toc21341619)

[Table 95.3: I think the use of ICT improves the quality of teaching 37](#_Toc21341620)

[Table 105.4: I think the use of ICT helps to prepare teaching resources and materials 37](#_Toc21341621)

[Table 115.5: I think the use of ICT helps to prepare teaching resources and materials 38](#_Toc21341622)

[Table 125.6: The use of ICT enables the students’ to be more active and engaging in the lesson 39](#_Toc21341623)

[Table 135.7: I have more time to cater to students’ need if ICT is used in teaching 39](#_Toc21341624)

[Table 145.8: I can’t have an effective teaching without the use of ICT 40](#_Toc21341625)

[Table 156.1: The ICT methods used in the school addresses the current needs of the organization 42](#_Toc21341626)

[Table 166.2: ICT allows students’ to be more creative and imaginative 43](#_Toc21341627)

[Table 176.3: The use of ICT helps students to find related knowledge and information for learning 43](#_Toc21341628)

[Table 186.4: The use of ICT encourages students to communicate more with their classmates 44](#_Toc21341629)

[Table 196.5: The use of ICT increases students’ confidence to participate actively in the class 44](#_Toc21341630)

[Table 206.6: The use of ICT enables students’ to express their ideas and thoughts better 45](#_Toc21341631)

[Table 216.7: The use of ICT promotes active and engaging lesson for students’ best learning experience 46](#_Toc21341632)

[Table 227.1: Schools is equipped with different kinds of hardware, software and network infrastructure 47](#_Toc21341633)

[Table 237.2: The school use digital video/audio recorder in teaching students 48](#_Toc21341634)

[Table 247.3: The school use computer systems for research or teaching in the classrooms 49](#_Toc21341635)

[Table 257.4: The school use tape of recorders to improve students listening skills 49](#_Toc21341636)

[Table 267.5: The teachers use smart phones, emails or fax to exchange information with parents/students while at home 50](#_Toc21341637)

[Table 277.6: The school use computerized database in exams and records department 51](#_Toc21341638)

[Table 287.7: The school use photocopy machine, scanners and printers used in producing the examination sheets 52](#_Toc21341639)

# **LIST OF FIGURE**

[Figure 12.1 Conceptual framework 22](#_Toc21343529)

# **ABSTRACT**

The study was about utilization of Information and Communications Technology and performance of selected rural secondary schools in Nebbi District. It was guided by the following objectives; to establish how ICT technical support influences the utilization of ICT in selected rural secondary schools in Nebbi District, to examine how the level of ICT teacher’s knowledge and skill influences the utilization of ICT in selected rural secondary schools in Nebbi District and to examine how ICT infrastructure influences the utilization of ICT in selected rural secondary schools in Nebbi District. The study adopted a cross sectional research design and study population of 340 and sample size of 181 respondents. Data was collected using self-administered questionnaires and interview guide. The study revealed that the school integrates ICT in teaching that makes learning more effective, use of ICT helps teachers to improve teaching with more updated materials, use of ICT improves the quality of teaching, use of ICT helps to prepare teaching resources and materials, it was also revealed that the ICT methods used in the school addresses the current needs of the organization, ICT increases sustainability of the school resources, ICT allows students’ to be more creative and imaginative. In conclusion, the very first stage of ICT implementation must be effective to make sure that, teachers and students are able to make the best use of it. Thus, preparations of a technology-based teaching and learning begin with proper implementation and supports by the school top management. If the implementation process of technology integration in schools take place appropriately from the very beginning stage and the continuous maintenance are adequately provided, ICT integration in schools results in a huge success and benefits for both teachers and students. The study recommended that schools needs to partner or enter into Memorandum of Agreement with local IT companies for supplies of ICT gadgets and other tools at a reasonable prices. The study also recommended that more ICT teachers should be employed and be trained on basics of ICT use in teaching and learning.

# **CHAPER ONE**

# **INTRODUCTION**

# **1.0 Introduction**

The study was about utilization of Information and Communications Technology and students’ performance in selected rural secondary schools, Nebbi District. Nebbi District is a district in Northern Uganda. It is named after its main municipal, commercial and administrative centre, Nebbi. The system of education in Uganda has a structure of 7years primary education, 6years secondary education (divided into 4 years of lower secondary and 2years of upper secondary) and 3 to 5years of postsecondary education. The government of Uganda recognizes education as a basic human right and continues to strive to prove free primary education to all children in the country. The current teaching method in rural schools is basically through the chalkboard, textbooks, lectures and class discussions conducted by teachers, recitation of oral questions by teachers, recitation of oral answers by the students, debates, group discussions and presentations by the students.

# **1.1 Background to the Study**

Information Communications Technology (ICT) is often used as an extended synonym for information technology (IT), but it is usually a more general term that stresses the role of unified. Communications and the integration of telecommunications (telephone lines and wireless signals), intelligent building management systems and audio-visual systems (Kolade, & Omodara, 2007). It consists of all technical means used to handle information and aid communication, including computer hardware and software and communication middleware (Lawsent, & Vincent, 1995).The use of ICT has not been extensive in education systems worldwide as found in other fields, such as business and engineering. Reasons for the low adoption or absence of ICT in education systems also vary significantly depending on the prevailing circumstances (Adegun, 2002).

Some experts suggest it is the high costs associated with implementing these technologies that prevents schools from using them in the classroom. Other experts argue that the social nature of current education systems, which require a substantial amount of personal contact between teachers and their students, prevents these technologies from being better integrated in the classroom setting (Adeyemi, 2011). The use of ICT in education extends beyond equipping classrooms with computers and an Internet connection. There are a wide variety of ICT currently available to schools to enhance students’ overall learning experiences in numerous ways (Oliver, 2009).The importance of ICT is quite evidence from the educational perspective. Numerous problems have been militating against the utilization of these ICT . Many reasons have been attributed to the non-availability and under-utilization of ICT in school. The authors have given various reasons for this.

Information Communication Technologies (ICTs) are information handling tools that are used to produce, store, and process, distribute and exchange information. These different tools are now able to work together, and combine to form networked world-which reaches into every nook and cranny of the globe (Afshari, 2009). It is an increasingly powerful tool for participating in global markets, promoting political accountability; improving the delivery of basic services; and enhancing local development opportunities (Aribamikan, 2007). According to Ogunsola (2015) ICT “is an electronic based system of information transmission, reception, processing and retrieval, which has drastically changed the way we think, the way we live and the environment in which we live”. It can be used to access global knowledge and communication with other people (Lubis, Embi, Yunus, &Wekke, 2009).

Student performance is the extent to which a student achieves their short or long-term educational goals. Student performance is assessed along a variety of dimensions including grades in tests, Score in annual exams, grade in national exams and class assessment. Academic achievement among students is commonly measured through examinations or continuous assessments but there is no general agreement on how it is best evaluated or which aspects are most important procedural knowledge such as skills or declarative knowledge such as facts (Vandamme, et al, 2015). Stakeholders associate good performance with good grades in Ugandan setting, at “O” level the assumption is that the more number of first grades the better the performance; in A-level the higher the points the better the performance.

Students who use ICTs gain deeper understanding of complex topics and concepts and are more likely to recall information and use it to solve problems outside the classroom (Lucey, 1995). Through ICT, students extend and deepen their knowledge, investigation, and inquiry according to their needs and interest when access to information is available on multiple levels (CEO Forum on Education and Technology, 2001). Information communication technology (ICT) has no doubt changed the face of teaching and learning globally.

Theoretically, Abe, T. O. & Adu, (2007) notes that education is a process, which seeks to change the behavior of a learner. Overall, behaviorist view education as the process of changing the behavioral pattern of people. Behavior in his sense refers to the way we change the learner, his or her thinking, his or her feelings and his other overt actions (Adedapo, 2007). Thus education is the process by which society deliberately transmits its cultural heritage through schools, colleges, universities and other institution (ASER, 2014). In other to achieve the above- mentioned purpose in education, information and communication technology (ICT) is an essential ingredient that could help bring these gains and benefits to the fore. Realistically, several researchers admitted that ICT have an impact in learning and teaching of science. Globally, the use of information and communication technologies (ICTs) is fast gaining prominence and becoming one of the most important elements defining the basic competencies of students.

Globally, many nations all over the world including U.S, China, Japan among others are taking the advantages inherent in ICT to impact on the educational sector. Though Uganda is also making efforts to join the ICT fray, these efforts appear to be ineffective. Computer laboratories are largely non-existent in many public schools across the country. And where they exist, they are nothing to cheer. Due to this general neglect and other factors, comprising corruption, outdated curriculum, ill-motivated teachers, materialism and academic laziness on the part of Students and Teachers, the nation has been reaping mass failure in public examinations. Arising from this, stakeholders are calling on government to provide basic facilities including ICT-driven teaching aids for the nation’s educational system (Asiabeka, 2010).

As part of the IT curriculum, learners are encouraged to regard computer as tools used in all aspect of their studies. In particular, they need to make use of the multimedia technologies to communicate ideas, describe projects and order information in their academic work. It also has been shown that if some secondary schools in Nebbi District. Much as ICT has developed in Uganda, most of the schools in rural areas don’t have access to ICT materials, both the students and the teachers do not utilize ICT materials hence poor performance in those areas as compared to the schools in urban areas of the country. This has called for the need to carry out a research on the main causes of underutilization of ICT and also get a way forward to increase the utilization of ICT in rural schools so as to provide professional development for multiple staff in an institution, enabling them to be more effective. Computers enables more effective conversations between the ICT community and the teaching-learning community in the schools; integrating ICT tools, techniques and processes needed to ensure successful school management and learning.

# **1.2 Statement of the Problem**

Uganda developed its initial ICT national policy in 2003. The policy framework document recognized that Uganda would need to embrace the goal of “lifelong education for all.” Objective 2 of the policy addresses literacy improvement and human resource capacity building with strategies that include Integrating ICT into mainstream educational curricula as well as other literacy programs to provide for equitable access for all students regardless of level. However, most of the secondary schools in rural areas have not been able to access those ICT , and the few who have access to those resources do not utilize them hence low standards in performance which in return has pushed most students to drop out of school. Teachers in rural schools also lack motivation making them reluctant to teach. In response to the problems, the study proposes to investigate the cause of underutilization of ICT and possibly increase its utilization in rural schools so as to improve the education environment and standards.

# **1.3 Purpose of the Study**

The study was about the utilization of information and communications technology and students performance in rural secondary schools in Nebbi District.

# **1.4 Objectives of the Study**

This study sought to achieve the following objectives:

1. To examine how the level of teacher’s knowledge in ICT influences students’ performance in selected rural secondary schools in Nebbi District
2. To establish how ICT technical support influences students’ performance in selected rural secondary schools in Nebbi District
3. To examine how ICT infrastructure influences students’ performance in selected rural secondary schools in Nebbi District

# **1.5 Research Questions**

The study was guided by the following research questions:

1. How does the level teachers knowledge in ICT influences students’ performance in selected rural secondary schools in Nebbi District?
2. How does ICT technical support influences students’ performance in selected rural secondary schools in Nebbi District?
3. How does ICT infrastructure influences students’ performance in selected rural secondary schools in Nebbi District?

# **1.6 Scope of the study**

**Content scope**: To ascertain ways of enhancing utilization of ICT in rural schools. The study sought to achieve the following objectives: to find out how ICT technical support influences the utilization of ICT in selected rural secondary schools in Nebbi District, to find out how the level of ICT teacher’s knowledge and skill influences the utilization of ICT in selected rural secondary schools in Nebbi District and to find out how ICT infrastructure influences the utilization of ICT in selected rural secondary schools in Nebbi District.

**Geographical scope**: The study concentrated on selected secondary schools in Nebbi District, Uganda where ICT is reported to be underutilized and Due to limited resources (e.g. time and finance), the researcher considered only three schools that is; Nam High School, Packwach Secondary School, Angal Secondary School, Erussi Secondary School and Sunrise Secondary School. The location of the district headquarters. Nebbi District is bordered by Arua District to the north, Amuru District to the northeast, Nwoya District to the east, Bulisa District to the southeast, the Democratic Republic of the Congo (DRC) to the south and Zombo District to the west. Nebbi, where the district headquarters are located approximately 77 kilometres (48 mi), by road, southeast of Arua, the largest town in the sub-region. The coordinates of the district are:02 27N, 31 15E (Latitude:2.4500; Longitude:31.2500).

**Time scope**: The study span for a period of one month. It began in Junes 1st 2018 and end in July 2018

# **1.7 Significance of the Study**

The findings of the study would help the stakeholders in education to understand the factors that affect the use of ICT in the education system and make relevant decisions. The Ministry of Education (MoE) would use the findings to formulate the appropriate ICT policies in line with the National ICT Policy (2006). The school administration would use the findings in making decisions on the type of ICT infrastructure to acquire as well as the technical support necessary. The curriculum developers would find the result of the study important in developing.

The findings of this study may be beneficial to the head teachers because it might help them in improving their knowledge in ICT and support the ICT teacher training programs. The head teachers may also become aware of the benefits of ICT in teaching and learning which may enhance the quality of education in rural secondary schools. The study findings will also be a source of information for students and teachers in their schools and the study recommendations will be useful to curriculum.

These study findings may also be used in identifying areas which urgently need to be addressed during the in-service courses for head teachers, deputy head teachers, head of departments as well as teachers which may assist in enhancing utilization of ICT in both teaching-learning process and in the entire School Management Systems (SMS).

# **CHAPTER TWO**

# **STUDY LITERATURE**

# **2.0 Introduction**

This chapter is made up of literature survey, the literature review and the conceptual frame work.

# **2.1 Literature survey**

The researcher exhaustively read about the Utilization of information and communications technology in rural secondary schools but little has been researched about the current study. Therefore, the study is using literature of other scholars in relation to this topic to find out the gap left which this study is aimed at and they include:

Diiro (2016) conducted a study to examine what is engineering students’ perception regarding the use of Information and Communication Technologies (ICT) in mathematics earning as well as investigating their opinion about how ICT is integrated to improve teaching and learning processes. The study was carried out in some of the selected secondary school in Namutumba District. The study used a descriptive research design. The study used a sample size of 100 respondents. The finding showed they are fully aware of importance of ICT in teaching and learning mathematics. Whilst, they were feeling comfortable and confident with technology, they do not have more experience of using technology in mathematics classes before. The findings supported the other studies, which indicated the potentials of ICT to facilitate students’ learning, improve teaching, and enhance institutional administration as established in the literature.

Namuhoya (2017) carried out a study to examine the utilization of Information and Communication Technology (ICT) resources on job effectiveness among library staff in the University of Kisubi. To achieve the purpose of this study, four hypotheses were formulated to guide the study. Ex-post facto research design was adopted for the study. A sample of two hundred and twenty five (225) respondents was randomly selected for the study. The selection was done through the stratified random sampling technique. The questionnaire was the main instruments used for data collection. The reliability estimate of the instruments was established through the test-retest reliability method. Pearson product moment correlation analysis was employed to test the hypotheses under study. The results of the analysis revealed that, staff use of internet, use of e-mail, use of PowerPoint and use of computer significantly related with library staff job effectiveness. Based on the findings, it was recommended that library managers should organized workshop to educate library staff on the use of ICT.

Isiife (2015) studied the impact of ICT on the academic performance of students of Kitende Secondary School. The study used closed and open ended questionnaires, Focus Group Discussions, Key informants as well as review of documents from various libraries and online resources to collect secondary data. Data of this study was drawn from ten organizations comprising 60 respondents using questionnaire, FGDs and interview methods. Data analysis was done quantitatively and qualitatively using Software Package for Statistical Science (SPSS) version 16.0. The study observed that, though Kitende Secondary School is making efforts to join the ICT fray, these efforts appear to be ineffective. Kitende Secondary School still experience a lag in its implementation due to general neglect and other factors, comprising corruption etc, and this continues to be the major challenge facing access to ICT-driven instructional aids facilities in most Kitende Secondary School. The study concludes that despite the roles ICT can play in education, Kitende Secondary School are yet to extensively adopt them for teaching and learning. Efforts geared towards integration of ICT into the school system have not had much impact.

The gap between the previous studies and the current study exists in terms of access of ICT technical support is limited because of inadequate technical training and fast evolution of ICTs which require regular in-service technical training. The study will also address the gap between the traditional teaching methods and use of print content and the modern methods using the ICTs and soft copies of curriculum materials. There is a need to develop original educational content, adapt existing content, and convert print-based content to digital media. This is not only technical but also time consuming for the teachers.

# **2.2 Literature review**

The problem of underutilization of ICT is not unique to Nebbi District but it has been studied by other models; the scholars have covered them in similar situations also were let to review some of the models/theories relevant to the situation in in the secondary schools in Nebbi District and they have used in similar situation elsewhere.

Interest in the use of ICT especially in secondary education is increasing significantly (Alampay, 2006). Therefore, as the teaching importance of ICT continue to rise among teachers involved in secondary education, understanding of the factors that encourage ICT use among the teachers become critical (Bank of Uganda, 2018). Alampay (2006) while commenting on differences in capabilities and opportunities to access and use of ICT by people affirmed that while access to ICT is a prerequisite to use, the capability approach says that individual differences, capabilities and choice play a role on whether an individual will make use of these ICT.

Scholars have theorized demographic factors as having the ability to determine the extent of use or non-use of ICT. Among the demographic factors that are often cited as having an influence on ICT use: gender; income; level of education, and age. Canoy, M. (2004) highlighted demographic factors such as income level, level of education, age, and gender as the key individual differences that determine the freedoms, capabilities and functioning’s that relate to ICT use.

Mohammad Y. (2006) affirmed the influence of age on the use of ICT by reporting that young teachers make use of ICT more than the old people. According to the study, young teachers within the age range of 21-40 years were found to be more capable of using the ICT than every other age group. One explanation for this is the fact that the ICT is a more recent development and that the young population would have had the benefit of being exposed to it in their schools. This was corroborated by Mohammad, Babawero,., Lokman, Yahaya, (2011) study in the Philippines that emphasised that the use of ICT is more pronounced among the younger generation.

According to Okon, (2010) ICT “is an electronic based system of information transmission, reception, processing and retrieval, which has drastically changed the way we think, the way we live and the environment in which we live”. It can be used to access global knowledge and communication with other people (Priscilla wambui, 2016). The use of information and communication technology (ICT) is becoming an integral part of Education in many parts of the globe. Uganda is not left behind as ICT gradually finds its ways to the Educational systems despite chronic limitations brought about by economic disadvantages. Fundamentally, education is a discipline like any other; it is a branch of human knowledge which is basically concerned with getting the young in the society prepared when they come of age.

The importance of ICT is quite evidence from the educational perspective. Though the chalkboard, textbooks, radio/television and film have been used for educational purpose over the years, none has quite impacted on the educational process like computer. While television and film impact only on the audio visual facilities of users, the computer is capable of activating the senses of sight, hearing and touch of the users. ICT has the capacity to provide higher interactive potential for users to develop their individual, intellectual and creative ability (Status Report, 2016).

Research conducted by Faloye, & Oparah, (2007), has shown that any secondary school which uses ICT tools to foster learning produces computer literates and potential wonderful researchers. He further poised that Information communication technology went a long way to prepare such secondary school students for the technological advancement tasks ahead, thereby making them adjust and acclimatize to any society of computing they find themselves. Also, computer has been made compulsory in our universities presently, and such student will not find the use of computer unfamiliar since he or she is used to it from JSS classes.

**Theoretical review**

The study is based on Roger’s theory of Diffusion of Innovations. The theory that seeks to explain how, why, and at what rate new ideas and technology spread through cultures. The original diffusion research was done as early as 1903 by the French sociologist Gabriel Tarde. Diffusion research centers on the conditions which increase or decrease the likelihood that a new idea, product, or practice is adopted by members of a given culture or a social system. This was extended by Rogers (2013) hence at present is commonly known as Roger’s theory of diffusion of innovation. Innovation diffusion research has attempted to explain the variables that influence how and why users adopt a new information medium, such as the Internet. The diffusion of information technology and telecommunications hardware, software, and services turns out to be a powerful driver of growth, having an impact on worker productivity (Jensen, 2002). He observed that, instead of focusing on persuading individuals to change, the theory sees change as being primarily about the evolution or “reinvention” of products and behaviors so they become better fits for the needs of individuals and groups.

This theory has four elements: (i) Innovation-is an idea, practice, or object that is perceived as new by an individual. (ii) A communication channel- is the means by which messages get from one individual to another. (iii)Time- is the length of time required to pass through the innovation-decision process. Rate of adoption is the relative speed with which an innovation is adopted by members of a social system. (iv) Social system- is defined as a set of interrelated units that are engaged in joint problem solving to accomplish a common goal. Each member of the social system faces his/her own innovation-decision that follows a 5-step process; Knowledge – person becomes aware of an innovation and has some idea of how it functions, Persuasion – person forms a favorable or unfavorable attitude toward the innovation, Decision – person engages in activities that lead to a choice to adopt or reject the innovation, Implementation – person puts an innovation into use, Confirmation – person evaluates the results of an innovation decision already made (Jones, 2010). This compels the user to continue adoption or later reject the technology.

The adoption or rejection of innovations is characterized by; the relative advantage, compatibility, simplicity, trial-ability and observability. So the understanding and utilizing diffusion networks can aid strategy aimed at quickly inducing system-wide change . Manduku, J, Kosgey, A. & Sang, 2012). Given that the education stakeholders are aware of the ICT innovations across the world, the rate of adoption is still very low and especially in the developing states. Rogers’ diffusion of innovations theory is the most appropriate for investigating the adoption of technology in higher education and educational environments.

According to Miciano, (2005), education is a process, which seeks to change the behavior of a learner. Overall, behaviorist view education as the process of changing the behavioral pattern of people. Behavior in his sense refers to the way we change the learner, his or her thinking, his or her feelings and his other overt actions. Thus education is the process by which society deliberately transmits its cultural heritage through schools, colleges, universities and other institution (Gbemanja 2014). In other to achieve the above- mentioned purpose in education, information and communication technology (ICT) is an essential ingredient that could help bring these gains and benefits to the fore. Realistically, several researchers admitted that ICT have an impact in learning and teaching of science. Globally, the use of information and communication technologies (ICTs) is fast gaining prominence and becoming one of the most important elements defining the basic competencies of students.

There has been a high level of investment in information and communications technology (ICT) in education over a prolonged period of time throughout the ‘developed world’ (Twining 2002). Interest in ICT in education in England stretches back to at least the mid-1960s, when the original National Council for Educational Technology was first formed (Mohammad, Babawero, Lokman, Yahaya, 2011). At this time the main focus was often on further and higher education rather than on schools. Later there was expansion to the schools starting with secondary then primary schools through government funding.

United States of America (USA) also has a long history about technological innovation revolutionizing education in the US since the mid-1800s, starting with the introduction of text books and moving through technologies such as film, radio, television and computers (Okon, 2010). The use of computers in school level education in the US started in the sixties. The first national educational technology plan, Getting America’s Students Ready for the 21st Century: Meeting the Technology Literacy Challenge, was developed including four key goals for educational technology: giving all teachers in the nation the training and support they needed to help students learn using computers; all teachers and students were to have modern multimedia computers in their classrooms; every classroom to be connected to the information superhighway and making effective software and on-line learning resources an integral part of every school’s curriculum. Advanced countries with integrated ICT in the education system also include;

Australia, South Korea, Demark, Finland, Belgium Sweden, Singapore among others. Some typical characteristics of these countries are as follows: almost all classrooms are equipped with computers and other ICT tools; the student/computer ratio is high; Internet access is available in all schools; curriculum revision ensures nationwide ICT integration; delivery of education is increasingly online (Priscilla wambui, 2016).

# **2.2.1 ICT knowledge, skills and students performance in rural secondary schools**

Teacher professional development is a crucial component of the educational improvement (Tin 201). Thus the teacher pre-service and in-service training in ICT is a must for proper integration of ICT in the education system in any country. Teachers need to be prepared to empower students with the advantages technology can bring. More to this the teacher is responsible for establishing the classroom environment and preparing the learning opportunities that facilitate students’ use of technology to learn, and communicate (Aribamikan, 2007). Research finding have revealed that most teacher training courses focused on; basic computer operations rather than advanced computer skills and subject-specific pedagogical applications.

Use of new technologies requires new teacher roles, new pedagogies, and new approaches to teaching and learning. Before teachers have developed the ability to achieve all of the above, they must have a comfortable level of ICT skills. Unless teachers are functioning at a comfortable level of ICT skills and knowledge, they will be unable to use ICT as a primary tool for teaching and learning across the curriculum. Teachers need to be competent and confident users of hardware and software, to understand how to organize the classroom to structure learning tasks so that IT resources become a necessary and integral part of learning rather than an add-on technical aid” (ibid.). Teaching becomes a process to initiate, facilitate, and sustain students’ self-learning and self-actualization; therefore, teachers should play a role as a facilitator who supports students’ learning (Lubis, Embi, Yunus, &Wekke, 2009)

The focus of teaching is to arouse students’ curiosity and motivation to think, act, and learn. The change from the traditional chalk-n-talk pedagogy to new modes of pedagogy within secondary schools might introduce much uncertainty which tend to induce teachers’ anxiety and cause them to feel frustrated in work. Hence many teachers have been found to offer stiff resistance to change involving technology intervention, technology integration and technology incorporation (Lucey, 1995).

Preparing students for real life in our technological and diverse world requires that teachers embed ICT in significant learning experiences (Abe & Adu 2007) Research findings indicate that the use of ICTs alone does not change traditional teaching practices and that ICTs need to be supported by innovative pedagogic techniques to enhance students’ self-learning and active interaction. To reduce the anxieties associated to the use of new technologies by the teachers, there has to be a reliable professional support. The technical experts should be employed to do things the teachers might struggle to do. There is a serious need for technical support staff with high level expertise in the maintenance aspects of ICTs.

Because of poor maintenance and insufficient skills to diagnose system problems and swap parts, there are many out-of-commission machines which could easily be re-activated and used. The problem of technical expertise is two faceted. In the first place, there are not enough people qualifying or attaining ICT specialist skills at the speed at which the technologies are adopted. Secondly, the problem of brain-drain whereby the few experts opt for better paying jobs overseas (Manduku, Kosgey & Sang 2012).

Having technical staff available also allow them to provide assistance to students in using software applications, when they are not engaged in servicing the technology. Whether provided by in-school staff or external service providers, or both, technical support specialists are essential to the continued viability of ICT use in a given school. Without on-site technical support, much time and money may be lost due to technical break downs. In the Philippines, for example, one of the major obstacles to optimizing computer use in high schools has been the lack of timely technical support. In some extreme cases involving schools in remote areas, disabled computers take months to be repaired since no technician is available in the immediate vicinity and so the computers have to be sent to the nearest city hundreds of kilometers away.

According to Miciano, (2005) lack of trained teachers is one of the major causes for the underutilization of ICT in rural secondary schools. He asserts that there is dearth of dynamic teachers formally trained in ICT. Moreover, there is hardly any quality training imparted on a regular basis to these teachers involved in ICT education. Asserted that once the teachers have finished their initial training they do not expect to need much further training therefore do not take the initiative to improve their practice and learn new skills. . Adedapo, (2007) in a literature review of the shift from novice to expert teachers, found that "many teachers are perfectly well satisfied with their practices and are unlikely to question prevailing educational processes. According to ASER (2014) Poor ICT infrastructure is one reason for the teachers not having obtained appropriate training to enable them to use ICT in pedagogy unlike their counterparts in developed world who are using ICT to conduct collaborative or interactive teaching learning suited to digital environment. Asiabeka (2010) in his study ‘Factors affecting the adoption and use of computer technology in schools’ stated that computer training should not be limited to teachers who teach computer but all teachers should train for computer and its usage. The need for computer training is explained by the fact that most of the presently recruited teachers received little or no training in their formal education concerning use of computers in teaching. It could also be a reflection of the need to update teachers’ knowledge in the world of fast moving technology of communication.

# **2.2.2 Technical support and students performance in rural secondary schools**

Faloye, & Oparah, (2007) defines administrative support as an act of giving out or applying something in an Organization. The adoption of ICTs to be effective and sustainable, administrators themselves must be competent in the use of the technology, and they must have a broad understanding of the technical, pedagogical, administrative, financial, and social dimensions of ICTs in education. For any school to adapt to new innovations there must be a back up from administrators. Jensen, (2002) found lack of administrative support as a to maximum utilization of it resources in the Ugandan education system. Jones, (2010) established lack of administrative, technical and financial support as problems that prevent teachers from using computers in their teaching.

According to (Mohammad (2006). Teachers who receive adequate ICT support from the administrators are more likely to use ICTs in their teaching practice while those who don’t receive ICT support from the higher authorities in school are less enthusiastic in using computer or do not integrate technology at all. Mohammad Y. (2006) in his study, assessment of teacher training in ICT in selected universities in Uganda, reported that ICT like most innovations will not work without administrative support. The study suggested that continuous training should provide the support from which teachers can continue to keep and update with ICT and its application to subject pedagogy, in order to enhance their teaching skills.

For successful integration of ICT in teaching and learning there has to be proper planning at the school level. This is because the school is expected to provide the necessary ICT for the teachers and the students to use. An ICT integration plan provides a detailed blueprint of the steps and methods needed to translate the school ICT vision into reality (Afshari 2009). A plan is a guide to action not a substitute for it; the existence of a written ICT plan and strategy does not guarantee the comprehensive use of ICT in schools, nor does the absence of an ICT plan necessarily equate to the lack of ICT integration in a given school.

# **2.2.3 ICT infrastructure and students performance in rural secondary schools**

Schools have to be equipped with the necessary ICT infrastructure in order to provide the next generations with the needed tools and resources for access and use and to attain the expected skills (Canoy, 2004). Schools are equipped with different kinds of technological infrastructure and electronic resources available; hardware, software and network infrastructure must be available to integrate ICT in education (Afshari 2016). He further argues that limited access to computers is a barrier to effectively using computers in classes.

Efficient and effective use of technology depends on the availability of hardware and software and the equity of access to resources by teachers, students an administrative staff. Use of ICT in teaching and learning must be accompanied by a corresponding change in curriculum. Tin (2002) explains that proper integration of ICT may require substantial pedagogical component in the IT curriculum of any teacher education program. He cautions that teaching ICT as an isolated discipline is not an effective way to encourage the use of ICT in learning. Clearly, the curriculum must be adapted or re-designed so that it is ready for ICT integration.

According to Adeyemi, T.O. (2011) Uganda faces the same challenges as most developing economies that affect the use of ICT in rural secondary school, he continues to stress that these may include poorly developed ICT infrastructure, high bandwidth costs, an unreliable supply of electricity, and a general lack of resources to meet a broad spectrum of needs. Adegun, (2002) in the study, diffusion of information communication technology in selected Ghanaian secondary schools reveals that one fundamental problem facing ICT implementation in schools is high cost price of computers and lack of computer infrastructure. According Lawsent, I., & Vincent, I. (1995), most ICT are not adequately available in schools. This therefore implies that, even though teachers are adequately trained and willing to impart the knowledge they have to students, they are blocked from doing so by this lack of technological equipment and laboratory facilities. The same research revealed a low extent utilization of ICT and related technologies in rural secondary schools. The research then recommended provision of funds for procurement and maintenance of ICT , ensuring existence of functional computer laboratories, consistent power supplies in schools and provision of in- house training for teachers so that they keep in touch with the developments in ICT and related technologies. Kolade, & Omodara, (2007), in their research paper titled (Availability and utilization of ICT tools for effective instructional delivery in tertiary institutions in Cross river state, Uganda), revealed that the availability of ICT tools for effective instructional delivery is relatively low, except for laptops and this affects the quality of students and he argued that ICT should be installed in schools to facilitate proper training of students. According to (education technology) the right to continuous power and broadband connectivity is one of the recognized worldwide challenge that is affecting the integration of ICT in rural secondary schools and their study continue to suggest that the government should put it into consideration to install recourses in place that facilitates the use of ICT in rural areas

# **2.3 Conclusion**

According to Ibec (2014), the use of information and communication technology (ICT) is becoming an integral part of Education in many parts of the globe. Uganda is not left behind as ICT gradually finds its ways to the Educational systems despite chronic limitations brought about by economic disadvantages. Fundamentally, education is a discipline like any other; it is a branch of human knowledge which is basically concerned with getting the young in the society prepared when they come of age. In Uganda, science teaching at that various level still retains the old conservative approach and if this situation would change, there is need for a diagnostic study.

# **2.4 Conceptual Framework**

**Independent variable Dependent variable**

**Information Communication Technology**

* ICT teacher’s skills
* ICT technical support
* ICT infrastructure
* Fund allocation
* Location of the school
* Organizational structure
* Organization policy
* Ownership status

**Students’ Performance**

* Improved service delivery
* Cost reduction
* efficiency and effectiveness
* Good records management
* Technology integration
* Understanding and critical thinking
* Information exchange

**Intervening variables**

**Intervening variable**

Figure 12.1 Conceptual framework

Figure 2.1 shows a conceptual framework that gives the link between the utilization of information and communications technology and students’ performance in the rural secondary schools in Nebbi District. According to the conceptual frame work, the dependent variable of the study include the ICT teacher’s knowledge and skills, ICT technical support and ICT infrastructure. On the other hand, the independent variable of the study include the improved service delivery, cost reduction, efficiency and effectiveness, good records management, technology integration, understanding and critical thinking, information exchange and enhanced learning and decision-making. The study considered the intervening variable to be the fund allocation, location of the school, organizational structure, org anization policy, ownership status. It is therefore noted that whenever there is effective utilization of the above ICT , there exists improved service delivery, cost reduction, efficiency and effectiveness, good records management, technology integration, understanding and critical thinking among others.

# **CHAPTER THREE**

# **RESEARCH METHODOLOGY**

# **3.0 Introduction**

This chapter describes the research methodology that was used to guide the study and this includes: the research design, target population, sample and sampling design, data collection methods and instruments, data processing, data analysis procedures and limitations of the study.

# **3.1 Research design**

A research design is the set of methods and procedures used in collecting and analyzing measures of the variables specified in the problem research (Creswell, 2014). A research design typically included how data is to be collected, what instruments were employed, how the instruments were used and the means for analyzing data collected. The research design composed of the research approach, strategy and methods. The research design consists of: research approach, research strategy, research duration and research classifications.

# **3.1.1 Research Approach**

The research approach can either be positivism approach, phenomenological approach or combination approach. The researcher used a combination approach using both quantitative and qualitative information.

# **3.1.2 Research Strategy**

A research strategy is a plan of how to answer the research questions. The researcher used a case study strategy which involved collecting data from respondents to find out the utilization of information and communications technology in rural secondary schools in Nebbi district.

# **3.1.3 Research Duration**

The research duration can either be cross sectional, which is a study of particular phenomena at a partial time or longitudinal, which is studying changes and developments over a long period of time. The researcher used a cross sectional research design for this study. Therefore, data was collected from 2015-2018.

# **3.1.4 Research Classification**

The research may be classified according the purpose such as: exploratory, descriptive, explanatory, and multi method. The researcher used the explanatory approach to establish the relationship between the research variables.

# **3.2. Study Area**

The study was carried out in Nebbi district which is located in northern Uganda. Uganda is located in eastern Africa, west of Kenya, south of South Sudan, east of the Democratic Republic of Congo, and north of Rwanda and Tanzania. It is in the heart of the Great Lakes region, and is surrounded by three of them, Lake Edward, Lake Albert, and Lake Victoria.

# **3.3. Study Population**

The study targeted 340 population from the five selected schools. These included; teaching staffs in the field of ICT, students and the school administrators in selected schools from Nebbi district.

# **3.4. Sampling Procedures**

For key informants, the study used non probability sampling procedure because there was no easy basis for determining the universe from which the desired sample could proportionately be selected. According to Kothari (2004: 55), under non probability sampling, the researcher purposively chooses particular units of the universe for constituting a sample on the basis that the small sample that he or she selects out of the huge one is typical of the whole. The study therefore, used purposive sampling because it is targeting respondents with knowledge of issues of stakeholder relations in the counter terrorism and human security issues. These included security officials, government officials from the ministries mentioned above and regional officials. Also the study used random sampling from a list that was provided.

# **3.5. Sample size**

This was conducted to a targeted teaching staff of about 70, administrators of about 30 and about 80 students in secondary schools which made a total of about one hundred and eighty people (180). Fifty expert opinions were supplemented with a reasonable number of primary and secondary documentary sources which was deemed enough to draw reliable conclusions for the study. Out of 340 respondents, a sample of 181 was selected and approached by use of sample random sampling methods and interviewed at different levels. The sample size was determined scientifically using the table for sample size determination developed by Krejcie and Morgan (1970). According to Krejcie and Morgan‘s table for any given population, they suggest a suitable sample to be considered for the study. The targeted sample for each category is as shown bellow.

Table 3.1: Sampling frame

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category of the respondents** | | **Target Population** | **Sample size** | **Sampling methods** |
| Students | Nam High School | 45 | 25 | Random sampling |
| Packwach SS | 40 | 25 | Random sampling |
| Angal SS | 55 | 25 | Random sampling |
| Erussi SS | 50 | 25 | Random sampling |
| Sunrise SS | 45 | 25 | Random sampling |
| Teachers | Nam High School | 20 | 10 | Random sampling |
| Packwach SS | 30 | 10 | Random sampling |
| Angal SS | 15 | 10 | Random sampling |
| Erussi SS | 20 | 10 | Random sampling |
| Sunrise SS | 20 | 15 | Random sampling |
| **Total** | | **340** | **181** | **100** |

# **Source: Field Data**

# **3.6. Sampling Techniques**

From each of the groups mentioned in the study population above, at least one key informant were purposively selected. This is because, by the nature of their responsibilities and mandates, they had the information the study was interested in.

# **3.7. Sources of Data**

The data was collected from both primary and secondary sources.

# **3.7.1. Primary data**

Primary data is the information that is purposely collected by the researcher for this particular study. This data was collected through questionnaires and interview guide in its original form.

# **3.7.2 Secondary data**

Secondary data is data that refer to the study. This included published and unpublished literature including textbooks material, research journals and magazines article.

# **3.8. Data Collection Methods**

The study employed survey and interview methods in collecting data needed

**3.8.1 Survey method**

Convergent, (2002) says that survey method is explained as “questioning individuals on a topic or topics and then describing their responses. Survey method was used in both, [quantitative](https://research-methodology.net/research-methods/quantitative-research/), as well as, [qualitative](https://research-methodology.net/research-methods/qualitative-research/) studies. According to Saunders (2007), survey method is used for explanatory research which enables the study to examine and explain relationships between variables in particular Utilization of ICT and students performance in rural secondary schools .

**3.8.2 Interviews**

According to (Kothari, 2009) interview is the verbal conversation between two people with the objective of collecting relevant information for the purpose of research. The interviews were used widely to supplement and extend the knowledge about individual (s) thoughts, feelings and behaviours. Interviewing was done with the help of an interview guide. This was when the researcher physically communicated with the respondents with a purpose of obtaining information for this survey. This was used to capture data from the respondents because much detailed information were needed from this category of respondents. While interviewing, probing was used in cases where respondents gave inadequate answers or where confused meanings was given to the question. Interviews were also be held with those respondents identified purposely to provide more explanations to the topic under study and those who were too busy to fill questionnaire.

# **3.9. Data Collection Instruments**

The study was guided by self-administered questionnaires, interview guide, an observation check list and a documentary review guide as described below:

# **3.9.1 Self -Administered Questionnaires**

The study used two kinds of SAQs that was directed towards teaching staff and the students. The study used this instrument because it helps cover a large number of respondents in a relatively short time, it is easy to guarantee the respondents’ confidentiality and can generate reliable data as respondents could answer questions in their own mood without being affected by the researcher’s presence (Mbaga, 1990).

# **3.9.2 Interview guide.**

For administrators, an interview guide was used to collect data from them,

## 3.10. Reliability and validity of the research instruments

## 3.10.1 Validity

Validity is concerned with ensuring that the tools used in a study are well designed to ensure that they actually measure what they are meant to. The researcher employed the Content Validity Index (CVI) approach to establishing validity of the draft interview guide and the draft questionnaire where both tools was distributed to 7 subject matter specialists to make an assessment on each question therein and declare their individual stand on whether each question individually merits to be either maintained on the tools, improved upon or all together dropped. The CVI formula is as follows. CVI is the ratio of Number of items considered valid on the draft to number of items on the draft instruments. As a rule of research methodology, the researcher aimed at a CVI of at least 0.7 in accordance with Amin, (2005).

## 3.10.2 Reliability

Reliability concerns the ability of different researchers to make the same observations of a given phenomenon if and when the observation is conducted using the same method(s) and procedure(s) (Brinberg, 1985). In this study, reliability was ensured through standardizing data collection techniques and protocols and also documenting time, day and place observations are made. First the researcher used the Test-retest technique where the draft questionnaire was applied on ten respondents and then applied on the same ten respondents with a space of fifteen days to see if they were able to give similar responses and thus test the reliability of the tool. The researcher also used the Statistical Package for Social Scientists (SPSS) to compute the Cronbach Alpha Coefficient. As a research methodology rule, the researcher ensured a Cronbach Alpha Coefficient of at least 0.7 is realized. According to Cronbach LJ (1951).

## 3.11 Procedure for data collection

The researcher collected primary data by administering questionnaires. The questionnaires were distributed to the respondents and duration of two weeks were given to the respondents to fill the questionnaire. The research also made follow ups to ensure high response rate is recorded. To effectively carry out interviews, the researcher booked appointments and carry out face to face interviews with the selected key informants. The interview was carried out with the help of an interview guide and where they conflict, the researcher sought special permission from the management of the Authority.

## 3.11 Ethical Considerations

The researcher respected the dignity of the respondents and treated the information given by them with utmost confidentiality. The researcher was keen not to ask provocative questions to the respondents especially questions concerning private life and even those, which degrade some body’s dignity. The researcher began by establishing the relationship with the outsourcing and organizational performance. The questionnaires were then be distributed and collected after one week from the point of collection of the questionnaire indicated to the respondents

# **3.12. Data Analysis**

After interview completion, content analysis was undertaken to identify the themes and patterns relevant to the study objectives. Analyzing interview guide material wasdone by transcribing the data and grouping all the responses into categories related to the sub topics mentioned above. The whole process of analyzing the materials both from empirical and secondary sources required the researcher to make a sound judgment between what he felt the message the respondents wanted to give and what the study objectives are. Coded and Edited data was analyzed using SPSS. Presentation, analysis and discussion was structured according to the key themes based on both the research questions, objectives and conceptual framework.

# **3.13. Limitations of the Study**

This study is predicted to have a limited time and other resource factors. First, the researcher has a time line to meet as per the university academic timetable.

# **CHAPTER FOUR**

# **BACKGROUND INFORMATION**

# **4.0 Introduction**

# This chapter presents the background information focused on gender, number of years in the school, age group, and departments in which the respondents work. Details of the findings are presented from tables 4.1-4.4

Table 4.1: Gender

|  |  |  |  |
| --- | --- | --- | --- |
| **Responses** | | **Frequency** | **Percentage** |
|  | Male | 97 | 54 |
|  | Female | 83 | 46 |
|  | **Total** | **180** | **100.0** |

**Source: Primary Data (2019)**

From the table 4.1, the study revealed that gender of the respondents, where 54% of them were male and 46% were female, which as evidenced by the researcher was due to the fact that there were more male willing to take part in the study and also the most active members than the female at the circle.

Table 4.2: Level of education

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | O-level | 33 | 18.3 |
| A- level | 30 | 16.7 |
| Diploma | 84 | 46.7 |
| Degree | 24 | 13.3 |
| Masters | 9 | 5.0 |
| **Total** | **180** | **100.0** |

**Source: Primary Data (2019)**

Table 4.2 established the education level of the respondents and the responses revealed that; 46.7% of the respondents had attained diploma as their highest level of education, 18.3% were O-level, 16.7% A-level and 13.3% were degree holders respectively. This implies that the respondents could interpret the questionnaire effectively, hence providing relevant information needed by the study.

Table 4.3 Marital status

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Married | 49 | 27 |
| Single | 131 | 73 |
| **Total** | **180** | **100.0** |

**Source: Primary Data**

Table 4.3 indicates that single of data was obtained from married people. This constituted a proportion of 73% of the total respondents. 427% of the respondents were single. Therefore despite of the level of divergences in the responses from the respondents, the study concludes that majority of respondents were single.

Table 4.4: Age group

|  |  |  |  |
| --- | --- | --- | --- |
| **Responses** | | **Frequency** | **Percentage** |
|  | 15-29 years | 76 | 42 |
|  | 30-39 years | 49 | 27 |
|  | 40-49 years | 41 | 23 |
|  | 50+ years | 14 | 08 |
|  | **Total** | **180** | **100** |

**Source: Primary Data (2019)**

The table 4.4 presents the age groups of the respondents, where 42% were between 20-29 years, 27% were between 30-39 years, 23% were between 40-49 years and 08% were 50 and above years. The study concludes that there were respondents from all the age groups meaning the hotel doesn’t have age discrimination with regard to age selection.

# **4.2 Analysis of response rate**

The study targeted a sample of 181 respondents. A total of 110 questionnaires were printed and distributed to the respondents. The response rate was good; 180 questionnaires were filled, 1was not filled.

Presented in the table below is the response rate of the study.

Table 4.1: Response rate of respondents

|  |  |  |
| --- | --- | --- |
|  | **Frequency** | **Percentage (%)** |
| Total number of questionnaires distributed | 181 | 100 |
| Total number of questionnaires returned | 180 | 99.4 |

**Source; Primary data, 2019**

As seen in Table 4.1, out of the 181 questionnaires distributed, 180 were returned giving a response rate of 99.4%. This response rate was deemed to be sufficient and representative for the study population because Mugenda and Mugenda (2003) asserted that a response rate of 50% and above is adequate for analysis and reporting.

# **CHAPTER FIVE**

# **ANALYSIS OF THE STUDY IN RELATION TO ICT TEACHERS’ SKILLS AND PERFORMANCE OF SECONDARY SCHOOLS**

# **5.0 Introduction**

This chapter presents the analysis and interpretation of results about the ICT teachers’ skills and performance of secondary schools. The findings are presented in Tables 5.1-5.10.

Table 5.1: I think that ICT supported teaching makes learning more effective

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Strongly Disagree | 11 | 6 |
| Disagree | 25 | 14 |
| Not Sure | 14 | 7.5 |
| Agree | 72 | 40 |
| Strongly Agree | 59 | 32.5 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 5.1, majority of the respondents 72.5% generally agreed that the teachers in secondary schools in Nebbi District reported that ICT supported teaching makes learning more effective. However, 20% of the total respondents disagreed and 7.5% were not sure. This therefore means that ICT supported teaching makes learning more effective since majority of the respondents agreed.

Table 5.2: The use of ICT helps teachers to improve teaching with more updated materials

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Strongly Disagree | 18 | 10.0 |
| Disagree | 32 | 17.5 |
| Not Sure | 14 | 7.5 |
| Agree | 52 | 28.7 |
| Strongly Agree | 63 | 35.0 |
| Total | 178 | 98.8 |
| Missing | System | 2 | 1.3 |
| **Total** | | **180** | **100.0** |

Source: primary data (2019)

Table 5.2indicates that, majority of the respondents 63.7% generally agreed that the use of ICT helps teachers to improve teaching with more updated materials. However, 27.5% of the total respondents disagreed and 7.5% were not sure. This therefore means that that the use of ICT helps teachers to improve teaching with more updated materials since majority of the respondents agreed.

Table 5.3: I think the use of ICT improves the quality of teaching

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Strongly Disagree | 15 | 8.3 |
| Disagree | 19 | 10.3 |
| Not Sure | 5 | 3 |
| Agree | 72 | 39.8 |
| Strongly Agree | 69 | 38.6 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 5.3, majority of the respondents 78.4% generally agreed that the use of ICT improves the quality of teaching. However, 18.6% of the total respondents disagreed and 5% were not sure. This therefore means that ICT teachers’ skills improve the quality of teaching since majority of the respondents agreed.

Table 5.4: I think the use of ICT helps to prepare teaching resources and materials

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Strongly Disagree | 11 | 6 |
| Disagree | 32 | 17.5 |
| Not Sure | 4 | 2.3 |
| Agree | 111 | 61.7 |
| Strongly Agree | 23 | 12.5 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 5.4, majority of the respondents 74.2% generally agreed that the use of ICT helps to prepare teaching resources and materials. However, 23.5% of the total respondents disagreed and 1.3% were not sure. This therefore means that the use of ICT helps to prepare teaching resources and materials since majority of the respondents agreed.

Table 5.5: I think the use of ICT helps to prepare teaching resources and materials

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Strongly Disagree | 5 | 2.5 |
| Disagree | 9 | 5 |
| Agree | 104 | 57.5 |
| Strongly Agree | 63 | 35 |
| **Total** | **180** | **100** |

Source: primary data (2019)

Analysis in the Table 5.5indicates that, majority of the respondents 92.5% generally agreed that the use of ICT helps to prepare teaching resources and materials. However, 7.5% of the total respondents disagreed. This therefore means that the use of ICT helps to prepare teaching resources and materials since majority of the respondents agreed.

Table 5.6: The use of ICT enables the students’ to be more active and engaging in the lesson

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Strongly Disagree | 4 | 2 |
| Disagree | 7 | 4 |
| Agree | 54 | 30 |
| Strongly Agree | 115 | 64 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 5.6, majority of the respondents 94% generally agreed that the use of ICT enables the students’ to be more active and engaging in the lesson. However, 6% of the total respondents disagreed. This therefore means that use of ICT enables the students’ to be more active and engaging in the lesson since majority of the respondents agreed.

Table 5.7: I have more time to cater to students’ need if ICT is used in teaching

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Disagree | 14 | 7.5 |
| Not Sure | 16 | 8.8 |
| Agree | 101 | 56.3 |
| Strongly Agree | 49 | 27.4 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 5.9, majority of the respondents 83.8% generally agreed that the teachers have more time to cater to students’ need while ICT is used in teaching. However, 7.5% of the total respondents disagreed and 8.8% were not sure. This therefore means that the teachers have more time to cater to students’ need while ICT is used in teaching since majority of the respondents agreed.

Table 5.8: I can’t have an effective teaching without the use of ICT

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Disagree | 27 | 15 |
| Not Sure | 41 | 22.5 |
| Agree | 63 | 35 |
| Strongly Agree | 50 | 27.5 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 5.10, majority of the respondents 62.5% generally agreed that teachers can’t still have an effective teaching without the use of ICT. However, 15% of the total respondents disagreed and 22.5% were not sure. This therefore means that teachers can’t still have an effective teaching without the use of ICT since majority of the respondents agreed.

The interview revealed that,

*“teachers’ professional skills are a key factor to successful integration of computers into classroom teaching”.*

*“Professional development and the continuing support of good practice are among the greatest determinants of successful ICT integration”.*

*“Teachers may adopt and integrate ICT into their teaching when training programs concentrate on subject matter, values and the technology”.*

*“teachers ‘understanding of content knowledge and how to apply technology to support students’ learning and attainment are joined to their increase in knowledge level, confidence and attitudes towards technology”.*

# **CHAPTER SIX**

# **ANALYSIS OF THE STUDY IN RELATION TO TECHNOLOGICAL SUPPORT AND PERFORMANCE OF SECONDARY SCHOOLS**

# **6.0 Introduction**

This chapter presents the analysis and interpretation of results about the effects of technological Support on utilization of ICT in education. The findings are presented in tables 6.1-6.11.

Table 6.1: The ICT methods used in the school addresses the current needs of the organization

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Strongly Disagree | 16 | 8.8 |
| Disagree | 23 | 12.5 |
| Not Sure | 59 | 32.5 |
| Agree | 34 | 18.8 |
| Strongly Agree | 49 | 27.4 |
| **Total** | **180** | **100** |

Source: primary data (2019)

Results in table 6.1 indicates that, majority of the respondents 46.2% generally agreed that the ICT methods used in the school addresses the current needs of the organization. However, 21.3% disagreed and 32.5% were not sure. This therefore means that, the ICT methods used in the school addresses the current needs of the organization since majority of the respondents agreed.

**Table** **6.2: ICT allows students’ to be more creative and imaginative**

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Disagree | 18 | 10 |
| Not Sure | 14 | 7.5 |
| Agree | 59 | 32.5 |
| Strongly Agree | 90 | 50 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 6.2, majority of the respondents 72.5% generally agreed that ICT allows students’ to be more creative and imaginative. However, 20% disagreed and 7.5% were not sure. This therefore means that, ICT allows students’ to be more creative and imaginative since majority of the respondents agreed.

Table 6.3: The use of ICT helps students to find related knowledge and information for learning

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Not Sure | 14 | 7.5 |
| Agree | 108 | 60 |
| Strongly Agree | 59 | 32.5 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 6.3, majority of the respondents 92.5% generally agreed that the use of ICT helps students to find related knowledge and information for learning. However, 7.5% were not sure. This therefore means that, the use of ICT helps students to find related knowledge and information for learning since majority of the respondents agreed.

Table 6.4: The use of ICT encourages students to communicate more with their classmates

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Strongly Disagree | 5 | 2.5 |
| Disagree | 7 | 3.8 |
| Not Sure | 7 | 3.8 |
| Agree | 116 | 64.5 |
| Strongly Agree | 46 | 25.4 |
| **Total** | **180** | **100** |

Source: primary data (2019)

Results in table 6.4, majority of the respondents 90% generally agreed that the use of ICT encourages students to communicate more with their classmates. However, 6.3% disagreed and 3.8% were not sure. This therefore means that, the use of ICT encourages students to communicate more with their classmates since majority of the respondents agreed.

Table 6.5: The use of ICT increases students’ confidence to participate actively in the class

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Disagree | 28 | 15.5 |
| Not Sure | 37 | 20.7 |
| Agree | 83 | 46.3 |
| Strongly Agree | 32 | 17.5 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 6.5, majority of the respondents 63.8% generally agreed that the use of ICT increases students’ confidence to participate actively in the class. However, 15.5% disagreed and 20.7% were not sure. This therefore means that, the use of ICT increases students’ confidence to participate actively in the class since majority of the respondents agreed.

Table 6.6: The use of ICT enables students’ to express their ideas and thoughts better

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Disagree | 56 | 31.1 |
| Not Sure | 70 | 38.8 |
| Agree | 7 | 3.8 |
| Strongly Agree | 47 | 26.3 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 6.6, majority of the respondents 30.1% generally agreed that the use of ICT enables students’ to express their ideas and thoughts better. However, 31.3% disagreed and 38.7% were not sure. This therefore means that, the use of ICT enables students’ to express their ideas and thoughts better since majority of the respondents agreed.

Table 6.7: The use of ICT promotes active and engaging lesson for students’ best learning experience

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Strongly Disagree | 20 | 11.3 |
| Disagree | 77 | 42.5 |
| Not Sure | 11 | 6.3 |
| Agree | 32 | 17.5 |
| Strongly Agree | 40 | 22.4 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 6.7, majority of the respondents 30.1% generally agreed that the use of ICT promotes active and engaging lesson for students’ best learning experience. However, 31.3% disagreed and 38.7% were not sure. This therefore means that, the use of ICT promotes active and engaging lesson for students’ best learning experience since majority of the respondents agreed.

Through the interview with the key informants, it was noted that,

*It is crucial for all secondary schools in Uganda to provide the schools with technical support with regard to repair and maintenance for the continued use of ICT in schools. However, currently, there are no technical support for teachers, this has continuously frustrated many teachers hence demotivation of the teachers that resulting in poor per4formence of the schools.*

# **CHAPTER SEVEN**

# **ANALYSIS OF THE STUDY IN RELATION TO THE EFFECTS OFICT INFRASTRUCTURE ON UTILIZATION OF ICT IN EDUCATION**

# **7.0 Introduction**

This chapter presents the analysis and interpretation of results about the effects ofICT infrastructure on utilization of ICT in education. The findings are presented in tables

Table 7.1: Schools is equipped with different kinds of hardware, software and network infrastructure

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Strongly Disagree | 9 | 5 |
| Disagree | 20 | 11.3 |
| Not Sure | 29 | 16.2 |
| Agree | 68 | 37.5 |
| Strongly Agree | 54 | 30 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 7.1, majority of the respondents 67.5% generally agreed that the schools is equipped with different kinds of hardware, software and network infrastructure. However, 16.2% disagreed and 16.2% were not sure. This therefore means that, the schools is equipped with different kinds of hardware, software and network infrastructure since majority of the respondents agreed.

Table 7.2: The school use digital video/audio recorder in teaching students

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Disagree | 2 | 1.3 |
| Not Sure | 9 | 5 |
| Agree | 115 | 63.7 |
| Strongly Agree | 50 | 27.5 |
| Total | 176 | 97.5 |
| Missing | System | 4 | 2.5 |
| **Total** | | **180** | **100.0** |

Source: primary data (2019)

Results in table 7.2 indicate that, majority of the respondents 91.2% generally agreed that the school use digital video/audio recorder in teaching students. However, 1.3% disagreed and 5% were not sure. This therefore means that, the school use digital video/audio recorder in teaching students since majority of the respondents agreed.

Table 7.3: The school use computer systems for research or teaching in the classrooms

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Strongly Disagree | 11 | 6.3 |
| Not Sure | 9 | 5 |
| Agree | 104 | 57.5 |
| Strongly Agree | 54 | 30 |
| Total | 178 | 98.8 |
| Missing | System | 1 | 1.3 |
| **Total** | | **180** | **100.0** |

Source: primary data (2019)

According to table 7.3, majority of the respondents 87.5% generally agreed that the school use computer systems for research or teaching in the classrooms. However, 6.3% disagreed and 5% were not sure. This therefore means that, the school use computer systems for research or teaching in the classrooms since majority of the respondents agreed.

Table 7.4: The school use tape of recorders to improve students listening skills

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Disagree | 21 | 11.5 |
| Not Sure | 14 | 7.7 |
| Agree | 145 | 80.8 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 7.4, majority of the respondents 80.8% generally agreed that the school use tape of recorders to improve students listening skills. However, 11.5% disagreed and 7.7% were not sure. This therefore means that, the school use tape of recorders to improve students listening skills since majority of the respondents agreed.

Table 7.5: The teachers use smart phones, emails or fax to exchange information with parents/students while at home

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Disagree | 42 | 23.1 |
| Not Sure | 52 | 28.8 |
| Agree | 87 | 48.1 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 7.5, majority of the respondents 48.1% generally agreed that the teachers use smart phones, emails or fax to exchange information with parents/students while at home. However, 23.1% disagreed and 28.8% were not sure. This therefore means that, the teachers use smart phones, emails or fax to exchange information with parents/students while at home since majority of the respondents agreed.

Table 7.6: The school use computerized database in exams and records department

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Disagree | 24 | 13.5 |
| Not sure | 35 | 19.2 |
| Agree | 80 | 44.2 |
| Strongly Agree | 42 | 23.1 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 7.6, majority of the respondents 67.3% generally agreed that the school use computerized database in exams and records department. However, 13% disagreed and 19.2% were not sure. This therefore means that, the school use computerized database in exams and records department since majority of the respondents agreed.

Table 7.7: The school use photocopy machine, scanners and printers used in producing the examination sheets

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Frequency** | **Percent** |
|  | Disagree | 55 | 30.8 |
| Not Sure | 10 | 5.8 |
| Agree | 80 | 44.2 |
| Strongly Agree | 35 | 19.2 |
| **Total** | **180** | **100** |

Source: primary data (2019)

According to table 7.7,, majority of the respondents 63.4% generally agreed that the school use photocopy machine, scanners and printers to produce the examination sheets. However, 30.8% disagreed and 5.8% were not sure. This therefore means that, the school use photocopy machine, scanners and printers to produce the examination sheets since majority of the respondents agreed.

The results from the interview indicates that,

*“Technology-based teaching and learning is more effective in compare to traditional classroom”.*

*“The use of ICT tools and equipment prepare an active learning environment that is more interesting and effective for both teachers and students”.*

*“The use of ICT in education would enhance students’ learning. However, most of teachers in this study agree that ICT helps to improve classroom management as students are well-behaved and more focused”.*

## CHAPTER EIGHT

## TOWARDS HARMONIZING THE UTILIZATION OF ICT AND STUDENTS PERFORMANCE IN RURAL SECONDARY SCHOOLS IN NEBBI DISTRICT

## 8.0 Introduction

# This chapter links the findings to the literature review and suggests the way forward in the solution to the problem of the study.

## 8.1 Discussion of findings

The discussions of the findings are formulated in accordance with the study objectives;

## 8.1.1 ICT teachers’ skills and students performance in rural secondary schools

The study revealed that the school integrates ICT in teaching that makes learning more effective, use of ICT helps teachers to improve teaching with more updated materials, use of ICT improves the quality of teaching, use of ICT helps to prepare teaching resources and materials, use of ICT enables the students’ to be more active and engaging in the lesson teachers have more time to cater to students’ need if ICT is used in teaching, and teachers have an effective teaching without the use of ICT. Teachers with more experience with computers have greater confidence in their ability to use them effectively. To conclude, Gbemanja (2014) reported that teachers competence relate directly to confidence. Teachers’ confidence also relate to their perceptions of their ability to use computers in the classroom, particularly in relation to their children’s perceived competence.

Teachers’ professional skills are a key factor to successful integration of computers into classroom teaching. Several studies have revealed that whether beginner or experienced, ICT-related training programs develop teachers ’competences in computer use, influence teachers ‘attitudes towards computers as well as assisting teachers reorganize the task of technology and how new technology tools are significant in student learning. McNergney (2013) related technology training to successful integration of technology in the classroom. In a study of 400 pre-tertiary teachers, they showed that professional development and the continuing support of good practice are among the greatest determinants of successful ICT integration. Hasselbring (2016) claim that teachers ‘technology skills are strong determinant of ICT integration, but they are not conditions for effective use of technology in the classroom.

McNergney (2013) further stretched that teachers may adopt and integrate ICT into their teaching when training programs concentrate on subject matter, values and the technology. Similarly, teachers ‘understanding of content knowledge and how to apply technology to support students’ learning and attainment are joined to their increase in knowledge level, confidence and attitudes towards technology. Educators who integrate technology with new teaching practices gained through professional training can transform the performance of the students. Teachers who are committed to professional development activities gain knowledge of ICT integration and classroom technology organization. Clearly, it is imperative to allow teacher trainees to apply ICT in their programs when in school in order to be able to use the technology to supplement their teaching activities.

## 8.1.2 Technological Support and students performance in rural secondary schools

The study also revealed that the ICT methods used in the school addresses the current needs of the organization, ICT increases sustainability of the school resources, ICT allows students’ to be more creative and imaginative, the use of ICT helps students to find related knowledge and information for learning, the use of ICT encourages students to communicate more with their classmates, the use of ICT increases students’ confidence to participate actively in the class, the use of ICT enables students’ to express their ideas and thoughts better and the use of ICT promotes active and engaging lesson for students’ best learning experience. This is in line with Zhang (2013) who reported that the breakdown of a computer causes interruptions and if there is lack of technical assistance, then the regular repairs of the computer will not be carried out which resulting in teachers not using computers in teaching. Similarly, Macho (2005) said it is also crucial to provide the schools with technical support with regard to repair and maintenance for the continue use of ICT in schools. Therefore, if there is no technical support for teachers, they become frustrated resulting in their unwillingness to use ICT.

## 8.1.3 ICT infrastructure and students performance in rural secondary schools

The study finally revealed that schools are equipped with different kinds of hardware, software and network infrastructure, the school use digital video/audio recorder in teaching, the school use computer systems for research or teaching in the classrooms, the school use tape of recorders to improve students listening skills, the school use smart phones, emails or fax to exchange information with parents/students while at home, the school use computerized database in exams and records department and the school use photocopy machine, scanners and printers . Access to ICT infrastructure and resources in schools is a necessary condition to the integration of ICT in education. Effective adoption and integration of ICT into teaching in schools depends mainly on the availability and accessibility of ICT such as hardware, software, etc. Obviously, if teachers cannot access ICT , then they will not use them. Therefore, access to computers, updated software and hardware are key elements to successful adoption and integration of technology.

The results of this study show that technology-based teaching and learning is more effective in compare to traditional classroom. This is because, using ICT tools and equipment will prepare an active learning environment that is more interesting and effective for both teachers and students. The results are in line with a research findings by Macho (2005) that proved using ICT in education would enhance students’ learning. However, most of teachers in this study agree that ICT helps to improve classroom management as students are well-behaved and more focused. Moreover, this study proved that students learn more effectively with the use of ICT as lesson designed are more engaging and interesting. Accordingly, the participants agreed that integrating ICT can foster students’ learning.

Results of a study by Zhang (2013) show that the Internet Use in EFL Teaching and Learning in Northwest China and the findings indicated that teachers have positive attitude regarding the use of Internet in teaching and learning; teachers have some knowledge about Internet use in teaching and learning; they have not well integrated Internet into teaching and learning so far; teachers’ knowledge about ICT and network technology is very limited. Likewise, the first two points were similar to the findings of this research, which most of teachers think ICT integration for students in learning is effective. Because students can develop the confidence to have better communication and able to express their thoughts and ideas; ICT helps students to be more creative and imaginative as their knowledge paradigm expend; and ICT helps students to possess all four skills in learning when they are able to acquire necessary information and knowledge. However, this study finds that public school teachers in Kuala Lumpur, Malaysia are not given enough time to learn and be comfortable with ICT.

In compare to a study conducted by Tazci (2011) that shows most of pre-service teachers indicated that they only implicate elementary ICT tools for educational use , this study found that most teachers think ICT integration is effective, but ICT tools provided in school are not enough nor in good condition; training and professional development are not adequately provided for teachers; technical supports are somehow provided but can be improved from time to time; and not very good condition of computer lab in school with well-functioning tools and facilities.

## CHAPTER NINE

## SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

## 9.1 Introduction

This chapter presents the summary of findings and conclusions of the study results.

## 9.1 summary of findings

The summary of the findings are formulated in accordance with the study objectives;

## 9.1.1 ICT teachers’ skills and students performance in rural secondary schools

The study revealed that the school integrates ICT in teaching that makes learning more effective, use of ICT helps teachers to improve teaching with more updated materials, use of ICT improves the quality of teaching, use of ICT helps to prepare teaching resources and materials, use of ICT enables the students’ to be more active and engaging in the lesson teachers have more time to cater to students’ need if ICT is used in teaching, and teachers have an effective teaching without the use of ICT. Teachers with more experience with computers have greater confidence in their ability to use them effectively.

## 9.1.2 Technological Support and students performance in rural secondary schools

The study also revealed that the ICT methods used in the school addresses the current needs of the organization, ICT increases sustainability of the school resources, ICT allows students’ to be more creative and imaginative, the use of ICT helps students to find related knowledge and information for learning, the use of ICT encourages students to communicate more with their classmates, the use of ICT increases students’ confidence to participate actively in the class, the use of ICT enables students’ to express their ideas and thoughts better and the use of ICT promotes active and engaging lesson for students’ best learning experience.

## 9.1.3 ICT infrastructure and students performance in rural secondary schools

The study finally revealed that schools are equipped with different kinds of hardware, software and network infrastructure, the school use digital video/audio recorder in teaching, the school use computer systems for research or teaching in the classrooms, the school use tape of recorders to improve students listening skills, the school use smart phones, emails or fax to exchange information with parents/students while at home, the school use computerized database in exams and records department and the school use photocopy machine, scanners and printers . Access to ICT infrastructure and resources in schools is a necessary condition to the integration of ICT in education. Effective adoption and integration of ICT into teaching in schools depends mainly on the availability and accessibility of ICT such as hardware, software, etc. Obviously, if teachers cannot access ICT , then they will not use them.

## 9.2 Conclusion

In conclusion, the very first stage of ICT implementation must be effective to make sure that, teachers and students are able to make the best use of it. Thus, preparations of a technology-based teaching and learning begin with proper implementation and supports by the school top management. If the implementation process of technology integration in schools take place appropriately from the very beginning stage and the continuous maintenance are adequately provided, ICT integration in schools results in a huge success and benefits for both teachers and students. The use of ICT especially in teaching and learning is more about practicality as compared to theories and that is why teachers must be given time to learn and explore it, face the “trial-and error” phase before they are completely comfortable with its usage and able to make use of it for teaching and learning.

## 9.3 Recommendation

Finally, the integration of ICT in classroom needs serious consideration in order to increase the competency of the country’s education system. This will help in increasing the world ranking of the national education and produce the better future work force.

The study recommends that schools needs to partner or enter into Memorandum of Agreement with local IT companies for supplies of ICT gadgets and other tools at a reasonable prices.

The study recommends that more ICT teachers should be employed and be trained on basics of ICT use in teaching and learning. In-service courses should be arranged regularly, to enable teachers acquire necessary ICT skills that are important in the process of teaching and learning.

In order to enhance the use of ICT in classroom, the government needs to improve and change the teachers’ belief about the integration of ICT in classroom. As the teachers’ role is the key role in making any of the new policy to be implemented efficiently and successfully. The changes that is taking place is driven by advanced technology and communication devices that should be available to students wherever they are either at school or home.

In addition , the needs for teachers to be literate and have good skills and knowledge in using ICT to improve their teaching methods and approach is desired to promote effective learning as well as to meet the demand of the 21st century teaching skills.

# **REFERENCES**

Adedapo, A. (2007). Designing a MIS for effective secondary school administration in Nigeriain special education on information communications technology (ICT IKEJE 138-143).

Adegun, O. A. (2002). Communication and administrative effectives of principals of secondary schools in Sewth Western, Nigeria” unpublished PhD Thesis University of Ado-Ekiti Nigeria 86-102.

Adeyemi, T.O. (2011). Impact of information and communications technology (ICT) on the effective management of universities in south-west Nigeria http://www.scihub. org/AJSMS.

Afshari, E. (2009). Research report for Gessometa review of ICT in education phase two. Retrieved on 8 December 2010 from http://www.gesci.org/ assets/files/Research/meta-researchphase2.pdf

Aribamikan, C. A. (2007). The Relevance of Information and Communication Technology in the Teaching of Physical Education and Sports in Special Edition on ICT, IKEJE, pp. 93-98.

ASER (2014). Annual Status of Education Report (Rural). Facilitated by PRATHAM, Available: [www.asercentre.org](http://www.asercentre.org).

Asiabeka IP (2010). Access and use of information and communications technology (ICT) for administrative purposes by principals of Government Secondary Schools in Nigeria. The researcher 2 (1): 43:50

World Bank report (2016), FINANCIAL STABILITY REPORT. June 2017 | Issue No.

Canoy, M. (2004). ICTs in Education: Possibilities and Challenges. Inaugural Lecture of the2004-2005 Academic Year, University at Oberta de Catalunya. Available athttp://www.uoc.edu/inaugural04/eng/carnoy1004.pdf.

Diiro (2016) conducted a study to examine what is engineering students’ perception regarding the use of Information and Communication Technologies (ICT) in mathematics earning as well as investigating their opinion about how ICT is integrated

Faloye, J.O., & Oparah, O. B. (2007). Relevance of Information and Communication Technology (ICT) in Education in Ikere, Journal of Education, Ikere-Ekiti, vol. 9, No.1, pp. 37-42.

Isiife (2015) studied the impact of ICT on the academic performance of students of Kitende Secondary SchoolAbe, T. O. & Adu, E.T. (2007). Impact of Information and Communication Technology (ICT) on Teacher Education in Ikere, Journal of Education, Ikere-Ekiti, vol. 5, pp. 169-175.

Jensen, M. (2002). Information and Communication Technologies (ICTs) in Africa –A

Jones, F. (2010). A new generation of learners? The next generation and digital natives. *Learning, Media and Technology*, 35(4), 365-385.

Kolade, O. T., & Omodara, O. D. (2007). Developing a Monitoring and Evaluation Planof Information Communication Technology ICTS in Education System in Special Edition on Information Communication Technology (ICT), Ikeja: pp. 176-181.

Kolawole, C. (1997). “Availability and Utilization of Audio-visual Materials for the Teaching of English Language in some Nursery/Primary Schools in Ibadan,” Journal of Educational Studies 1(1), 122-127.

Lawsent, I., & Vincent, I. (1995). Impact of e-Learning on Tertiary Education (on line) Accessed 18 June, 2008 athttp://www.info.gov.za/speeches/index.html.

Lubis, M., Embi, M., Yunus, M. &Wekke, I. (2009).The application multicultural education and applying ICT on Pesantren in South Sulawesi, Indonesia. *WSEAS Transactions on Information Science and Applications*, 6(8), 1401-1411.

Lucey, T. (1995). Management Information Systems, London: DP Publications Ltd., 31-52.

Manduku, J, Kosgey, A. & Sang, H. (2012). Adoption and Use of ICT in Enhancing Management of Public Secondary Schools. A Survey of Kesses Zone Secondary Schools in Wareng District of WasinGishu County, Kenya.

Miciano, T.A. (2005). *Fundamental principles on teaching Mathematics*. New York: McGraw-Hill Book.

Mohammad Y. (2006): Factor influencing the implementation of ICT in Jigawa States Schools Nigeria. Unpublished M.Ed. Thesis, University of Ilorin.

Mohammad, S. S., Babawero, S., Lokman, M., Yahaya, B. (2011). Applicability of information and communications technologies (ICTS) inthe administration of technical and vocational education and training (TVET) is a knowledge-based society academic.

Namuhoya (2017) carried out a study to examine the utilization of Information and Communication Technology (ICT) resources on job effectiveness among library staff in the University of Kisub

Okon, A. (2010). *The chichester project: Teaching christianity, a world religions approach. Grimmitted pedagogies of religious education.* Great Wakering: McCrimmon.

Priscilla wambui (2016). Mutiefactors influencing integration of information and communication technology in teaching and learning, 2016.

Status Report (2016): UN ICT Task Force “Bridging the Digital Divide in the 21 century

# **APPENDIX I:** **QUESTIONNAIRE**

## I am, Kyaterekera Gloria a student of Nkumba University, conducting an academic research on, the utilization of information and communications technology in rural secondary schools. It focuses on five selected secondary schools in Nebbi district; as a requirement for the award of a Master’s Degree in Information Technology.

## I kindly request your assistance in answering the following questions by ticking where applicable. The information will only be used for academic purposes and shall be treated with utmost confidentiality.

## SECTION A: BACKGROUND INFORMATION

## Please tick the appropriate box where applicable

## 1. Gender

## Male Female

## 

## 2. Highest Level of Education.

## O-level A-level Diploma Degree Masters

## 3 Marital status

## Singles Married Separated Divorced widowed

## Age group

## 15-29 30-39 40-49 50 and above

**Section B: ICT teachers’ skills and performance of secondary schools**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Strongly Disagree** | **Disagree** | **Not Sure** | **Agree** | **Strongly Disagree** |
|  | I think that ICT supported teaching makes learning more effective |  |  |  |  |  |
|  | The use of ICT helps teachers to improve teaching with more updated materials. |  |  |  |  |  |
|  | I think the use of ICT improves the quality of teaching. |  |  |  |  |  |
|  | I think the use of ICT helps to prepare teaching resources and materials. |  |  |  |  |  |
|  | The use of ICT enables the students’ to be more active and engaging in the lesson. |  |  |  |  |  |
|  | I have more time to cater to students’ need if ICT is used in teaching. |  |  |  |  |  |
|  | I can still have an effective teaching without the use of ICT. |  |  |  |  |  |
|  | I think the use of ICT in teaching is a waste of time. |  |  |  |  |  |

**Section c: Technological Support and performance of secondary schools**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Strongly Disagree** | **Disagree** | **Not Sure** | **Agree** | **Strongly Disagree** |
|  | The ICT methods used in the school addresses the current needs of the organization |  |  |  |  |  |
|  | Technological Support increases the levels of sustainability of the schools |  |  |  |  |  |
|  | ICT allows students’ to be more creative and imaginative |  |  |  |  |  |
|  | The use of ICT helps students to find related knowledge and information for learning |  |  |  |  |  |
|  | The use of ICT encourages students to communicate more with their classmates |  |  |  |  |  |
|  | The use of ICT increases students’ confidence to participate actively in the class. |  |  |  |  |  |
|  | The use of ICT enables students’ to express their ideas and thoughts better |  |  |  |  |  |
|  | The use of ICT promotes active and engaging lesson for students’ best learning experience. |  |  |  |  |  |

**Section D: ICT infrastructure and students performance in rural secondary schools**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Strongly Disagree** | **Disagree** | **Not Sure** | **Agree** | **Strongly Disagree** |
|  | Schools is equipped with different kinds of hardware, software and network infrastructure |  |  |  |  |  |
|  | The school use digital video/audio recorder while teaching students |  |  |  |  |  |
|  | The school use computer systems for research or teaching in the classrooms |  |  |  |  |  |
|  | The school use power point as a teaching tool in the class |  |  |  |  |  |
|  | The school use tape of recorders to improve students listening skills |  |  |  |  |  |
|  | The teachers use smart phones, emails or fax to exchange information with parents/students while at home |  |  |  |  |  |
|  | The school use computerized database in exams and records department |  |  |  |  |  |
|  | The school use photocopy machine, scanners and printers |  |  |  |  |  |

**APPENDIX II**

**INTERVIEW GUIDE**

How does ICT help teachers to improve teaching with more updated materials?

Does the use of ICT improve the quality of teaching?

How does the use of ICT enable the students’ to be more active and engaging in the lesson?

How does technological Support increase the levels of sustainability of the schools?

Does the use of ICT help students to find related knowledge and information for learning?

Do the schools in Nebbi use digital video/audio recorder while teaching students

Do teachers use smart phones, emails or fax to exchange information with parents/students while at home

Do school use computerized database in exams and records department

# **APPENDIX III:** **TABLE FOR SAMPLE SIZE DETERMINATION**

**TABLE FOR DETERMINING SAMPLE SIZE FROM A GIVEN POPULATION**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| N | S | N | S | N | S | N | S | N | S |
| 10 | 10 | 100 | 80 | 280 | 162 | 800 | 260 | 2800 | 338 |
| 15 | 14 | 110 | 86 | 290 | 165 | 850 | 265 | 3000 | 341 |
| 20 | 19 | 120 | 92 | 300 | 169 | 900 | 269 | 3500 | 246 |
| 25 | 24 | 130 | 97 | 320 | 175 | 950 | 274 | 4000 | 351 |
| 30 | 28 | 140 | 103 | 340 | 181 | 1000 | 278 | 4500 | 351 |
| 35 | 32 | 150 | 108 | 360 | 186 | 1100 | 285 | 5000 | 357 |
| 40 | 36 | 160 | 113 | 380 | 191 | 1200 | 291 | 6000 | 361 |
| 45 | 40 | 180 | 118 | 400 | 196 | 1300 | 297 | 7000 | 364 |
| 50 | 44 | 190 | 123 | 420 | 201 | 1400 | 302 | 8000 | 367 |
| 55 | 48 | 200 | 127 | 440 | 205 | 1500 | 306 | 9000 | 368 |
| 60 | 52 | 210 | 132 | 460 | 210 | 1600 | 310 | 10000 | 373 |
| 65 | 56 | 220 | 136 | 480 | 214 | 1700 | 313 | 15000 | 375 |
| 70 | 59 | 230 | 140 | 500 | 217 | 1800 | 317 | 20000 | 377 |
| 75 | 63 | 240 | 144 | 550 | 225 | 1900 | 320 | 30000 | 379 |
| 80 | 66 | 250 | 148 | 600 | 234 | 2000 | 322 | 40000 | 380 |
| 85 | 70 | 260 | 152 | 650 | 242 | 2200 | 327 | 50000 | 381 |
| 90 | 73 | 270 | 155 | 700 | 248 | 2400 | 331 | 75000 | 382 |
| 95 | 76 | 270 | 159 | 750 | 256 | 2600 | 335 | 100000 | 384 |

Note: “N” is population size and “S” is sample size.