MANAGEMENT AND IMPLEMENTATION OF THE ICT CURRICULUM IN GOVERNMENT AIDED HIGH SCHOOLS IN NAKASONGOLA DISTRICT, UGANDA

BY

MUTABAZI ABRAHAM LINCOLN

(13/U/1962/GMED/PE)

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DECLARATION

I, Mutabazi Abraham Lincoln, declare that this dissertation is my original work and has never been submitted to any education institution of higher learning for any academic award.

Signature: .....

Date: 24th November 2016

APPROVAL

This is to certify that this dissertation was under my supervision and has been submitted to the School of Postgraduate Studies for the award of a Masters Degree of Education in Policy, Planning and Management of Kyambogo University, Kampala.

Supervisors:

Signature..... Date 25/11/2016

Dr. Ndawula Stephen

Signature..... Date 29/11/16

Dr. W.W. Kamukama

DEDICATION

I dedicate this study to my family, whose endless love, support, patience and encouragement kept me going throughout the course.

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LIST OF ACRONYMS

ANOVA	-	Analysis of Variance
DOS	-	Director of Studies
HSC	-	Higher school Certificate
ICT	-	Information and Communication Technology
MoES	-	Ministry of Education, and Sports
SAQ	-	Self Administered Questionnaire
SPSS	-	Statistical Package for the Social Sciences
UCC	-	Uganda Communications Commission
UNESCO	-	United Nations Educational Scientific and Cultural Organisation
UNCST	-	Uganda National Council of Science and Technology
UPOLET	-	Universal Post A' level Education and training (programme)

ABSTRACT

This study investigated the management and implementation of the ICT curriculum in government aided high schools in Nakasongola district. Quantitative and qualitative research methods were used as guided by the exploratory survey research design. The total number of respondents sampled was 144, which composed of 120 ICT students, 6 head teachers, 6 deputy head teachers, 6 Directors of studies, and 6 ICT teachers. They were selected using purposive and simple random sampling techniques. Instruments used in data collection were questionnaires, interview guide and document review. Regression analysis and ANOVA were used to test the relationship between Management and the implementation of the ICT curriculum in the selected high schools. Quantitative data was presented in tables using frequencies and percentages whereas content analysis was used for qualitative data. The findings indicated that most of the schools had inadequate ICT equipment like computers, computer rooms/ library and internet connectivity which affected ICT implementation in schools. Secondly, the schools lacked trained and professional ICT teachers and there was inadequate administrative support towards the ICT curriculum implementation in the high schools. The study recommended that the Ministry of Education and Sports plans for provision of better school ICT facilities to all schools; step up awareness on ICT implementation through training and recruiting more ICT teachers to handle the subject and allocate an adequate budget to the schools to specifically cater for the ICT curriculum implementation.

CHAPTER ONE

INTRODUCTION

1.0 Background to the study

With the introduction of the Compulsory ICT curriculum at Advanced level in Uganda and with the subsequent and steadily growing need to streamline ICT in the secondary education cycle according to the ICT Policy, there has been a craving to explore the progress of the studies and how it is being managed and implemented in schools.

This study aims at exploring the management and implementation of ICT curriculum at A' Level in government aided high schools in Nakasongola district, Uganda. It is largely anticipated that the challenges be minimized to ensure that the process of managing and implementation of ICT curriculum does not fail. This could be the case in most rural areas as seen in government aided high schools with problems cutting across all spheres.

This background therefore assess these issues in four perspectives, namely; historical, theoretical, conceptual and contextual: This chapter also presents the statement of the problem, purpose, specific objectives, research questions, scope and significance of the study and the Conceptual framework.

1.1.1 Historical Background

Educational systems around the world are under increasing pressure to equip students with Information and Communication Technology (ICT) knowledge and skills needed in the 21st century (Omwenga, 2007). Development and application of ICT in African secondary schools is

critically important if the continent is to reduce the knowledge, technological and economic gaps between itself and the rest of the world (Farrell and Shafika, 2007).

In Uganda, the national Information and Communication Technology (ICT) policy development process was initiated in 1998 by the Uganda National Council of Science and Technology (UNCST) (Torach, Okello and Amuriat, 2008.). Five years later in 2002 the UNCST submitted a draft national ICT policy framework to the cabinet which was approved the following year. The policy framework document recognized that Uganda would need to embrace the goal of lifelong education for all (Farrell, 2007)

According to Farrell, (2007), Uganda developed its initial National ICT Policy in 2003 with its main objective of integrating ICT into educational curricula as well as other literacy programmes to provide for equitable access for all students regardless of the academic level.

With the establishment of a Ministry of ICT in Uganda in 2006, various policies were developed in the Ministry of Education and Sports (MoES). In 2012, the ministry of Education and Sports directed the operationalisation of the Information and Communication Technology (ICT) policy at Advanced level. This required the High School Certificate (H.S.C) students to choose between Subsidiary Mathematics and Information and Communication Technology (ICT) as their subsidiary subject, besides General Paper.

This came along with implementation of the policy of Universal Post O' Level Education and Training (UPOLET) programme under the Ministry of Education and Sports. It targeted the graduates of Universal Secondary Education (U.S.E) policy, as a continuation, in the effort to achieve the Millennium Development Goals (MDGs).

Researchers in the past have had interest in ICT curriculum management and its implementation in several ways. Katushabe and Kisambira, (2002) studied ICT based educational content on Kyambogo University and its affiliated NTCs; whereas Ndawula et al, (2012), studied the end user's attitudes towards Digital Media approach, focusing on the experience of Kyambogo University.

In another study, Ndawula et al, (2013) investigated how secondary schools were getting ready for integration of pedagogical ICT in Uganda. Odongo, (2007) looked at ICT integration and its influence on the teaching process in selected secondary schools in central Uganda.

No studies have been undertaken relating to the management and implementation of ICT curriculum in government aided high schools in Nakasongola district, Uganda, a gap which this study is striving to close.

1.1.2 Theoretical Background

The Perceived Attributes Theory by Rogers, (2003) stipulates that if the perceived advantage to the use of an innovation is positive, there is a greater likelihood that it will be adopted rapidly. The perceived attributes are the characteristics of innovation that have an impact on the likelihood of acceptance and adoption, and also on the rate at which this process develops. Innovation attributes supporting diffusion are: relative advantage, compatibility, and complexity.

The theory defines relative advantage as "the degree to which an innovation is perceived as being better than the idea it supersedes". The availability of opportunity and ability motivation aspects of innovations are elements of relative advantage.

When School heads face the new demands placed on them, they will support the ICT curriculum management and implementation fully. To increase the rate of adopting innovations and to make relative advantage more effective, direct or indirect support like financial payment incentives may be used to support the implementers of a policy in adopting an innovation.

The elements of an innovation communication model include the sender (the innovator), the receiver (the potential adopter), the channel (planned or unplanned information about the innovation and resulting feedback), and interference (uncertainty) which results from perception.

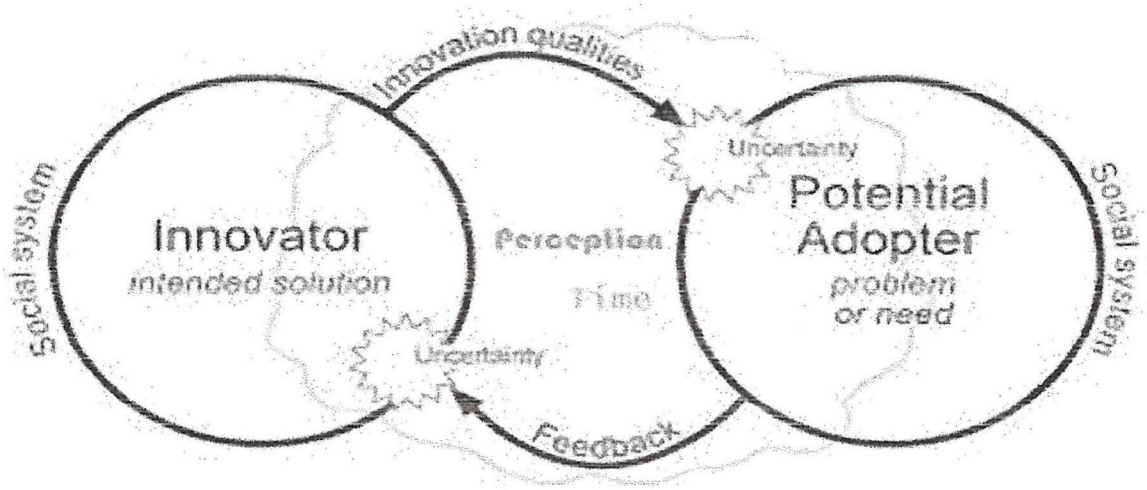


Figure 1: An Innovation of Communications Model (Source: Rogers, 2003)

Using Rogers' theory, Kim (2013) found out that where there is an uncertainty, confusion and support problem, an innovation becomes incompatible, complex and intimidating. Adopters tend to have greater risk tendencies and the higher the risk, the shorter the rate of diffusion of a typical innovation.

1.1.3 Conceptual Background

In this study, the independent variable is the degree of schools' preparedness for ICT management, whereas the dependent variable is the actual ICT implementation in the schools under study.

ICT is an umbrella term that includes all technologies for the communication of information (Farrell, 2007). For the purpose of this study, ICT is used to refer to computers in computer laboratories in the respective selected UPOLET secondary schools, which are primarily designated for student use.

In this context, ICT curriculum management encompasses the processes involved in mainstreaming ICT in the education sector through, training, getting new software or hardware operating properly in its environment, and making necessary changes.

The Free Online Dictionary defines challenges as situations that hinder the accomplishment, result, or process. In this study problems that were considered are; availability of ICT training materials, competence of ICT teachers, and administrative support.

Availability of ICT training materials in this study refers to existence of computers and their accessories and related peripherals in place. Qualified ICT personnel, in this study, will refer to qualified teachers of ICT. Administrative support refers to the help and guidelines given out by administrators in institutions of learning to aid computer training and integration of ICT into the curriculum.

1.1.4 Contextual Background

According to Bakkabulindi (2008) and the Ministry of Education and Sports (2010), institutions of learning in Uganda, both including tertiary institutions and universities, depended on manual systems, with little use being made of computers. In addition, internet access and e-mail applications were minimal and what was on the ground were desk computers for office work and other general applications.

The Researcher's area of study explored the management and implementation of ICT curriculum with various issues ranging from availability of qualified personnel, administrative support, infrastructure and peripherals availability among others.

Waite, (2011) indicated that even though teachers showed great interest and motivation to learn about the potential of ICTs, in practice, the use of ICT was relatively low and it focused on a narrow range of applications, with word processing being the predominant use. The application of other ICT tools, such as video conferencing, emailing and the Internet was rare. Moreover, various institutions of learning are still using old versions of software, black board and textbooks in teaching. Many A' level students have complained of seeing a computer for the first time in the UNEB exam.

However, there are some institutions where ICT is being well managed and implemented with no stiff constraints.

1.2 Statement of the Problem

ICT education is highly indispensable in Uganda today because it can equip learners with vital technological skills in order to be in line with the Sustainable Development Goals (SDGs). As investment in ICT continues to increase and ICT gets included in the secondary curriculum,

availability of ICT equipment such as computers in some schools in the country have seemed to be an issue, alongside manpower and other enhancement challenges. This can defeat the objective for which the investment is being made.

It is largely through the production of ever sophisticated technology that we redeem the promise of a better tomorrow, confirm the world's perfectibility, and absorb some to ourselves and to our institutions (Hodas, 2011). Implementation of ICT curriculum requires equipment availability, effective subject content, teacher qualification and proper management and support to implementation itself. It is important to understand how end-users are reacting to the ICT syllabus and managing it or else it is difficult for policy makers and curriculum designers to know if they are meeting the needs of students effectively. (UNESCO, 2012).

This stimulates a research to establish the impact of the current management and implementation of the ICT curriculum in the selected schools in Nakasongola district. Failure to access and adopt effective ICT skills shall hinder ICT sustainable progress for individuals and communities in the 21st century.

1.3 Purpose

The purpose of the study was to investigate the management and implementation factors for ICT curriculum in the selected schools in Nakasongola district, Uganda

1.4 Objectives

The specific objectives of the study were;

i) To establish the relationship between the availability of ICT study equipment and the implementation of the ICT curriculum

ii) To find out whether there is a relationship between the availability of qualified ICT teachers and the implementation of the ICT curriculum

iii) To establish the relationship between administrative support and the implementation of the ICT curriculum

1.5 Research Questions

The study was guided by the following research questions:

i. What study equipment are available to enhance ICT curriculum implementation in the selected high schools in Nakasongola district?

ii. What are the qualifications of ICT teachers and to what extent does this affect ICT curriculum implementation in the selected high schools in Nakasongola district?

iii. To what extent has the schools' Administration supported the management and implementation of ICT curriculum in the selected high schools in Nakasongola district?

1.6 Significance of the study

The findings of this study could have important implications for Policy and Practice, as administrators and policy makers seek the most effective ways to inculcate ICT skills in the secondary school cycle.

The Ministry of Education and its partners will be helped to understand how implementation should go on and thus be in position to adjust appropriately. Furthermore, this study could be one of the first papers to explore the Level of schools' preparedness for Computer studies in Nakasongola District, Uganda so it would also prompt more researchers in the area having contributed to the literature for future studies.

This research also aimed at examining the key problem at hand, identify and analyze the effect it has on the management and implementation of ICT curriculum, evaluate and give feedback, with recommendations, to minimize the problem affecting the process in selected schools.

1.7 Scope

This includes both geographical scope, content scope and time scope.

1.7.1 Geographical Scope

This research was carried out in Nakasongola District, in the Central region of Uganda. The researcher limited himself to six high schools. This was because these are the government aided high schools in the district which are managing and implementing the ICT curriculum under the UPOLET policy currently, the category which the researcher is studying.

1.7.2 Content Scope

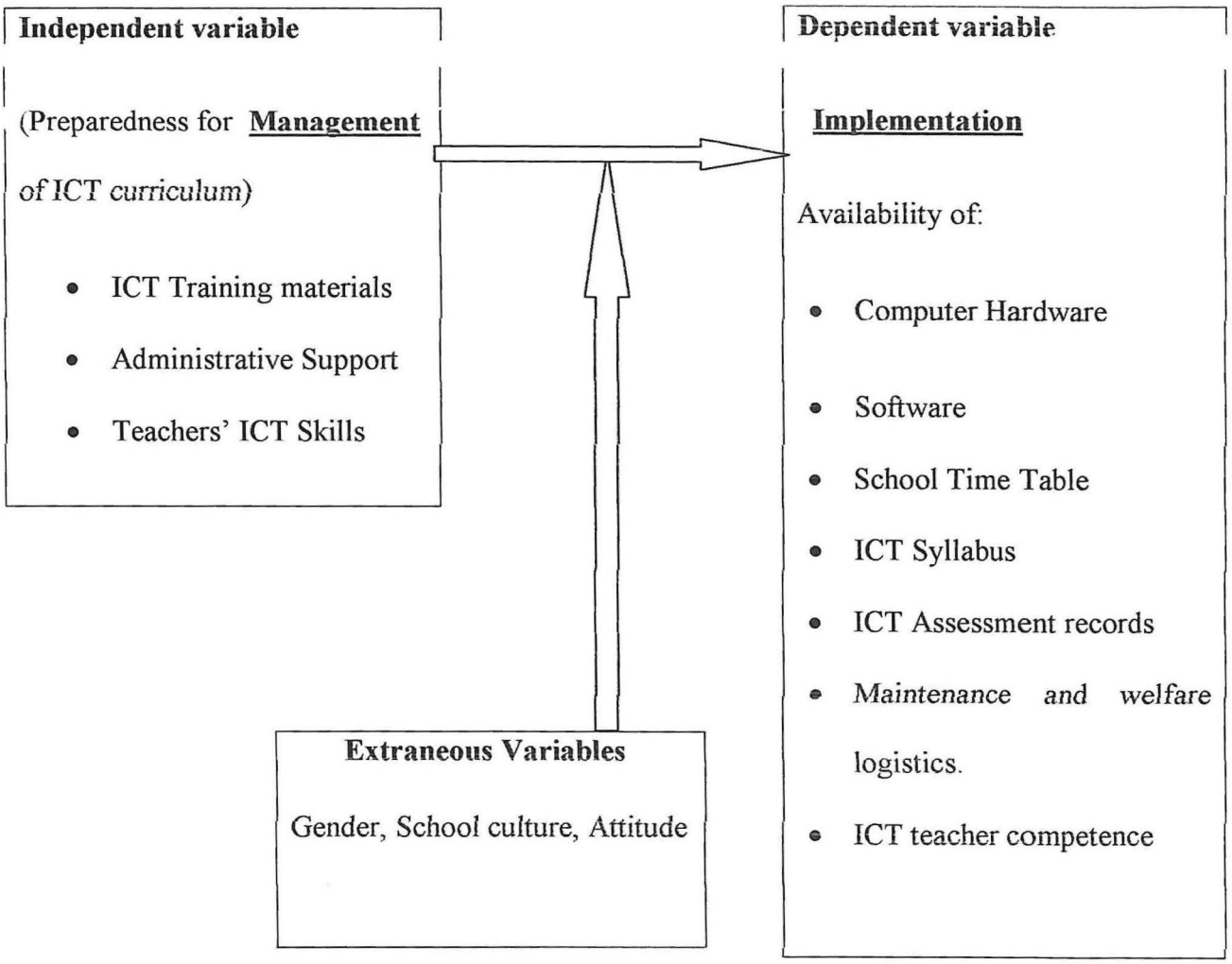
In content, the study focused on three problems namely: availability of ICT study equipment, qualification of ICT teachers and the extent of administrative support in relation to how they affect the management and implementation of ICT curriculum.

1.7.3 Time Scope

The period of data to be considered in the organization was from 2012 – 2016 and the period of body of knowledge in reviewing literature was up to date, while the study was carried out from January to June 30th, 2016.

1.8 Conceptual Framework

Fig .2 Conceptual framework showing problems influencing management and the implementation of ICT curriculum



Source: Rogers, (2003) theory model

The framework in Figure 2.1 above illustrates that the independent variable is conceptualized under three key basics for management and implementation of ICT curriculum namely;

availability of study equipment, the need for administrative support, and the prerequisite of the ICT teacher's skillfulness and competence in relation to the ICT studies, which were investigated and studied accordingly.

The dependent variables, above, highlight the challenges that tend to militate against the actual syllabus management and Implementation process. They can largely point to the level of the UPOLET schools' preparedness for the ICT syllabus management. They were conceptualized regarding the extent to which the study equipment, teacher skill and competence and ICT communication media are provided for in the institutions under study.

The Extraneous variables too, above impact on the management and implementation of the ICT curriculum by dictating on some decisions to be made by administrators and other stakeholders thus affecting the policy especially through bias.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

This section reviews literature related to the three specific objectives in this research namely:

2.1 Management and implementation of ICT curriculum and the Availability of ICT study equipment

Availability of study equipment refers to existence of necessary tools and equipment needed for ICT training. According to this study, management of ICT refers to the process of ensuring preparedness for provision of modalities for the implementation of the ICT curriculum at A' level in the selected high schools. The availability of ICT training materials if not met, is considered to be among the problems that could negatively affect the management and implementation of ICT curriculum in government aided high schools in Nakasongola District. The less the number of computers and their accessories, means the less the opportunities for students to have hands on experience.

The Observer, Monday, December 22-23, 2014 reported that "secondary schools lack laboratories, computers and their accessories. Many students approached said they were seeing computers for the first time during the national examinations..."

Empirical studies on the relationship between availability of ICT study equipment and ICT curriculum management are many. For example Makau, (2008) established that ICT materials,

resources and accessories form a key factor to the successful implementation and integration of ICT in education institutions in Kenya.

Aduwa-Ogiegbaen and Lyamu, (2009) established lack of sufficient hardware and software applications, as one of the problems hindering integration of ICT in the secondary cycle in Nigerian secondary schools. In their study, Diffusion of information communication technology in selected Ghanaian secondary schools, Malcolm and Godwyl, (2008), reveal that one fundamental problem facing the ICT syllabus management in schools is lack of sufficient computer infrastructure. This indicates that when ICT training materials are in shortage, ICT implementation in institutions of learning tends to be minimal and vice versa.

Ziwa, (2012) in his paper on networking and use of ICT in the French education system reported that the main obstacle to utilizing computers in schools is the shortage of computer peripherals.

It is believed that successful use of ICT in schools is hampered by shortage of tools. Sewanyana, (2010), in his study on adoption and usage of ICT in developing countries argued that, low usage was due to high cost of required investment in materials thus being deterrent. The findings suggested that there was need to widen ICT facilities for the local entrepreneurs to take advantage of opportunities associated with adoption of ICT.

While most studies above show that those materials pose a challenge to adoption and teaching of ICT, Tusubira and Mulira, (2013) seem to be taking a different position of considering materials as a less important factor. According to them, availability of study materials was not taken as a major inhibitor of ICT implementation in schools. They considered teachers' awareness and positive attitude towards ICT as necessary conditions for effective ICT implementation.

Sharma, (2011) argues that the cost of a desk top computer connected to the internet is often prohibitive for most people in developing countries and for those who can afford, maintenance is difficult. Thus, developing countries are likely to have a lower rate of ICT diffusion in their curriculum. It is believed that as the price of a modern computer falls in developed countries, it is steadily rising in developing countries. In support of this statement, Sife et al, (2009) reported that while a desk top computer may cost less in a month's wage in the USA, the average worker in developing countries may require more than six months wage to buy one and besides that, costs associated with peripherals may be beyond reach of some institutions in developing countries.

Much as most studies above were concerned with availability of ICT study materials, the population studied was different. For instance, some studies were concerned with secondary school teachers while others considered only post graduate lecturers. Furthermore, the studies were mainly in line with institutions of higher learning like Makerere University, Kyambogo University and none was related to government aided schools in Nakasongola district.

To contribute to the closure of this gap, this study needed to investigate the availability of ICT study equipment towards the management and implementation of the ICT curriculum in selected government aided high schools in Nakasongola district.

2.2 ICT Teachers' skills and the management and implementation of the ICT curriculum

Hornby, (2013) defines skill as the ability to do something well. Competence in this study will refer to special ability (or expertise) enabling one to impart skills to learners and perform any activity by using a computer efficiently and its related peripherals in either teaching or learning.

Several studies have attempted to relate adoption of qualified and skilled teachers in ICT. For example, Bates, (2010) reported lack of trained and skilled personnel as an obstacle to ICT use in institutions of higher learning in Tanzania, while Agaba, (2013) found lack of skills and ICT competence as one of the problems explaining underutilization of Makerere University Library electronic information resources by academic staff.

Farrell, (2007) established that, though the Faculty of Computing and Information Technology at Makerere University trains staff in e-learning and supports e-learning in the whole university, comparatively few teachers have the skills to make pedagogical use of ICT for teaching across the curriculum. This could be due to inadequate ICT training skills, lack of time and negative attitude by teachers towards ICT implementation.

Computer competence, therefore, can be observed in terms of teacher's beliefs concerning their knowledge, basic skill, and capability of performing essential functions using the computer and ably imparting the skills and concepts. According to Albirini, (2014), computer competence refers to educators' beliefs about their computer knowledge and skills. Computers are an essential part of many work places and employers need both men and women with computers skills.

According to a UNESCO, (2012) survey, about 35% of the already trained teachers in secondary schools in Europe, Asia and Africa have basic skills in ICT, which leaves 65% of the teaching workforce on the three continents still in need of computer skilled personnel.

Alonzo, (2012) argues that teacher content knowledge influences how teachers engage students with subject matter. Teachers' content knowledge makes a difference in their instructional practice and their student's achievement. This means that more knowledgeable teachers are more likely to further students understanding. Teachers with deeper content knowledge are more likely to teach better and propose additional guidance to enhance learning than those with weaker knowledge.

Numerous problems related to ICT curriculum infusion and management occur due to lack of teachers or lack of teacher's technical skills and knowledge of content or maintaining the functionality of the computer.

Mooiji and Smeets, (2011) in the study aimed at investigating the implementation of ICT within secondary schools in Holland, found that teachers' competence and confidence in their skills were one of the main factors to influence teachers' willingness to teach ICT. They claimed that educators' lack of knowledge is a serious hindrance to teaching ICT in secondary schools. Educators must attain and maintain an assured degree of technological competence to make instructional strategies more effective. Training all teachers on the educational use of computers gains importance when considering integrating computer into regular curriculum. Teachers need to know how to use computers first before they can integrate them in the curriculum. This could make ICT innovation simple to adopt and implement as the innovation becomes compatible with the current objectives of the users. Although some come to the job with computer related

education, many workers need training or retraining to keep up with new computer hardware or software. (Busch, 2008).

According to Sarantokos, (2012) when technology is introduced in the curriculum, the emphasis is often on teaching about technology instead of teaching technology. Hence, inadequate preparation to teach technology is one of the reasons that teachers may not systematically teach ICT. Many teachers of ICT lack the necessary skills and thus need to be given opportunities to practice using information technology in their training programs so that they can augment their classroom activities. Teachers are more likely to teach ICT competently when professional training gives them an opportunity to learn, share and collaborate with colleagues. This suggests that training teachers to update their ICT skills may aid the implementation of ICT into the curriculum.

Knowledge creation and the ability to translate ICT skills and knowledge to the benefits of society are critical. Professional ICT skills are required for empowerment to enhance ICT learning. Human capital must be developed (Amstrong, (2009), through training, research and capacity building. However, institutions of education in most developing countries are affected in this area. Ensminger et al, (2012) found that low levels of skills and the need to train users influenced ICT implementation whereas Dalton, (2014) emphasized the importance of retooling teachers for the diffusion of ICT in schools.

Bauer and Kenton, (2010) stated that although teachers were having fairly sufficient skills, were innovative and easily over came obstacles, they did not inculcate technology consistently both as a study subject and a skilling tool. Reasons were out dated hardware, lack of appropriate

software, technical difficulties and student skills level. The study found out that professional development has a significant influence on how well ICT is taught.

According to Oliver, (2013), the success of technological innovations in education depends largely on the skills and knowledge of teachers. The study reported that teachers' lack of knowledge and skills is among the most inhibiting obstacles to learning ICT in schools. Similarly, in the United States, Knezek and Christensen, (2012) reported that educators with higher levels of skill, knowledge and tools would exhibit higher levels of ICT instruction in the classroom.

While the majority of the above studies showed positive correlation between skills development and adoption of ICT, and some were in secondary schools, none was on the context of Nakasongola district thus the need for this study to investigate the management and implementation of the ICT curriculum in government aided high schools in Nakasongola district.

2.3 Extent of Administrative support and the management and implementation of the ICT curriculum.

Soanes, (2014) defines administrative support as an act of giving out, or applying something to accelerate the progress of another in an organisation. Administrative support in the context of the ICT syllabus management refers to the presence of enhancing ICT instruction using role models, such as the head teacher, and the presence of incentives for teachers to use technology.

In this study, administrative support refers to the help and guidelines given out by administrators of institutions to aid in computer training and integration of the ICT policy into the curriculum. Twinomujuni, (2011) reported that administrative support is critical to the successful integration of ICTs into the learning processes. It can be argued that administrators can provide the conditions that are needed, such as putting in place an ICT policy, incentives and other relevant resources.

Afshari et al, (2009), indicated that teachers need technical and training support to assist them in the teaching -learning process when they face constraints, whereas for competent teachers, they are eager to share their expertise and provide technology support to their colleagues. Problems related to ICT curriculum infusion occur among the teachers due to the lack of technical knowledge of maintaining the functionality of the computers. Moreover, lack of technical support could hinder the management of the computer studies. Lack of training support by administrators could be identified as a significant barrier towards implementation of ICT. Krysa, (2009) reported that successful management of computer studies can only occur if administrators offer teachers support and leadership. Yang (2011), in a case study at Curtin University of technology reported that university teachers who

received support from administrators had a high commitment to the adoption of ICT for teaching and learning. Hence, availability of ICT facilities alone is insufficient and must be accompanied by technical as well as administrator support as supplemented by Twinomujuni, (2011).

Aryatuha, (2007) also noted that the availability of computer hardware and software should be accompanied with training of the users and constant technical support.

Mbulankende, (2007) 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. It was asked whether Administrative support has a great impact on implementing the ICT curriculum. Thus, the role of the school administrator is crucial in providing the force, support and conditions to enhance the teaching of computer at A' level.

Several past studies had tried to relate Administrative support and ICT management and implementation like Cameron, (2009) who found lack of administrative support as a barrier to adoption of innovation in Nigerian Education system. Mumtaz, (2010) established lack of administrative support as a problem that prevents reliable ICT instruction. Hawkins, (2011) reported that administrators offer very little structural support and incentives to teachers to effectively handle ICT in class rooms.

Administrators in school, act as a mediator to integrate ICT into the education system by playing a key role in encouraging, supporting and helping teachers to use computers in teaching. The support of the head teacher encourages and supports teachers' willingness to teach the subject. Thus the administrator is crucial in providing the force, support and conditions to enhance the teaching of ICT.

Lack of training support by administrators should be identified as a significant barrier towards the implementation of ICT. Teachers need recommendation for ways how ICT can be taught to meet the educational objective with ideas on how to take advantage of the technological job world.

Peansupap and Walker, (2011) indicated that the failure of the ICT paradigm shift derives from traditional beliefs of managers and ICT experts that technology is a magic bullet and so they neglect the role of people in implementing it.

Munyantware, (2009) in his study, problems affecting teachers' adoption of technology among science and math teachers in Kisoro district reported that in addition to social support from colleagues, support from the administration was more needed. The study suggested that continuous support to teachers gives them confidence in doing their work.

Akankwasa, (2009) found out that although many teachers share beliefs that technology could promote learning and that ICT is desirable, they are reluctant to teach it because of insufficient support and resources.

Much as the above mentioned studies were on the context of the problems that influence ICT implementation, none of the problems studied were in line with management and implementation of the ICT curriculum, the gap this study intended to close. The only factor that was similar was pedagogical ICT development implementation. In addition, such studies did not even investigate the management and implementation of the ICT curriculum in government aided high schools in Nakasongola district, the gap this study intended to close, hence the need for this study to investigate the same.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 INTRODUCTION

This chapter focuses on the design, population, sampling strategies, data collection methods and instruments, data quality control, procedure and data analysis that were used in the study.

3.1 Research Design

The study basically used qualitative approaches. The quantitative approach when applied in some aspects was based on variables measured with numbers and analyzed with statistical procedures (Amin, 2005). In particular, the study used the exploratory survey research design in order to provide a baseline for the future, since the program of implementing the ICT curriculum policy had existed for only five years at the time of the research project. It would therefore ensure that a more thorough definitive future study starts with sufficient knowledge of the nature of the problem.

The study intended to use a survey involving a large number of respondents and exploratory in nature so that pertinent data would be collected from all respondents once and for all to reduce on time and costs involved (Amin, 2005).

3.2 Area of Study

This study was carried out in six selected Government Aided secondary schools in Nakasongola District, Central Uganda, which run the Universal Post O' Level Education and Training programme (UPOLET). The key concern was to assess level of preparedness for the management and implementation of ICT curriculum in these schools.

3.3 Population

The target population of 260 respondents in the study constituted 30 administrative staff and 10 ICT teachers plus 220 A' level ICT students respectively from the 10 selected schools. These categories were the ones involved because they are the group that were dealing with the actual management and implementation of the ICT curriculum and were a representative sample size of the study area and would be able to capture the characteristic of both urban and rural schools.

3.4 Sample and Sampling Strategies

Of the target population of 220 A 'level ICT students, 30 administrative staff and 10 teaching staff, Krejcie and Morgan (1970)'s Table of Sample Size Determination, helped suggest the minimum sample size.

In order to ensure accurate representative samples, stratified (simple random) sampling was a suitable approach for the student population and purposive sampling was used for both the administrators and ICT teachers. To attain the respective sample sizes from the said population, the researcher used appropriate sampling strategies. (See Table 1). The ten selected schools were stratified into two groups of 5, out of which, using simple random sampling, 3 schools were chosen from each respective strata and then the percentages of the samples got by dividing the sample size by the target population and multiplying by 100. Purposive sampling dictated the respondents to be selected as administrative staff and ICT teachers, since these were the ones who would provide the most appropriate responses to the questions. Amin, (2005). Stratification uses knowledge of the population to increase the representatives of a sample of a given size or to get an equivalent amount of information for a small sample. Amin, (2005).

Table 1: Population, Sample size, Percentage Sample and Sampling Techniques of the Study

Category	Target population	Sample size	Percentage sample	Sampling technique
Head teacher	10	6	60%	Purposive
Deputy Head teacher	10	6	60%	Purposive
DOS	10	6	60%	Purposive
ICT teachers	10	6	60%	Purposive
Students	220	20 (s5 and s6, 10 each class)	29%	Simple random
T0tal	260	144		

Source: Primary data

3.5 Primary and Secondary data collection methods

The study obtained data from different secondary sources such as textbooks, magazines, journals, internet, and dissertations on the issue at hand at affordable cost. Due to normal short comings of secondary sources such as out datedness and inadequacy in terms of coverage, the study went a mile further beyond secondary sources and contacted respondents for reliable data using self administered questionnaires (SAQs).

This approach, the researcher believed, would enable coverage of a large population quickly and at an affordable cost; further SAQs were very suitable for the target respondents on account of their knowledge in English (Sarantokos, 2012).

Structured interviews were applied to administrators since they are few, and able to give in-depth information which could be left out in SAQs. Document review method was also used to obtain additional and vital information which could probably not have been accessed through SAQs and interview.

3.6 Data Collection Instruments

The study was guided by self administered questionnaires, interview guides and a document review guide as described below:

3.6.1 Self Administered Questionnaire

Three sets of SAQs were directed towards the DOS, ICT teachers, and the A 'level ICT students respectively. Each of the respective SAQs was starting with a main title; followed by introductory note about the research (as shown in Appendix). Some questions in the instrument were close-ended, and few were open ended questions to allow respondents freely express their opinions. The close-ended questions with predetermined multiple responses measured against a Likert scale was used to collect quantitative data (Krejcie and Morgan, 1970).The study used this instrument because it helps cover a large number of respondents in a relatively short time, it was easy to guarantee the respondents' confidentiality and generate reliable data as respondents were able to answer questions in their own mood without being affected by the researcher's presence. Amin, (2005).

3.6.2 Interview guide

Vogt, (2014) defines interview guide as oral and vocal questioning technique or discussion. The interview schedule was prepared for administrators and ICT teachers to collect data from them. Questions were limited to availability of ICT study equipment and accessories, ICT teachers' skills and availability of equipment and administrative support (as shown in the Appendix). The interview schedule provided the researcher with greater opportunity to explain the purpose of the study. Vogt. (2012).

3.6.4 Document review guide

A Document review guide was used to view and analyze the existing documents that could show evidence of management and implementation of ICT studies, number of students, and ICT guidelines in place, in the selected institutions.

3.7 Procedure for data collection

The researcher obtained a letter from the Dean graduate school introducing him to the respondents in Nakasongola district to permit him collect data about their schools. The letter was presented to each category of the respondents that were involved in the study. Their consent was obtained to participate in the study. In the collection of data, anonymity and extreme confidentiality was observed while handling the responses. Information was availed to the respondents that the research would not endanger them directly or indirectly and that participation was voluntary.

3.7.0 Data quality control

3.7.1 Validity of the instruments

Validity refers to the accuracy of instrument used in research to collect meaningful and right data (Amin 2005). Content validity literally means the amount of substance in the study. The instruments had adequate traits due to consultations with the supervisor, colleagues and the research expert. The research expert helped in strengthening the validity of the research instruments and calculation of the content validity, CVI. The test of content validity was established through independent judgment with two research consultants. The formula was

CVI= n/n.

Where n is = number of items related as relevant and N= total number of items in the instrument.

The CVI for the interview guide and questionnaire to be regarded as valid was accepted at above 0.7. This is because Amin (2005) suggests that in a survey, the least CVI recommended in a survey study should be 0.70 or 70%. Some adjustments were made to make the questions more valid. The results are presented in Table 2.

3.7.2 Reliability

Reliability refers to the degree of consistency in which a measuring instrument yields when the entity being measured has not changed (Amin, 2005). Reliability refers to how consistent a research procedure or instrument is. Twinomujuni, (2011). The strategies that were used to obtain reliability are peer debriefing, prolonged engagement and audit trials. Peer debriefing involved the researcher working with colleagues to examine the instruments and giving their views about their correctness. With prolonged engagement, the researcher spent sufficient time in the field to learn or understand the social setting while audit trials involved a thorough

collection of information regarding all aspects of the research. Data was systematically checked, focus maintained and there was identification and correcting errors (Amin , 2005). This helped to ensure establishment of accuracy of data collected. Reliability for quantitative data was obtained by carrying out a test of reliability analysis (Alpha-coefficient). This was field tested on one government aided high schools in the study area and it was not involved among the schools in the final study. This was done to ensure accuracy of the instruments to enable the researcher send properly designed tools in the research field. Using SSPS, the instruments were found valid at a (alpha) above 0.7. A reliability of 0.70 indicates 70% consistency in the scores that are produced by the instrument (Sife, 2007). The use of SPSS was because of its being easy to apply and fitting a two or more point rating scale. Results of Cronbach are presented below in Table 2.

Table 2: Reliability and Content Validity Index

Items	Content validity index	Cronbach alpha (a) value
ICT equipment	0.81	0.792
Administrative support	0.80	0.755
Academic qualifications	0.83	0.782
ICT challenges	0.79	0.751
ICT performance	0.80	0.791

3.6 Ethical Considerations

To be ethical is to conform to accepted professional practices (Webster's Dictionary, 2014). Before interviews and administration of questionnaires the researcher fully explained the objectives of the study to all the respondents. In addition, their consent was sought and their right to confidentiality assured before interviewing and distributing questionnaires. Furthermore, the researcher fully observed their right to privacy and anonymity by not asking them to write or mention their names and names of the schools. The researcher also thanked the respondents for their participation in the study.

3.7 Data Presentation and Analysis

The study used both quantitative and qualitative data analysis techniques. Quantitative data was checked for completeness, and entered into the Statistical Package for Social Sciences (SPSS version 16.0) programme. Regression and ANOVA were used for analysis of quantitative data.

Qualitative data was transcribed and analyzed using qualitative content analysis. The emerging themes were presented with a few quotes to illustrate the findings on the management and the implementation of ICT curriculum in the selected high schools in Nakasongola district.

The responses to the close-ended items in the data collection instruments were assigned codes and labels. Frequency counts of the responses were obtained to generate descriptive information about the respondents who participated in the study and to illustrate the general trend of findings on the various variables that were under investigation. This involved the use of percentages, mean, variance, standard deviation and this was presented in form of tables and graphs. They helped to summarize large quantities of data whilst making the report reader friendly. Some of the responses to open ended items in questionnaires were presented as quotes while others were tabulated after obtaining frequency counts. Microsoft excel was used to generate tables.

Each interview schedule was closely scrutinized before leaving each respondent; it was cross checked for uniformity, accuracy, completeness and consistency of information. Some data was coded and tabulated using frequency tables. While analyzing content of the findings, some of the responses from interviews were quoted directly in the descriptive narrative of the findings.

3.8 Limitations of the study

A number of limitations were experienced during the study. Some of the targeted population was not co-operative and hesitated to respond to the questionnaires. However, efforts were made to convince the respondents that the information was only for study purposes. Some respondents ended up losing the questionnaires thus nearly affecting the expected sample size according to Krejcie and Morgan, (1970) sample size determination.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.0 Introduction

This chapter presents the findings of the study. The study was carried out to investigate management and the implementation of ICT curriculum in government aided high schools in Nakasongola district.

The study was centered on the responses to the three research questions; the findings were presented in tables and charts. Therefore, this chapter was divided into sub sections namely response rate and research questions that the study sought to answer.

4.1 Response rate

Interviews were conducted with 12 respondents and these included 6 Head teachers and 6 Deputy Head teachers and the questionnaires were assigned to the DOS, ICT teachers and ICT students. Analysis of documents was conducted in all the 6 schools selected for the study. All the necessary documents were provided for analysis to the researcher. A total of 132 questionnaires were presented to all the respondents.

4.2 Results on the availability of study equipment to enhance the ICT curriculum in the selected secondary schools in Nakasongola district.

The question stated, "What study equipment are available to enhance ICT curriculum in the selected secondary schools in Nakasongola district?" It was intended to solicit data for research objective one which was to establish the relationship between the availability of ICT study equipment and the implementation of the ICT curriculum.

This question formed section A on how school ICT facilities were availed for implementation. The findings are presented in Table 3 below.

Table 3: Students' responses on the Questionnaire on Availability of ICT study equipment and implementation of ICT curriculum awareness n (120)

SECTION A	Availability of ICT study equipment and implementation of ICT *curriculum*	**SA**	**%**	**A**	**%**	**D**	**%**	**SD**	**%**
	My school has a functional Computer lab	41	34	39	32.5	28	23	12	10
	Computers are fully equipped with necessary learning accessories	36	30	37	31	27	22	20	17
	The Computer lab has internet connectivity	32	27	34	28	34	28	20	17
	There are provisions in case of power failure	11	9	6	5	62	52	41	31
	All students access a personal computer during practical lessons	23	19	36	30	25	21	36	30
	Instruction is done following the ICT syllabus	27	22.5	48	40	40	33.3	5	4
	Our computers are user friendly, they start very fast and do multipurpose tasks at the same time	23	19	37	31	39	32.5	21	17.5
	We have an adequate computer room which accommodates all students	22	18.3	29	24	33	28	36	30
	I always access a personal computer during ICT practical lessons	20	17	36	30	40	33	24	20
	All our computers in the ICT laboratory are operating	20	17	37	31	39	32.5	24	20

Source: Primary data

The findings from question one in Table 2 show that 67% of the respondents agreed that their schools had functional computer laboratories which was opposed by 33%. This, in my opinion implied that majority of the computer laboratories in the different schools were functioning.

The student questionnaire responses from 61% indicated that their Computers were fully equipped with necessary learning accessories while 39% disagreed; this meant that schools had tried to equip the computers.

Further results by 55% of the student respondents showed that their Computer laboratories had internet connectivity while 45% denied. This meant that although majority schools had access to internet connection, still many of them didn't have, which was hindering the implementation of ICT in schools.

The study findings from 14% of the respondents went on to reveal that they had provisions in case of power failure. This was contrary to 83% who disagreed. The indication is that many schools didn't have alternative provisions in case of power failure.

On the issue of all students accessing personal computers during practical lessons, the results by 49% established that they accessed while 51% disagreed. This meant that many students used one computer for practical lessons; the interpretation still may go on to mean that there were a few computers for crowds of students. This in my opinion was still a disaster as regarded implementation of the ICT program.

The results from 62.5% of the respondents established that Instruction was done following the ICT syllabus while 37.3% disagreed, meaning that most of the schools follow ICT syllabus when instructing lessons.

The results from 50% of the student respondents indicated that their school computers were user friendly; they could start very fast and did multipurpose tasks at the same time while 50% disagreed. This implied that on average the computers were user friendly hence effective implementation though there was need for acquiring better recent computers.

The results from 42.3% of the respondents agreed that they had an adequate computer room which accommodates all students while 58% disagreed. This meant that schools were lacking adequate computer rooms that could accommodate all students with enough computers.

The findings from 48% of the respondents went on to reveal that all their computers in the ICT laboratory were operating; this was opposed to 52% who disagreed. It gave a clear sign that there were computers in the laboratories that were down and not working, which implied that the program was ineffectively being implemented in government aided high schools in Nakasongola district.

Table 4: Questionnaire for ICT Teachers and DOS on Availability of ICT study equipment and Implementation of ICT curriculum n (12)

Availability of ICT study equipment and Implementation of ICT curriculum	SA	%	A	%	D	%	SD	%
My school has a functional Computer lab	4	33.3	4	33.3	1	8	3	25
Computers are fully equipped with necessary learning accessories	2	17	4	33.3	3	25	3	25
The Computer lab has internet connectivity	1	8.3	3	25	5	42	3	25
There are provisions in case of power failure	2	17	1	8.3	3	25	6	50
All students access a personal computer during practical lessons	3	25	2	17	4	33.3	3	25
Instruction is done following the ICT syllabus	3	25	5	42	1	8.3	3	25

Source: Primary data

The findings from question one in table 4 show that 66.6% of the respondents agreed that their schools had functional computer laboratories which was opposed to 33% who disagreed. This, in my opinion, implied that majority of the computer laboratories were functioning despite the fact that many computers were not operating.

The study results from 50.3% established that Computers were fully equipped with necessary learning accessories while 50% opposed. This meant that though schools had computers there was need for equipping them with more learning accessories in some schools.

Some of the respondents, that is, 33.3% indicated that the computer lab had internet connectivity while 67% disagreed. This meant that internet connections were available at a few schools but lacking in many other high schools in Nakasongola district.

The findings from 25.3% of the respondents revealed that there were provisions in case of power failure while 75% denied; meaning that most schools had one source of power and when it was down then computers had no alternatives for operation.

On the issue of all students accessing a personal computer during practical lessons 42% agreed while 58.3% disagreed and this implied that computers were few compared to the big numbers of the students.

The results from 67% of the respondents disclosed that Instruction was done following the ICT syllabus while 33.3% dissented. This meant that teachers followed the ICT syllabus in implementing the program.

4.3 Interview results on the availability of study equipment and implementation of the ICT curriculum

In the interviews that were conducted, 6 Head teachers and 6 deputy head teachers were sampled on the study equipment and on how they were implementing the ICT curriculum in their schools. Majority of the interviewees reported that their schools had functional computer laboratories with computers fairly equipped with necessary learning accessories.

One of the interviewees said, "The Ministry of Education and Sports partnered with UCC and gave us 41 computers to boost ICT learning for students. However we have power problems.

Sometimes power goes off for a week and there are no alternatives. This is affecting the implementation of the program"

Another one said, "We have few computers with so many students and even some of the computers are down. We don't have a technician to repair, maintain and service computers. Many of my teachers have been computer illiterate and they have just enrolled for the computer programs, since these are new innovations on the curriculum''

The interview results showed that some schools had internet connectivity but there were no other provisions in case of power failure. A respondent said that his students were by then able to communicate using social media channels on the internet. However they were limited by few computers compared to the large crowds of students schools have.

"In our school we subscribe to the internet once every term because it is expensive yet we have a lot of programs to fund" said a head teacher.

On the issue of whether Instruction was done following the ICT syllabus the interview respondents reported that the teachers were instructing student learning following the curriculum ICT syllabus. One respondent had this to say,

"I secured the ICT syllabus from NCDC and UNEB to guide in the teaching of ICT at this school; I have as well facilitated the department with textbooks since we don't have a qualified teacher to handle the subject content well."

The respondents in overall reported that there were guidelines/ rules and regulations for the computer laboratory users so that they could maintain well the equipment and computer lab facilities.

4.4 Document review on availability of study equipment and implementation of the ICT curriculum

The document review carried out revealed that majority of the schools sampled had documents on ICT curriculum implementation, schools conducted ICT meetings, and this was seen in the minutes that were kept. The files also showed the teaching models for ICT teachers. In some schools they resolved to look for a computer technician who would service, repair and maintain the computers. This was in the minutes seen. The document review revealed that majority of the schools had desktop computers but printers, projectors, scanners and white boards were lacking.

According to the school time table seen in all the 6 schools visited, ICT was only allocated time on the school timetable in 3 schools, in the rest of the schools teachers could look for their own time to teach the students. This in my view implied that on average ICT was being taught in schools.

Evidence of ICT teachers' arrival at school was also observed in the arrival books at many schools. It was also found out in the document review that follow up of some events in the learning of students was done by both the DOS and the head teacher however in some schools it was noted that they were still waiting for MoES to send them ICT teachers. This was seen in the minutes of staff meetings held and that the head of ICT department along with the ICT teachers would monitor and ensure safety of the computers, no student would go to the computer room without the authority of the teachers concerned and that the head of the computer lab was supposed to give regular reports during the following meetings. This was reflected by responses given in the questionnaires, interview guides and the document review conducted.

All in all the results for research question one by all the three instruments, that is, the questionnaire, interview and document review did not differ; they all produced corresponding information on availability of study equipment and implementation of the ICT curriculum in government aided high schools in Nakasongola district.

4.5 Results on whether ICT teachers have suitable qualification to handle the ICT curriculum at A' Level.

This question was intended to solicit data for research objective two which stated, "To find out whether there was a relationship between availability of qualified ICT teachers and the implementation of the ICT curriculum. The questionnaire for this objective was sampled on 120 students, 6 ICT teachers and 6 Directors of Studies. This was because they were specifically involved in implementation of the ICT curriculum in the schools under study. This question formed section B of the questionnaire and findings were presented in table 5 below:

Table 5: Student questionnaire on ICT teacher competence and use of equipment in the implementation of the ICT curriculum n (120)

	ICT teacher qualification and implementation of ICT studies	SA	%	A	%	D	%	SD	%
	Our teacher is always available whenever it is time for ICT classes/lesson	42	35	32	27	17	14	29	24
	Our Teacher is approachable when ever need be for learning	40	33	27	23	13	11	40	33
	Our computer room is always open for ICT students only when it is time for ICT lessons.	55	46	42	38	10	5	13	11
	I use email address, face book , twitter or whatsapp for communication with the ICT teacher	32	27	13	11	40	33	35	29
	Our teacher follows lesson plans and schemes of work during ICT lessons	37	31	39	33	25	21	19	16
	Our ICT teacher is always around incase for consultation	45	37.5	38	32	27	22.5	20	17

ICT Equipment	**Very often**	**%**	**Often**	**%**	**Rarely**	**%**	**Very rarely**	**%**
Desktop computers	102	85	0	0	9	8	9	8
Projectors	50	42	17	14	28	23.3	25	21
Printers	6	5	60	50	28	23.3	26	22
Scanners	10	8.3	46	38	27	22.5	37	31
Whiteboards	12	10	45	38	36	30	27	22.5

Source: Primary data

In the table above, students were sampled to give general knowledge /views on how their teachers implement the ICT curriculum in their schools. This was good in assessing the level of teacher professionalism and work rate towards student ICT curriculum.

The study results from 62% of the respondents indicated that their teachers were always available whenever it was time for ICT classes/lessons. This was contrary to 38% of the respondents who disagreed. The indication was that most teachers attended to their ICT lessons though some absented themselves from teaching students.

The findings from 57% of the respondents disclosed that their ICT teachers were approachable whenever there was need for learning as opposed by 43%, the difference in these percentages meant that though some teachers were approachable, many of them were still missing out on this, which was hindering ICT implementation in Schools.

The results from 84% established that computer rooms were always open for ICT students only when it was time for ICT lessons while 16% disagreed. This meant that students accessed computers during time for ICT lessons.

The findings from 38% of the student respondents agreed that they had email addresses, face book, twitter or whatsapp, which were active, while 62% disagreed. This implied that very few students had embraced technology for communication or either they were lacking ways of how to go about it.

On the issue of whether their teachers had lesson plans and schemes of work, 64% agreed while 37% disagreed. This meant that majority of the ICT teachers had lesson plans and schemes of work.

The respondents were sampled on how often they use the ICT gadgets/ ICT equipments; the essence of the question was to find out how practical they go in lessons:

Majority of the students, (92%), agreed that they very often use desktop computers as opposed to 8% who disagreed. This meant that schools had desktop computers which they used for instruction.

As regards projectors, only 56% 0f the respondents agreed while 43.5% of the respondents indicated that they rarely used projectors during ICT lessons.

For the Printers, Scanners and White boards, a total sum of 149.3% of the respondents showed that they never used such equipments during their lessons while 151.3% disclosed that they rarely did use them. This means that these gadgets were rarely used at schools for ICT lessons.

Table 6(a): Questionnaire for ICT Teachers and DOS on use of ICT equipments and ICT teacher competence in the management and implementation of the ICT curriculum n (12)

ICT Equipment	Very often	%	Often	%	Rarely	%	Very rarely	%
Desktop computers	6	50	5	42	0	0	1	8.3
Projectors	4	33	3	25	2	17	3	25
Printers	5	42	4	33	2	16.6	1	8.3
Scanners	2	17	8	66.6	2	8.3	0	0
Whiteboards	None	0	7	58	2	17	3	25

6(b): ICT teacher qualification requirements and implementation of the ICT curriculum	**SA**	**%**	**A**	**%**	**D**	**%**	**SD**	**%**
ICT teacher is only equipped with computer user experience	4	33	2	17	3	25	3	25
ICT Teacher has other qualification but has attended Retooling courses	6	50	1	8.3	3	25	2	17
I have adequate qualifications/ skills in Microsoft packages	3	25	3	25	3	25	3	25

Source: Primary data

The teacher respondents were asked to rate how often they used ICT equipment in teaching, (see Table 6 above), and their responses on this question indicated that 92% use desktop computers

when teaching students while 8.3% dissented. The results on projectors indicated that 58.4% concurred that they used them while 42% showed that they rarely used them for instruction.

The study results from 75% also established that teachers very often used printers as opposed to 24.9%. This meant that printers were on average being used for instruction in schools despite the fact that still some schools were missing out on this.

The findings from majority of the respondents showed that Scanners and White boards were rarely being used in these schools while the rest agreed. This implied that many teachers rarely used these gadgets in class.

The study also found out, (as indicated in Table 6(b) above), from 50% that the ICT teachers were only equipped with computer user experience as 50% disagreed. This meant that on average, some teachers, ICT was not their area of subject qualification but only equipped in computer use.

The results from 58.3% of the respondents' agreed that they had other qualifications but had attended retooling courses for ICT teaching as opposed to 42% who denied, which means that schools were lacking qualified ICT teachers.

The results by most teachers (50%) still showed that they had adequate qualifications and skills in Microsoft packages while 50% disagreed. This meant that teachers' qualifications were on average, regarding ICT curriculum implementation.

4.6 Interviews for head teachers and deputy head teachers on ICT teacher qualification and the implementation of the ICT curriculum

In the interviews that were conducted, many of the respondents reported that they had recruited ICT teachers with basic knowledge and skills in basically Microsoft packages. Three had requested for ICT teachers from the ministry to handle the subject technicalities but the ministry had not yet answered them. Therefore they resorted to recruiting teachers on temporary basis with skills in ICT. Head teachers said that they lacked qualified teachers for ICT.

The interviews showed that schools had secured and were using more Desktop computers than the rest of the ICT equipments like printers, scanners, whiteboards and projectors. Most of the lesson learning aid was desktops than any other gadgets. However, even the desktops were old fashioned in most of the schools and lacked various recent accessories.

The results established that the ICT teachers had much knowledge in Microsoft packages, schemes of work and they exhibited high levels of professionalism. The interviewees observed that the ICT teachers were only equipped with computer user experience, but not professionally qualified to teach ICT. These teachers had other qualifications but had attended Retooling courses mostly in skills in Microsoft packages.

4.7 Review on Availability of documents

In the document review conducted, there were minutes of ICT departmental meeting with management showing their plans, challenges and way forward for the department. Teachers' files had their qualifications and majority of the teachers had qualified in other subjects and were teaching it because of their skills in computer. It was only two schools with qualified staff to handle ICT in the entire district. Most of the teachers had seminar or workshops papers, with qualifications in Microsoft packages. From their scheme of work records most teachers had concentrated much on teaching theory than practical lessons.

In conclusion, the findings from all instruments concurred that schools had less ICT facilities and the few teachers who were qualified in ICT and handling students only went for retooling courses but had qualified to teach other subjects.

4.8 Results on the extent to which schools' Administration supported the management and implementation of the ICT curriculum in the selected high schools in Nakasongola district

In this question, the level of ICT management practices were of interest because it was necessary to investigate the extent of support in each category before investigating the general level of participation in ICT management. To determine this, questionnaires were administered to the students, ICT teachers and DOS. The results from questionnaires were presented in two tables where one table shows the views of students as key informants while the other table shows the views of ICT teachers. This was done to put the data into manageable proportions for easy presentation. Interviews were administered to the head teachers and deputy head teachers. A Document review was also conducted. The findings were summarized in tabulated form.

Table 7: Student questionnaire on the extent of administrative support in the management and implementation of the ICT curriculum n (120)

Extent of administrative support and the implementation of the ICT curriculum	SA	%	A	%	D	%	S D	%
1. In this school, Management holds meetings with ICT teachers	60	50	29	24	13	11	18	15
2. ICT teachers in this school are sponsored to attend ICT workshops and retooling courses	31	28	9	7.5	52	43	28	23
3. In this school, the ICT department has a vote on the school budget	50	42	30	25	34	28	6	5
4. In this school ICT is included on the general Time table	57	46	40	33	12	10	11	9
5. Expert technical support is availed whenever need arises	46	38	35	29	20	17	19	16
6. Servicing of the computers is done regularly in this school.	34	28	40	33	23	19	23	19

Source: Primary data

Table 7, above shows that 74% of the student respondents revealed that schools' administration held meetings with ICT teachers towards better ICT implementation in schools, while 26% disagreed. This meant that school administrations often held meetings to discuss ICT issues.

It was shown by 35.5% in the student responses that ICT teachers in their respective schools were sponsored to attend ICT workshops and retooling courses while 66% disagreed. This meant that teachers rarely attended ICT workshops at school.

On whether ICT had a vote on the school budget, 67% respondents agreed while 33% disagreed. This implied that ICT implementation had financial constraints.

The student questionnaire discovered from 79% of the respondents that in their schools, ICT was on the general Time table as opposed to 19% who disagreed; this implied that many schools allocated ICT on the general school timetable.

The findings from 67% showed that their schools availed expert technical support whenever need arose, this was contrary to 33% who opposed. Basing on averages it was clear that schools tried to avail technical knowledge

At least 61 % of the respondents indicated that their computers were serviced regularly in their schools while 38% disagreed. This meant that schools did service their computers despite the fact that there was need for other schools also to maintain their computers.

Table 8: Questionnaire for ICT Teachers and DOS on the extent of administrative support and the implementation of the ICT curriculum, n (12)

Extent of administrative support and the implementation of the ICT curriculum	SA	%	A	%	D	%	SD	%
1. In this school, Management holds meetings with ICT teachers	4	33.3	5	41.6	1	8.3	2	17
2. ICT teachers in this school are sponsored to attend ICT workshops and retooling courses	2	17	1	8.3	4	33.3	5	41.6
3. In this school, the ICT department has a vote on the school budget	4	33.3	6	50	1	8.3	1	8.3
4. In this school ICT is included on the general Time table	6	50	2	17	1	8.3	3	25
5. Expert technical support is availed whenever need arises	5	42	4	33.3	2	17	1	8.3
6. Servicing of the computers is done regularly in this school.	4	33.3	5	42	2	17	1	8.3

Source: Primary data

The results by 74.9% of ICT teachers and DOS the responses established that in their schools, Management held meetings with ICT teachers to discuss ICT issues while 25.3% of them denied. These averages meant that schools Management conducted meetings for ICT implementation.

At least 25.3% of the respondents indicated that ICT teachers in their schools were being sponsored to attend ICT workshops and retooling courses as opposed to 74.9% who opposed. This meant that management was not giving enough support as regards workshops and seminars.

Further results from 83.3% of the respondents showed that in their schools, the ICT departments had votes on the school budget which was contrary to 16.6% who opposed. This meant that majority of the schools had some financial support towards the ICT department.

The results from 67% of the respondents indicated that in their schools, ICT is included on the general school Time table, though this was opposed to 33.3% of the respondents who disagreed. This implied that majority schools allocated ICT on the general time table.

On providing expert/ technical support whenever need arises, 75.3% agreed while 25.3% disagreed. This implied that schools were fairly trying to provide technical support whenever needed and then the inquiry into whether servicing of the computers was done regularly in the schools showed 52% in agreement while 48% disagreed, which implied that on average schools tried to service computers.

4.9 Relationship between management and ICT curriculum implementation in government aided high schools in Nakasongola district

The regression method was used to test the relationship between management and implementation of the ICT curriculum.

Table 9: Showing the relationship/correlation between the independent and dependent variable.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.641[a]	.601	.521	12.989

a. Predictors: (Constant), dmanagement, dICT

The dependent variable was 60.1% explained by the independent variables since R squared was .601 therefore being a good fit.

Table 10: Showing the F statistic of the relationship

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	41.500	2	20.750	23	.041[a]
	Residual	2868.300	17	168.724		
	Total	2909.800	19			

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	41.500	2	20.750	23	.041[a]
	Residual	2868.300	17	168.724		
	Total	2909.800	19			

a. Predictors: (Constant), management, dICT implementation

b. Dependent Variable: marks

The F statistic 23 had a p value 0.041 which was less than 0.05 thus management was statistically significant at 5% level of significance.

Table 11: Showing the co-efficiency of the relationship between management and ICT implementation

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	63.200	5.809		10.880	.000
	dmanagement	2.467	7.245	.102	.340	.001
	dict	-7.000	7.865	-.027	-.089	.030

Table 11: Showing the co-efficiency of the relationship between management and ICT implementation

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	63.200	5.809		10.880	.000
	dmanagement	2.467	7.245	.102	.340	.001
	dict	-7.000	7.865	-.027	-.089	.030

a. Dependent Variable: marks

The coefficient 2.467 showed that management had a strong effect on ICT implementation by 2.467 times more. This was through allocation of funds towards the ICT program and instructional materials. This was statistically significant at 5% level of significance since the p value 0.001 was less than 0.05. Therefore, the researcher concluded that management had a strong impact on ICT implementation in schools.

4.10 Interview results on administrative Support and implementation of the ICT curriculum

In the interviews that were conducted for objective three, the respondents were sampled on what administrative support that was being given towards the implementation of ICT curriculum in

schools. The interviews unanimously revealed that their schools have included ICT on the general Time table and do hold meetings to discuss ICT issues in their schools.

An interviewee is quoted to have said, `` I always hold meetings with the ICT department; this has helped us in planning, monitoring and evaluating the state of affairs in this department. Since most of the A' level students were offering the subject as an additional to their combinations''

``We introduced computer science at ordinary level so as to eradicate computer illiteracy; this has been through recruiting an ICT teacher on temporary basis as we wait for MoES to send us a computer teacher. We also allocate a budget to ICT department to facilitate its activities, however we are affected by inadequate funds and a delay in its release to schools, affects ICT operations. Some of our schools entirely depend on USE funds therefore its delay demolishes school programs and the entire staff''

Most of the respondents said that ICT teachers were sponsored to attend ICT workshops and retooling courses so as to empower the teachers with more skills and new innovations towards better ICT implementation in schools.

One respondent observed that, "The challenge we have is that computer facilities are few compared to the big number of students that we have. The students are ever fighting to see that they access one during lessons, in the process many of them are damaged, but I always avail technical support whenever need arises so that to keep students learning, therefore Servicing of the computers is done regularly in this school.

"They give out scholastic materials like books schemes of work and lesson plan books so that the teachers do prepare well their lessons, we give ICT teachers accommodation, medical care and transport allowances so that he can do his work when he is motivated."

In the document review, it was found out that most schools had given out scheme and lesson plan books to the teachers where they schemed and lesson planned for teaching students. Most schools had records on budgets allocated to the ICT department, allocation of ICT on the time table, UNEB results of students who offered ICT at A' level. However some schools had the ICT syllabus, but most of them lacked records of documents on ICT yet their libraries were well stocked with textbooks of other subjects. In my opinion this was evidence enough to say that many schools had inadequate text books for ICT.

Results on daily attendance books showed that most teachers were regular at school whenever it was time for lessons but also it was observed that some teachers were often absent as per document inquiry.

It was also seen in documents that some head teachers had tried to motivate their teachers through recognition and delegation.

In conclusion, the results of research question three tested by all instruments were not any different from the others. They all produced similar results, that on average, schools tried in their means to avail administrative support towards ICT implementation but could not do much because of financial challenges.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

5.0 Introduction

In this chapter, the findings of the study were discussed after which the conclusions and recommendations were drawn. For clarity and chronology, it was arranged by these contents and then by the three research objectives that the study sought to find out. Thus the chapter was divided into subsections namely, discussion which is related to the theoretical frame work and the literature review, conclusions and suggestions.

5.1 Discussion of study findings

The discussion was arranged according to the three objectives of the study. The discussed findings were empirically got from the field using a self-administered questionnaire and interview guide. The section was subdivided into the following subsections: ICT study equipment in line with management and implementation of ICT studies; ICT teacher qualification in the management and implementation of the ICT curriculum, and extent of Administrative support in the management and implementation of the ICT curriculum.

5.1.1 ICT study equipment in line with management and implementation of the ICT curriculum

It was found out from the study that majority of the schools were less equipped as far as facilitation was concerned. All instruments established this and through the interview many of them were quoted saying:

"The schools do not have adequate functional Computer laboratories, the state of laboratories was worrying, `we just decided to allocate the four computers to a certain room where students

can go and learn only when it's a practical lesson. Our school lacks adequate buildings where we can do all school programs.''

Aduwa-Ogiegbaen and Lyamu, (2009) established lack of sufficient hardware and software applications, as one of the problems hindering integration of ICT in the secondary cycle in Nigerian secondary schools.

The findings of the study revealed that majority of the computers were not fully equipped with necessary learning accessories. This was seen through the few computers schools are using for learning. This finding was in line with Malcom and Godwyl, (2008) in their study, Diffusion of information communication technology in selected Ghanaian secondary schools which revealed that one fundamental problem facing ICT syllabus management in schools was lack of sufficient computer infrastructure. This indicates that when ICT training materials are in shortage, ICT implementation in institutions of learning tends to be minimal and vice versa which is the case in Nakasongola district government aided high schools.

The study discovered that though there was internet connectivity in four of the sampled schools, the internet itself was always down as schools rarely subscribed for the internet. In many cases students could just be taught theory on how to use the internet. This was also affected by high power tariffs that schools had to pay for and in many cases. The schools did not have any provisions in case of power failure, many of the schools had acquired solar panels which they were using at school but their capacity couldn't manage running all the computer facilities. This in the researcher's view was a storm towards ICT curriculum in schools.

Concerning instruction following the ICT syllabus, only three schools had this. The rest were following pamphlets and UNEB past papers for teaching. It was surprising how a teacher could instruct a subject without a syllabus that could guide his teaching operations.

5.1.2 ICT teacher qualification in the management and implementation of the ICT curriculum

The findings of the study on whether teachers had suitable qualifications to handle ICT curriculum at schools revealed that most of the schools lacked trained professional teachers who had specialized in the area of ICT, schools ended up recruiting teachers with Microsoft package skills to help in handling students but when they were not well versed with the ICT content. This was well established through the interviews and documents than the questionnaire. This finding in my view was affecting the implementation of the program. This was in line with Albrini (2014), who said that teacher computer competence is very vital in the student computer learning. Teachers beliefs concerning their knowledge, basic skill, and capability of performing essential functions using the computer and ably imparting the skills and concepts is so critical in the learning situation without which students performance gets affected.

The results on ICT equipment usage showed that the schools were only using desktop computers during instruction. Projectors, white boards, scanners and printers were very rare and even the schools which had them still rarely used the materials for instruction. Alonzo, (2012) argues that teacher content knowledge influences how teachers engage students with subject matter. Teachers' content knowledge makes a difference in their instructional practice and their students' achievement. This means that more knowledgeable teachers are more likely to further the students' understanding. Teachers with deeper content knowledge are more likely to teach better and propose additional guidance to enhance learning than those with weaker knowledge.

The study found out from 64% that the ICT teachers were only equipped with computer user experience as 36% disagreed. This meant that for most of the teachers, ICT was not an area of subject qualification but they were only equipped with computer user skills. Several studies had attempted to relate adoption of qualified and skilled teachers in ICT. For example, Bates (2010) reported lack of trained and skilled personnel as an obstacle to ICT use in institutions of higher learning in Tanzania, while Agaba (2013) found lack of skills and ICT competence as one of the problems explaining underutilization of Makerere University Library electronic information resources by academic staff.

The findings from 53% of the respondents agreed that they had other qualifications, but had attended retooling courses for ICT teachers as opposed to 21% who denied. This implied that schools were lacking qualified ICT teachers.

The results by most teachers, (55%), still showed that teachers had adequate qualification and skills in Microsoft packages while 45% disagreed. This meant that teachers' qualifications were still lacking. According to a UNESCO (2012) survey, about 35% of the already trained teachers in secondary schools in Europe, Asia and Africa had basic skills in ICT, which leaves 65% of the teaching workforce on the three continents still in need of computer skilled personnel.

5.1.3 Administrative support in the management and implementation of the ICT curriculum

The study concentrated on availability of School Administrative support because this was important in determining the management and implementation of the ICT curriculum. The quality of teaching goes hand in hand with motivation as observed by Armstrong, (2010). In these schools it was found out that the ICT teachers were less motivated towards ICT studies. In the open questionnaire, one ICT teacher respondent argued that he was coming from very far to

go and teach, the school was not paying him accommodation, transport fares and even his salary was inadequate and irregular since he was privately recruited.

The study established that in these schools, there was still very little administrative support towards ICT implementation. Although management held meetings with the ICT departments, very little had changed. The study went on to reveal that though the ministry was offering workshops and seminars on ICT studies, many schools were still less involved in this; they failed to facilitate teachers or even go for these seminars where ever they were organized.

Krysa, (2009) reported that successful management of computer studies can only occur if administrators offer teachers support and leadership. Yang (2011), in a case study at Curtin University of technology reported that university teachers who received support from administrators had a high commitment to the adoption of ICT for teaching and learning. Hence, availability of ICT facilities alone was insufficient and must be accompanied by technical as well as administrator support (Agaba, 2013).

The study disclosed that many schools tried to put a vote for ICT on the school budget, but even then the budgets that were reviewed showed that it was still inadequate to help run the ICT department in terms of paying for the teachers since in all these schools the ministry never recruited any single teacher. Most of the ICT teachers were on private arrangement. Computer servicing, internet, scheme books and so many others were still less facilitated. It was noted further that failure of the head teachers to allocate a special budget towards facilitation of the ICT department had made the ICT curriculum almost fail to take off successfully in many schools. This was in line with UNESCO, (2012) on the state of ICT in East Africa secondary schools.

Other scholars like Afshari et al (2009), indicated that teachers needed technical and training support to assist them in teaching -learning process when they face constraints, whereas for competent teachers, they are eager to share their expertise and provide technology support to their colleagues. Problems related to ICT curriculum infusion occur among the teachers due to the lack of technical knowledge of maintaining the functionality of the computers. Moreover, lack of technical support could hinder the actual implementation of ICT studies.

5.2 Conclusions from the study

The study was conducted to investigate the management and implementation of ICT curriculum in government aided high schools in Nakasongola district.

In focus to objective one, it was found out that many schools had inadequate ICT equipment which was affecting the implementation of the ICT curriculum.

In objective two, it was established that Schools lacked trained and professional ICT teachers, and the ones handling the subject were largely computer user knowledge competent.

In objective three, it was discovered that there was inadequate administrative support towards management and implementation of ICT curriculum in schools. This was basically because of insufficient financial support towards the schools.

5.3 Recommendations

The study made the following recommendations in line with the findings:

For objective one, Government, through MoES, should plan for provision of better school ICT facilities to all schools, by constructing modern and fully equipped ICT laboratories and providing a full time power supply. There is need for stakeholders to standardize the minimum requirements on hardware and soft ware.

For objective two, there is need to further the awareness on ICT curriculum implementation through offering ICT teacher training courses, seminars and workshops and also recruit ICT trained teachers to handle the subject at A' level in schools.

There is need for MoES to allocate a special budget to the high schools to specifically cater for the ICT curriculum implementation and ensure close monitoring of the funds. This will improve on the implementation of the subject, as it will create checks and balances on the policy.

5.4 Areas of Further Research

The following areas are suggested for further research:

ICT Teacher competence towards the implementation of ICT in Secondary schools

Teacher motivation and student academic performance in ICT in Uganda.

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APPENDICES

Appendix A: Self Administered Questionnaire

Dear Respondent,

You are kindly requested to fill in this questionnaire. It is for purposes of research, on the management and implementation of ICT curriculum in Government Aided high schools in Nakasongola District. All information you give will be treated confidentially.

Please help classify your responses by giving facts;

SECTION 1: 1. Name of school .....

2. Position of responsibility .....

3. Number of students taking ICT at A' level: .....

4. What is **your age** range? (Please tick one):

Age Range	20-30 years	31-40 years	41-50 years	51-60 years

5. Gender:

1. Male	
2. Female	

6. For how long have you been working at this school?

1. Less than a year	
2. 1-2 years	
3. 3-4	
4. above 5 years	

SECTION 2: Availability of ICT study equipment and Implementation of the ICT curriculum

For each of the following statements, please indicate your stand by ticking the extent to which you agree or disagree, using the following scale: (Strongly Agree, Agree, Strongly Disagree, and Disagree)

Statements	**Strongly Agree**	**Agree**	**Strongly Disagree**	**Disagree**
1. My school has a functional Computer lab				
2. Computers are fully equipped with necessary learning accessories				
3. The Computer lab has internet connectivity				
4. There are provisions in case of power failure				
5. All students access a personal computer during practical lessons				
6. Instruction is done following the ICT syllabus				

2.2 Please rate how often the given ICT equipment (below) is used in teaching, by ticking the scale that follows accordingly, under the scale: (Very Often, Never, Very Rarely, Rarely)

ICT Facility	**Very Often**	**Never**	**Very Rarely**	**Rarely**
1. Desktop Computers				
2. Projectors				
3. Printers				
4. Scanners				
5. White boards				

Please give any other suggestion regarding availability of study equipment and the Implementation of the ICT curriculum:

.....

.....

.....

SECTION 3: ICT teacher qualification and the implementation of the ICT curriculum

For **ONE** of the following statements, please indicate your stand by ticking the extent to which you agree or disagree about the minimum academic qualifications of the ICT teacher, using the following scale: (Strongly Agree, Agree, Strongly Disagree, and Disagree)

Statements	**Strongly Agree**	**Agree**	**Strongly Disagree**	**Disagree**
1. ICT teacher holds a Masters degree				
2. ICT teacher holds a Bachelors degree				
3. ICT teacher holds a Diploma				
4. ICT teacher holds a Certificate				
5. ICT teacher is only be equipped with computer user experience				
6. ICT Teacher has other qualification but has attended Retooling courses				

3.2 Rating of the ICT teacher's skill in computer instruction and usage with the following software. Please tick accordingly.

ICT skills	**Very High**	**High**	**Moderate**	**Cannot use**
Word processor(e.g. Microsoft word)				
Spreadsheet (e.g. Microsoft Excel)				
Presentation (e.g.Microsoft PowerPoint)				
Database (e.g. Microsoft Access)				
Search engines (e.g.Internet/www)				
Communication (e.g.Email)				

Please give any other suggestion regarding ICT teacher skill and Implementation of the ICT curriculum:.....

.....

.....

SECTION 4: Extent of administrative support and the implementation of the ICT curriculum

For each of the following statements, please indicate your stand by ticking the extent to which you agree or disagree, using the following scale: (Strongly Agree, Agree, Strongly Disagree, and Disagree)

Statements	**Strongly Agree**	**Agree**	**Strongly Disagree**	**Disagree**
1. In this school, management holds meetings with ICT teachers				
2. ICT teachers in this school are sponsored to attend ICT workshops and retooling courses				
3. In this school, the ICT department has a vote on the school budget				
4. In this school ICT is included on the general Time table				
5. Expert technical support is availed whenever need arises				
6. Servicing of the computers is done regularly in this school.				

Please give any other suggestion regarding the extent of administrative support and the implementation of the ICT curriculum:

.....

.....

Thank you

Appendix B

INTERVIEW GUIDE FOR ADMINISTRATORS ON THE MANAGEMENT AND IMPLEMENTATION OF ICT CURRICULUM IN GOVERNMENT AIDED HIGH SCHOOLS IN NAKASONGOLA DISTRICT

An interview was held with the above Focus Group basing on:

Section A: Availability of study equipment and implementation of ICT curriculum

1. How equipped is the computer lab in this school?

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   .....

2. What computer hardware and software does the ICT teacher normally use in teaching?.....

   .....

3. Comment on the maintenance of ICT equipment in the lab

   .....

   .....

Section B: ICT teacher qualification and Implementation of the ICT curriculum:

4. What is the criteria of recruiting the ICT personnel in your school?.....

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5. Comment on the competence of the available ICT teachers?.....

.....

6. Is there an arrangement for helping the teacher attain refresher training in form of ICT workshops?.....

.....

Section C: Administrative Support and implementation of ICT curriculum

7. To what extent has your office improved ICT management in this school?.....

.....

8. What challenges do you face in implementing the ICT policy as an institution?.....

.....

9. How else has the school tried to put in place necessary measures for ICT to be taught appropriately?.....

Thank you

Appendix C

DOCUMENT REVIEW GUIDE TO BE OBSERVED

The following items were investigated on their existence in the respective schools under study for purposes of research, on the Management and Implementation of ICT curriculum in Government Aided high schools in Nakasongola District.

All information is confidential **Guiding item: Yes/No**

Availability of the following Documents		**Response**	
		Yes	**No**
1.	Documents on ICT curriculum		
2.	Documents on teaching schedules		
3.	Documents showing ICT budgets and expenses		
4.	Documents showing number of ICT subject attendance.		
5.	Document on ICT syllabus		

Thank you

Appendix E:

KREJCIE MORGAN's SAMPLE SIZE DERTERMINATION

Table for determining needed size *S* of a randomly chosen sample from a given finite population of *N* cases such that the sample proportion *p* will be with-in ± .05 of the population proportion *P* with a 95 percent level of confidence.

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1,200	291
15	14	230	144	1,300	297
20	19	240	148	1,400	302
25	24	250	152	1,500	306
30	28	260	155	1,600	310
35	32	270	159	1,700	313
40	36	280	162	1,800	317
45	40	290	165	1,900	320
50	44	300	169	2,000	322
55	48	320	175	2,200	327
60	52	340	181	2,400	331
65	56	360	186	2,600	335
70	59	380	191	2,800	338
75	63	400	196	3,000	341
80	66	420	201	3,500	346
85	70	440	205	4,000	351
90	73	460	210	4,500	354
95	76	480	214	5,000	357
100	80	500	217	6,000	361
110	86	550	226	7,000	364
120	92	600	234	8,000	367
130	97	650	242	9,000	368
140	103	700	248	10,000	370
150	108	750	254	15,000	375
160	113	800	260	20,000	377
170	118	850	265	30,000	379
180	123	900	269	40,000	380
190	127	950	274	50,000	381
200	132	1,000	278	75,000	382
210	136	1,100	285	100,000	384

N is population size; *S* is sample size

Source: Krejcie, R.V. & Morgan, D.W. (1970).