

**EFFECTS OF ICT INTEGRATION IN TEACHING AND LEARNING  
PROCESS IN SECONDARY SCHOOLS**

**NSANGI SUB-COUNTY, WAKISO DISTRICT**

## TABLE OF CONTENT

### CONTENTS

TABLE OF CONTENT .....	i
CHAPTER ONE .....	3
INTRODUCTION.....	3
1.1. Background of the Study.....	3
1.2. Statement of the Problem .....	4
1.3. Objectives.....	4
1.3.1. General Objectives.....	4
1.3.2. Specific Objectives .....	4
1.4. Research Questions .....	4
1.5. Justification .....	4
1.6. Scope.....	5
1.7. Limitations.....	5
CHAPTER TWO .....	6
LITERATURE REVIEW .....	6
2.1. Introduction .....	6
2.2. Theoretical Framework.....	6
2.3. Conceptual Framework.....	6
2.3.1. ICT Training needs Assessment.....	7
2.3.2. The Modes of ICT Training for Teachers .....	8
2.3.2.1. Pre–Service Training .....	8
2.3.2.2. In-Service Training.....	8
2.3.2.3. Online Training.....	8
2.3.2.4. On- the- Job Training/in House Training.....	8
2.3.3. ICT Infrastructure for Schools .....	9
2.3.4. ICT Integration Challenges and Solutions to the Challenges .....	9
2.3.5. Solutions to ICT Integration in Schools .....	11
2.4. Summary .....	11
2.5. Research Gaps.....	11

CHAPTER 3 .....	13
METHODOLOGY .....	13
3.1. Introduction .....	13
3.2. Research design .....	13
3.3. Population .....	13
3.4. Sampling Frame .....	13
3.5. Sample and Sampling Technique .....	14
3.5.1. Sample.....	14
3.5.2. Sampling Technique .....	14
3.6. Instruments.....	14
3.7. Data Collection Procedure .....	14
3.8. Pilot Test .....	15
3.9. Data Processing and Analysis.....	15

## CHAPTER ONE

### INTRODUCTION

#### 1.1. Background of the Study

The world is being taken over by the storm of the twin forces of Globalization and technological changes. The past fifteen years have seen a new global economy being created which is “powered by technology, fueled by information and driven by knowledge” according to Tinio (2002). As technology is changing global economy, Education which is a major sub-system in that economy has not been spared by this wave of change. From time immemorial, education has been viewed as a very important vehicle for managing change and this is the reason why the changes in technology have to be infused in education then education takes them to all sectors through the graduates of the education system. ICT has played a pivotal role in modern societies, and economies and therefore its introduction into secondary schools is high on any government’s political agenda be it developed or developing country. ICT has also been used to improve access to education and the quality of teacher training as stated by Crisan (2004).

ICT-enhanced learning mobilizes tools for examination, calculation and analysis of information, thus providing a platform for student inquiry, analysis and construction of new information. Research has proved that ICT cannot be integrated into teaching and learning without preparing the teacher for the ICT up take.

Most developing countries lack ICT infrastructure and the teachers have not obtained appropriate training to enable them to use ICT in pedagogy unlike their counterparts in developed world who are using ICT to conduct collaborative or interactive teaching learning suited to digital environment. These developing countries have realized that the only way they can narrow the economic gap between them and developed countries is to narrow the digital divide by providing ICTs in Education and training the teachers adequately to be able to integrate ICT in learning. Such countries have realized if they don’t get into the bandwagon of ICT they will remain in the vicious cycle of poverty. An assistant minister in the ministry of education has told Uganda members of parliament to embrace E-learning in their constituencies because by so doing, they will improve the performance of students since ICT makes learning easy and interesting. The assistant minister of education said that he was looking forward to a time when all schools will have digital content packages for e-learning, so as to improve performance. He also said that most learners do not learn effectively due to lack of interest, therefore with a simplified version of e-learning, teachers can conceptualize the idea of e-learning so as to create interest amongst learners in schools.

This research study is meant to find out how teacher ICT training has impacted on the integration of ICT in secondary school in Nsangi sub- County. The people who will benefit from this study are those working in Education sector including but not limited to Education policy makers,

quality assurance and standard officers, District Education Officer (DEO) and Provincial Education Officer (PDE) school principals, teachers, and students

## **1.2. Statement of the Problem**

Teachers are expected to be well trained and confident in the use of computer-related technology in the classroom and in other professional activities. They need to take education and indeed the world economies to the next level yet they lack the knowledge, the means and the right attitude to do so. Despite the training that teachers have received at pre-service and in the in-service training they are still some teachers are unable to integrate ICT in the teaching and learning of their subjects. They are also unable use ICT for professional development hence the rate of ICT integration in Education has remained slow and not in tandem with immense technological tools that have been developed for use in Education. So my research is meant to find out why some teachers have failed to integrate ICT in their teaching and learning process

## **1.3. Objectives**

### **1.3.1. General Objectives**

To find out weather, teacher's training in ICT has an impact on integration of ICT in secondary schools.

### **1.3.2. Specific Objectives**

- 1) To find out whether training needs assessment is done to determine the type of ICT development program required.
- 3) To identify the ICT infrastructure available in secondary schools
- 4) To find out the challenges teachers face in the use of ICT in secondary schools
- 5) To make recommendation for improvement in ICT integration in secondary schools

## **1.4. Research Questions**

- (1) Is needs assessment done for ICT training programs offered to teachers' in Nsangi sub county?
- (2) What modes of ICT training programs have been offered to teachers in Nsangi sub county?
- (3) Which ICT infrastructures are available in secondary schools in Nsangi sub county?
- (4) What are the challenges that teachers face in the use of ICT in schools in Nsangi sub county?
- (5) What are some of the ways in which the use of ICT in Nsangi sub county can be improved?

## **1.5. Justification**

The researcher, being a teacher herself recognizes that, an ICT literate workforce is the foundation on which a country can acquire the status of a knowledge economy and that,

education is the natural platform for equipping the nation with ICT skill. The role of the teacher in developing an ICT- literate Workforce cannot be underestimated because all the students are modeled by the teacher hence the need to train them adequately so as to be competent, confident and creative in the use of ICT, and this will bring up a generation that is enthusiastic about ICT. It also underscores the importance of ICT application in learning and believes that it can improve the results of students a great deal, not only in computer studies but in all the other subjects.

This research study identifies some of the problems that make ICT trained teachers fail to integrate ICT in education therefore the study will benefit the ministry of education and donor partners interested in ICTs in education who will use the study to develop interventions that will enhance ICT training programs, so that they focus on improving the quality of learning as well as educational efficiency and relevance by building the capacity of teachers to integrate ICTs into teaching. This research is an added voice, to the cry for better access to ICT infrastructure in various secondary schools and hence, it influences both the ministry of Education and the donor community to redouble their efforts in provision of the relevant ICTs in schools where it is inadequate or lacking altogether. Other researchers may use the study findings to further research on how ICT teacher training impacts on ICT integration in schools and how training can be improved. The research will assist educational officers, teachers, students and other interested parties to understand and appreciate the significance of ICT teacher training in influencing how ICT is used in schools.

### **1.6. Scope**

The study targeted secondary school teachers in secondary schools within Nsangi sub-county for example olympio high school ,Nsangi secondary school ,st marks collage . The respondents were teachers who have been trained in at least basic ICT courses.

### **1.7. Limitations**

The researcher was given permission out of the station only in the afternoons to collect data; this was after doing her duties in the morning session, hence time was a limitation. To avoid the problem of having many respondents who have not trained in ICT filling the Questionnaire and giving irrelevant data, purposive sampling technique, and to be specific judgment sampling was used by to ensure that only those who have trained in ICT provided the data.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1. Introduction

This chapter discusses the literature related to the impact of training on ICT integration in secondary schools in nsangi sub county . It particularly focuses on ICT Training need assessment, Modes of ICT training programs for teachers, ICT infrastructure in education, Challenges faced by teachers in ICT integration, Recommendations for improvement of ICT integration in secondary schools. Literature

#### 2.2. Theoretical Framework

A lot of research and writing has been done concerning the issue of ICT teacher training and ICT integration. This study was guided by pedagogical approach to teacher training as the best means of achieving ICT integration in schools. In this theory the teacher integrates ICT better, if they are trained on how to teach their subject using technologies. This idea is clarified further by IAP (2005) USEIT survey that was conducted to establish and compare technology use patterns of teachers who had taught for over five years with those that have taught for less than five years. Roselletal (2003) observes that naturally it would be expected that the teachers who have taught for under five years to use technology to teach more than their senior counterparts because they are just fresh from training and most probably would have received an up to date or more comprehensive ICT training. The survey results revealed that the teacher who have worked for less than five years, though more confident in using technology they used less of it in class and more of it in outside class activities. Though their senior counterparts were less confident in using technology they used more of it for instruction in class.

Teachers who have taught for fewer years are expected to be better trained and more enthusiastic in using technology where it matters most, and that is in classroom, yet the study had revealed otherwise. Was the ICT training inadequate? I want to find out whether the same situation is replicated in Uganda with a view to Identifying ICT integration challenges and solutions. This is where at hand found a gap to be investigated. In this research was out to find determine how ICT training influences ICT Integration in secondary schools in Uganda

#### 2.3. Conceptual Framework.

The researcher has conceptualized that ICT training, if done right can increase the use of ICTs in teaching in secondary *schools* and hence improve the performance of both the teacher and the students. This entails an assessment of teacher ICT training needs, training programs designed according to need, modes of training selected according to needs, the right ICT infrastructure provided at training level and after training, and ICT integration challenges identified and solved amicably.

### **2.3.1. ICT Training needs Assessment**

Training is the use of systematic and planned instruction activities to promote learning. The approach can be summarized in the phrase, 'learner-based training', this is according to Armstrong (2008). Training is any learning activity which is directed towards the acquisition of specific knowledge and skills for the purposes of an occupation, as defined by Cole (1978). Training is also a process designed to maintain or improve current job performance.

In this study the focus is on teacher ICT training which shall be defined as a process through which a teacher acquires knowledge and skills to use ICT in teaching their subject for better performance. Training is required when there is poor performance or changes have occurred in the job and therefore employees require new skills to do the job. For training to be successful it has to be done systematically. A system of training that involves five stages; Analysis, Designing, Developing Implementing and Evaluation, has been described by Rosette (1987). Before teachers are taken for any ICT training, an assessment of their needs is supposed to be done so that the training program is tailored towards meeting those needs. Steps involved in undertaking a training needs analysis are as follows: Clarify the goal, identify the target group, identify the skill set required, determine the current skill level, determine the skill level required, determine the skill gap, develop a training plan including dates, training strategy and resources required. An ICT needs assessment is done per individual teacher, using a questionnaire entailing the various skills the teacher ought to have. The teacher fills the questionnaire declaring the skills they possess and the skills they lack, then data in the questionnaires is analyzed and programs are designed to suit the needs. In Uganda however, there has been a problem of lack of ICT teacher training needs assessment which has forced most teachers to train in ICT courses that are initiated by trainers, ICT vendors, donors or government even when such programs don't suit their needs.

The purpose of carrying out a needs analysis is to find the problem, understand the problem so that a solution can be found; this is according to Barbazette (2006). Assessment will involve knowing optimal performance and the actual performance then analyses to find the gap or discrepancy. Not all problems are solved by training but if the nature of the problem identified will require training then the trainer comes up with training goals and objectives.

In development stage, working from objectives, training strategies are planned and developed. The training techniques used should be appropriate to the purpose of the course and to the characteristics of participants, that is, their jobs, learning needs, previous experience, level of knowledge and skills, and how receptive they will be to being taught (motivated to learn) provide ample time for participation and active learning through discussion, case studies and simulations. In the implementation stage solutions that have been developed are put into action. At evaluation stage the training solutions that were developed and implemented are evaluated, the idea here is to find out whether the solution worked so that it can be used as it is or it may need some modifications or it should be abandoned altogether if it did not work. Training needs assessment can be done by observing the employee while doing the job, give performance tests, carrying out



interviews, carrying out organizational analysis, and through performance appraisal as suggested by Burack and Smith (1982). The objective of training and the expected change of behavior or skills in the trainee at the end of the training exercise should be stated clearly. The content of the training should be related to the work contexts of the participants, Armstrong (2008) recommends. Ideally, their work should be made a central feature of the subject matter as they train.

### **2.3.2. The Modes of ICT Training for Teachers**

There are several modes of training available to teachers, some of them are:

#### **2.3.2.1. Pre-Service Training**

Due to the importance that is attached to ICT in the world today it has become inevitable to include ICT training in Teacher training institutions. Most teacher training colleges have ICT units incorporated in their curriculum. Research has however indicated that the ICT training in the pre-service is not helping much in the integration of ICT in education mainly because teachers are not taught how to integrate ICT in their teaching instead, they are taught computer literacy.

#### **2.3.2.2. In-Service Training**

Teachers who graduated earlier from college missed the opportunity to train in ICT and out of these, those who find themselves in the need to upgrade their skills normally find refuge in the ICT training courses which they can pursue during breaks from work. Teachers attend such courses in the evening after work or during their vacation. These in-service courses have been criticized for being too brief and most of the time they are rushed because there is too much content to be taught. The trainee teacher's ends up being frustrated and some give up on training in ICT.

#### **2.3.2.3. Online Training**

This is one of the most modern forms of ICT teacher training mode, also referred to as computer based learning or E-learning. Basal (2009) terms it as the most flexible and effective way of life long professional development for today's teachers. This method entails learning ICT modules in CD ROMs, or by use of digital television or PDA and mobile phones. This mode of learning can also be conducted by use of internet where learning programs can be emailed, discussion forums, collaborative class management and team learning systems have greatly enhanced long distance teacher training and has made it flexible, where just-in-time learning meets teacher's specific need.

#### **2.3.2.4. On- the- Job Training/in House Training**

Tailor made ICT courses are offered to teachers at their work stations, these are geared to address specific ICT challenges that are faced by teachers in a school. The emphasis here is more on the organization of specific knowledge in real situation using the organization's facility (Cole 1997).

### **2.3.3. ICT Infrastructure for Schools**

ICT infrastructure in a school set up includes but not limited to, radio broadcasting, digital television, computers, projector, internet connection, video conferencing facilities, websites and ICT software relevant in Education. An effective teacher training must expose the teacher to the ICT tools that they will meet in class as this will boost their confidence in teaching using those tools. For the teachers to transfer the skills they have learnt, they need to have the ICT infrastructure. In today's world where technology is changing rapidly there is need for every secondary school to be equipped with computers in class and be connected to the internet. ICT integration in this paper is broadly defined as a process of using any ICT (including information resources on the web, multimedia programs in CD-ROMs, learning objects, or other tools) to enhance student teaching (Williams, 2003). ICT tools are many in use in school but to make this study less complicated, ICT will refer to the use of computer and internet connection. The level of ICT integration can be determined by what kind of ICT infrastructure is available in the schools and how it is being used in teaching and learning process. This can be brought out clearly by articulating the digital gap that exists between the developed and developing countries.

The developed countries are geared towards ICT-enhanced learning, mobilizes tools for examination, calculation and analysis of information, thus providing a platform for student inquiry, analysis and construction of new information. Learners therefore learn as they do and, whenever appropriate, work on real-life problems in-depth, making learning less abstract and more relevant to the learner's life situation. Such ICT-enhanced learning promotes increased learner engagement as well as "just-in-time" learning in which learners can choose what to learn when they need to learn it.

While developing countries have reported up to 41% of integration of ICT to teaching and learning, the proportion remains substantially low in Africa, Uganda included as indicated by Ministry of Education (2006). Access to computer and other ICTs remains a big problem and thus the low levels of use of these tools in the schools. While the average ratio of computer to student is reported to be one to 15 students in developed countries in developed countries, and in Uganda for that matter, it is about one to 150 students.

### **2.3.4. ICT Integration Challenges and Solutions to the Challenges**

'A school can have the best software ever made and access to the Web on every computer, But it won't see much difference in student learning, experts say, unless its teachers know how to use the digital Content in their classrooms". "I could put the same software into two classrooms, and in one classroom, it's used horribly, and in the other classroom, it's fantastic. It's all got to do with the teacher," says Gregg Martin, the technology director at Addison Central Supervisory Union, a school district in Vermont's Champlain Valley, as reported by Trotter (1999). The statements above underscore the importance of a teacher in integrating ICT and in the

implementation of a digital curriculum and dilute earlier notion that modern ICT will replace teachers in the classroom. It instead emphasizes the fact that teacher's role is now more than ever, embedded into the system. Teacher's role has to 'change, from being the sole voice of authority to that of a facilitator, mentor and coach' since ICT has increased student participation in class and opened up classrooms to the outside world as observed by Tinio (2002).

Research has shown that use of ICT can make learning more interactive hence can support new instructional approaches and make hard-to-implement instructional methods such as simulation or cooperative learning more feasible as presented by (Roblyer, Edwards, & Havriluk, 2004). ICT cannot be integrated in education without the teacher, 'Teachers are key to whether technologies are used appropriately or not' (Carlson & Gardio 2002). Most research findings are in agreement that not just a teacher is instrumental in ICT integration in teaching and learning, 'appropriate and effective use of technologies involves competent, committed interventions by people' the people are the teachers declares Haddad (2007). Most of them, have indicated that appropriate teacher training in ICT has a positive effect in integration of ICT in Education as these make the teachers prepared, comfortable and motivated to use ICT in teaching their subjects William (2000). In some reported cases ICT training for teachers has failed to yield result due a number of problems. A research using survey design methodology to examine the nature and impact ICT training offered by teacher educators, was conducted by Jegede (2009) and found out that lack of need assessment lead to irrelevant, none ICT integration focused courses being offered by teacher training institutions.

Organisations and donors have come up with programs that are either obsolete or inadequate and are not focus on the 'how to use ICT' hence do not prepare the teacher to meet the new requirements in modern education, which require the teacher to according to Bevernage et al (2002) to 'use ICT to learn'. Most of the courses offered are short and are mainly geared to providing the teacher with basic computer literacy skills. It is unfortunate that the design of teacher-educator curriculum lies primarily with the category of people who themselves were minimally informed on ICT concepts, let alone its integration in Education Jegede (2009) observes. Other factors that make teachers not to effectively use ICT includes and not limited to 'poor software development, skepticism on effectiveness of computers in improving learning outcomes, lack of administrative support, more time and effort needed to learn the technology and how to use it for teaching, and teachers' fear of losing their authority in the classroom since technology makes it more learner centered' according to Hannafin & savenye (1993).

Survey findings of ImpaCT2 (Harrison 2002) attest to the fact that ICT is having a major impact on education and hence been regarded as an important means through which access to education and improvement in quality of education can be improved. Most developing countries that have lagged behind in ICT like Uganda are now, 'firmly on the path to establishing digital learning in schools to boost quality and access of education countrywide' as reported by Ratemo (2011).

### **2.3.5. Solutions to ICT Integration in Schools**

Some of the solutions have been highlighted while discussing the challenges above. Problem of lack of infrastructure have been solved by governments partnering with the private sector to sponsor the acquisition of the facilities by the schools and also by setting up digital centers that can be used by a whole community, schools included. Most of the governments have the issue of ICT integration in education embedded in their national ICT policy and where it is given all the political support required. Another solution is in restructuring of teacher ICT training to include training in the use of ICT in all educational processes but giving more emphasis to ICT uses in pedagogy. Teacher ICT training policy is required to ensure the required standards are set, strategies formulated, and training process monitored to ensure training objectives are met.

### **2.4. Summary**

Though Training of teachers in ICT can assist in integration of ICT in schools the rate of change is going to remain slow until the education systems and policies are changed to be more accommodative of ICT. As it is now integrating new technologies into old or traditional systems is like putting new wine into old Wineskins and they might burst. However the change should be introduced gradually. Research indicates that change at all levels will be necessary to bring about widespread and effective use of technology. Educational programs must devote a substantial portion of their budget to extensive teacher professional development and technical support; they must encourage a culture of collaboration in which teachers work together to explore more effective uses of technology; and they must modify their assessment systems to measure changes, such as deeper understanding and improved problem solving, that result from effective technology use.

### **2.5. Research Gaps**

There are many researches that have been carried out that have given prominence to training in ICT, some have tended to deal with the issues of ICT integration, while still many have highlighted or dealt with the issue of training as a barrier of ICT integration in schools. One of the researches that are relevant to this research is the one done by Jegede (2009), an assessment of Nigerian teacher educator's in ICT that examined the nature and impact of trainings received by teacher educators in south western Nigeria teacher training institutions. A population of 500 teacher educator selected randomly was used, from 6 colleges and 6 universities. I used Questionnaires, (TICQ), teachers use check list (TICTUC), and teachers competence scale (TICTCS). The study conducted by Jegede is similar to this one in that, both studies were focused on the influence of training of teachers on their rate of use of ICT in teaching and learning.

However Jegede's research differs from this research in that his focus was on teachers who were still on training but this one was focused on teachers who are through with training and are already practicing. Jegede in his finding cited the inadequate ICT educator's curriculum as being responsible for little impact felt in the classrooms in terms of ICT use. While with him on this,

there is need to explore further to get other factors responsible for low use of ICT in the classrooms. Another research that is relevant to this study is that of Bevernage Bart.c, & Ngaga (2005), Integrating ICT: Reflections on practice and policy implications, A case study of the learning Resource center at the Uganda technical Teachers college. This study is similar to mine because it was out to assess the impact that ICT teacher training has on the use of ICT in schools. The case study however differs from the one done by Jegede and the one at hand because it is based on a single institution as opposed to a sample of many institutions, the study also emphasized on access to ICT and ICT policy as the main factors that determines the use of ICT by teachers in class while the other two hinge more on training of teachers in ICT as the factor that increases the use of ICT to teach.

The two researches described above hints that there could be a lot more factors causing low rate of integration of ICT in the classes and Training of teachers is a major one. Jegede's research design is more applicable for this study than the case study. Most Researches that have sort to study the influence or effect of training in ICT integration have been done in developed countries and the focus has been on mainly the Teacher educators and teacher trainees in colleges. According to the literature review I did found a research gap in linking teacher ICT training and ICT integration in learning at secondary school level in a developing country like Uganda. Research was required in this area to be able to paint the picture of how far behind the developing countries are lagging in ICT integration in education and find out how they can fast track the process to be able to evolve with the ever changing technology.

## **CHAPTER 3**

### **METHODOLOGY**

#### **3.1. Introduction**

This chapter comprises of, research design, population, sampling frame, sample and sampling technique, instruments, data collection procedure, pilot test ,data processing and analysis.

#### **3.2. Research design**

This study has employed mainly qualitative strategy with a survey research design. The study was concerned with the impact of teachers training on the integration of ICT in secondary school education in Nsangi Sub County. It intended to show the relationship between teachers training on ICT and integration of ICT in teaching and learning in secondary schools. This study covered the whole of Nsangi with about 5 secondary schools that are spread throughout the county. Survey was suitable for this extensive research because it entailed investigating populations by selecting samples then generalizing results to the whole population. The limited time and resources made survey design most suitable for this study than any other.

#### **3.3. Population**

The population of the study comprised of 25 teachers teaching in secondary schools in Nsangi sub county. This target population was chosen because it's made up of trained teachers who were implementing the same curriculum, and employed and remunerated by the same employer that is, teachers service commission. This target population was appropriate because it meant that the respondents were working under more or less same environment and influenced by same factors.

#### **3.4. Sampling Frame**

Due to limitations in time and financial resources the whole population could not be used as respondents, a sample consisting of 6 respondents was selected from estimated 25 teachers teaching secondary schools in Nsangi sub county. This sample of 6 respondents is 10% of the estimated target population; this is an ample sample as advanced by Gay (1981) quoted by (2003) Mugenda & Mugenda where he stated that, ten percent of the accessible population is enough for descriptive research studies.

### **3.5. Sample and Sampling Technique**

#### **3.5.1. Sample**

The sample comprised of 6 teachers teaching in public secondary schools in Nsangi sub county. The sample was found to have the following characteristics; they were employed by the same employer, they were all teaching in secondary schools and had a form of basic training in ICT.

#### **3.5.2. Sampling Technique**

A source list with names of all secondary schools in Nsangi sub county was obtained from the Provincial director of Education's office. I used multi-stage sampling in which a random sample of eight public secondary schools from Nsangi sub county was selected. Name of all secondary schools in Nsangi sub county were written down, each in a separate piece of paper then using lottery method, five schools were selected. 25 respondents were then selected purposively from five selected schools in Nsangi sub county so as to get a sample of only ICT -trained these made up respondents.

#### **3.6. Instruments**

Questionnaire was mainly structured as it had more closed-ended questions, only two questions were open-ended. The questionnaire had a total of 14 items, 3 items were on personal information of respondents, 2 items were on training needs assessment, 4 items were on modes of training, 3 items were on ICT infrastructure available in schools, 1 item on challenges of ICT integration, and 1 item on Solutions to ICT integration challenges. The items on challenges and solutions to ICT integration were open-ended questions and the rest were closed- ended. Questionnaire method of collecting data was chosen for this research because all the respondents were literate hence there was no difficulty in filling the questionnaire. Questionnaires are also most suitable for collecting a lot of data when time is limited. This research was mainly concerned with variables that cannot be directly observed like training, such information is best collected by questionnaire.

#### **3.7. Data Collection Procedure**

Data that was collected was qualitative from a sample size of 25 respondents, and from a target population of estimated teachers in secondary schools. Data was collected using Questionnaire method. Questionnaires were administered to teachers who had already undergone at least basic training in ICT. These questionnaires had mainly closed- ended questions and only two open-ended questions. The questionnaires were personally administered to the respondents' by since the sample size was small.

### **3.8. Pilot Test**

Pretesting is necessary especially when the study is complex and sample is large and where resources (money and Time) are available, that is according to Mugenda & Mugenda (2003). This study was neither complex nor was the sample large hence it would be uneconomical to pilot the study. Instead five questionnaires were being given to five teachers to fill so as to check for any weakness in the questions such as ambiguity or any other error. There were no major error the minor errors were rectified.

### **3.9. Data Processing and Analysis**

The researcher organized the collected data into various constituent parts, coded it then used Microsoft Excel software for qualitative analysis. Data was analyzes using descriptive statistic methods, mainly percentages and frequencies. Data was been presented by use of frequency tables and charts.