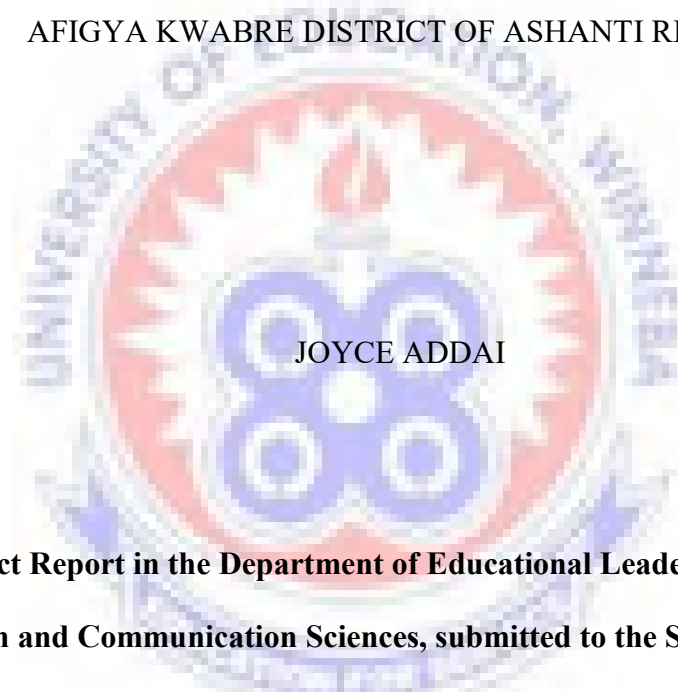


UNIVERSITY OF EDUCATION, WINNEBA

TEACHERS USE OF INSTRUCTIONAL TECHNOLOGIES IN BASIC SCHOOLS AT
AFIGYA KWABRE DISTRICT OF ASHANTI REGION



JOYCE ADDAI

**A Project Report in the Department of Educational Leadership, Faculty of
Education and Communication Sciences, submitted to the School of Graduate
Studies, University of Education, Winneba, in partial fulfilment of the requirements
for award of the Master of Arts (Educational Leadership) degree**

DECEMBER, 2018

DECLARATION

STUDENT'S DECLARATION

I, JOYCE ADDAI, declare that this project report, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE:

DATE:

SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with guidelines for supervision of project report as laid down by the University of Education, Winneba.

NAME OF SUPERVISOR: SR. DR. MARY ASSUMPTA AYIKUE

SIGNATURE:

DATE:

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Furthermore, I want to acknowledge the numerous friends I made during the course of the program. After all, the highest achievement is to perceive that our lives are connected and contributing to positive changes in the world.

DEDICATION

To my dear husband Mr. Baffour Awuah and my lovely kids, Nana Baffour Awuah

Kesse and Papa Tweneboah Baffour Awuah



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ABSTRACT

The purpose of the study was to investigate rationale behind the resort to the use of instructional technologies in the classroom by teachers in the Afigya Kwabre District. The objectives of the study were to find out how frequent teachers use instructional technologies in basic schools of the Afigya Kwabre district, determine the reasons for non-usage of instructional technologies in basic schools of the Afigya Kwabre district and to ascertain the factors that influence the use of instructional technologies in basic schools. A descriptive survey design with structured questionnaire was used for the study. The sampled population of the study was 100 teachers, who were sampled with simple random sampling technique. Among the findings were that the most frequently used instructional technology in teaching in Afigya Kwabre District is chalkboard. The study further revealed that overhead projector and videos were not frequently used in the district. Teachers do not use overhead projector because it is not available. Teachers in the district occasionally used flip chart. Also administrative support is a very important factor influencing the use of instructional technology in teaching. Based on the findings, it is recommended that training and workshop officers in Ghana Education Service should organize training on the usage of technologies like overhead projector, computer, videos and local resources.

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter consists of the background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, limitations of the study, delimitations of the study and organization of the study.

1.1 Background to the study

Twenty five years ago the term technology had a rather different meaning than it does today (Jaber, 1997). Anything other than chalk and talk or paper and pencil was considered technology for teaching. This might have included anything from fuzzy felt boards to mechanical gadgets, as well as the multimedia of that period i.e. television, tape recording film and 35mm slide (Jaber, 1997).

The Education Committee of the International Statistical Institute convened a Round Table conference on the impact of Calculators and Computers on Teaching Statistics. Among the recommendations put forward were the following:

“Educational research into teaching methods was needed to determine at what age and through what methods statistical concepts can be effectively learned by children; the stage at which calculators and computers can best be introduced in the teaching of statistics; for what statistical purposes calculators and computers are best suited; and how developments in computers can affect statistical courses and syllabuses?” (Papert & Ragosta, 1982 p. 43).

The developments in computers and computing during the past quarters of a century have been so profound that it is not surprising that they replaced other technological teaching aids. This does not mean that we should forget such alternative aids altogether nor the need to research their effective use

Technology can help facilitate the knowledge constructed classroom. A number of researchers (laboratory for comparative human cognition, 1989, Papert & Ragosta, 1982) views computer as having an influential effect on the teaching and learning process. They state that with the use of computer in the classroom, school would become more students centered and that more individualized learning would take place than ever before.

In the student centered classroom of today with the aid of the computer students are able to collaborate to use critical thinking and to find alternative to solutions of problems (Jaber, 1997). In Ghana teachers use less technology in their lessons presentation but as a developing country, Ghana has improved the use of new technology to maintain status with other countries in this century technological revolution. The need for effective use of technology by the teacher is an increasingly important factor to student success in this environment of global technological revolution. In part the motivation behind this research is borne from this.

I.2 Statement of the Problem

There has been a rapid change in the role of the teacher in recent years. There are many new changes and challenges that teachers face and are required to adapt to them. Included in this are a more modern and westernized approach from schools, new methods

of teaching and most importantly an explosion in the development of teaching with ICT. All these mean teachers need to update their knowledge and skills to developed the educational process in the classroom.

With the advent of a new philosophy towards ICT and its role by the teacher in education, many research has been developed to investigate the role of technology and its effect in developing a conducive educational environment. Many of these studies have provided evidence of the significant contribution that technology makes to improve methods of teaching and positively impact the learner (Kennewell & Beauchamp, 2007)

Many of these studies were limited to the impact of technology on the learner neglecting the teacher. There are therefore seemingly very few studies that focus on the reasons why teachers use technology and its importance. This was a motivation for this study to investigate the reasons for the use of technology by teachers in the Afigya Kwabre of Ashanti Region.

1.3 Purpose of the study

The purpose of the study was to investigate rationale behind the resort to the use of instructional technologies in the classroom by teachers in the Afigya Kwabre District.

1.4 Objectives of the Study

Specifically, the study sought to:

1. find out how frequent teachers use instructional technologies in basic schools of the Afigya Kwabre district
2. determine the reasons for non-usage of instructional technologies in basic schools of the Afigya Kwabre district
3. ascertain the factors that influence the use of instructional technologies in basic schools?

1.5 Research Question

The following research questions were posed for the study

1. How frequent do teachers use instructional technologies in basic schools of the Afigya Kwabre district?
2. What are the reasons for non-usage of instructional technologies in basic schools of the Afigya Kwabre district?
3. What are the factors that influence the use of instructional technologies in basic schools?

1.6 Significance of the Study

Despite the availability of technology in all angles of life today, technology is not used in most of our classrooms on a regular basis. The current technology plan in Ghana lack an understanding of the important role professional development needs play in order

to ensure the usage of technology into the standard school curriculum. Additionally with limited opportunities for professional development in general, it is unlikely that the necessary skills for technology usage will be developed without this research. This professional development studies will be a significant step forward in being good stewards of the resources the teachers have available to them. Also teachers will have a professional development program designed for them and will let them have valuable ICT skills, stimulate their innovations, establish collaborative discussion with colleagues and provide ample opportunities to assessing their success in the classroom

Technology is entwined in the social lives of students today. They carry cell phones and MP3 players in their pocket play video game during free time and use computers to chat with friends. Therefore when technology tools are added into the classroom, it would stand to reason that these students should be more engaged in the learning process.

1.7 Limitation of the Study

Resources to carry out the study were limited. The study was also limited to only 2 circuits out of the 5 circuits of the Afigya Kwabre District of Ashanti namely Kodie and Afrancho due to limited financial resources; therefore the result may not be generalized. Comparable studies should be carried out in the other public basic schools in the Afigya Kwabre District to overcome this problem.

1.8 Delimitations of the Study

The study was delimited to only 2 circuits out of the 5 circuits of the Afigya Kwabre District of Ashanti namely Kodie and Afrancho. The sampled population of the study was the 100 teachers sampled from basic schools in 2 circuits of the Afigya Kwabre District. The findings may therefore not be generalized to include the remaining basic schools of the Afigya Kwabre District.

1.9 Organization of the Study

This project work consists of five chapters. Chapter One comprises of the introduction, background of the study, problem statement, purpose of the study, research questions, significance of the study, limitations and organization of the study. Chapter Two covers the literature review. Chapter Three outlines the methodology which includes the research design, the population, sampling procedures, data collection instrument, data collection procedures, data analysis and ethical considerations. Chapter Four talked about the findings and discussions of the study. Chapter Five summaries the findings of the study, conclusions and recommendations of the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0. Overview

The topic for this study cut across more than one substantive area in the review of the literature. This chapter provides information about aspect of previous works which relate to this study. In view of this, a number of presentation culled from the various source are under review here.

2.1. The Advent of Technology in Teaching

The use and presence of technology in education is as old as the field of education itself, beginning with more simple tools like chalk and slate and progressing towards the more complex tools of personal computers and the hardware and software components. These technological contribution to the field of education are the result of passionate innovator and scholars who have sought to enhance the educational system (Fazrine, Divjak, Korosec, Holobar & Zazula, 2003).

Attempts to involve technology in the educational arena began with the invention of the personal computer (Fazrine, Divjak, Korosec, Holobar & Zazula, 2003). Fazrinc et. al. (2003) also points out many subsequent inventions to make personal computer more user friendly were spawned due to the desire to see computers put to use in the educational settings.

The first computers entered the world of education during the 1970s (Keengwe, Adams, Reid & LeMaster, 2008b). Finally the interest came on the scene during the 1990s (Keengwe, et. al. 2008b) further securing the rise of the information age.

Along with the increasing presence of the internet, other innovation in the field of ICT were being combined to increase the accessibility and availability of ICT for educational purpose. Teachers began using technology to additional ways both inside and outside classroom (Babell, 2004).

The increasing availability and prospect of ICT in the classroom prompted investigations into how technology was utilized in the classroom settings. Despite many research and promise of ICT to enhance the educational system in Afigya Kwabre District of Ghana. It is not being used in the classroom in ways to develop meaningful learning opportunities or fully realize its proclaiming potential.

2.2. Promise of ICT use

Gimbert and Cristol (2004) identified the promise ICT lie in the ability to improve teaching and learning. These proposed advantages of technology have been the notification for the seemingly endless investment hoping to support ICT use in the classroom. In the early childhood classroom ICT is identified as serving as a catalyst to encourage collaboration between teachers and parents as well as inter-student collaboration in learning. (Gimbert & Cristol, 2004). This collaboration leads to an increased professional development. Accessibility to information on the Internet also increases the potential for collaboration between professionals in various field of education. But still some studies believe that some teachers are not completely aware of the collaborative potential of ICT for professional growth (Doolittle & Hicks, 2003).

Another concern of teachers with regards to the use of ICT for teaching is the difficulty in accessing these tools (Doolittle & Hicks, 2003). Despite the difficulty on the

usage of ICT tools, it does hold promise to increase collaborative teaching. Investigated that the promise of using ICT to aid struggling readers. They identified that guidance could be built not the software that is used to provide pronunciation, definitions, examples and illustrations that would assist struggling readers in understanding a given text. Clements and Sarama (2003) identify the hope of ICT to help teachers close the gap in reading ability caused by environmental factors in early childhood education, which is the cause of falling standards in Ghana.

The result of research on ICT use to teach social studies in the classroom indicate that students in each of the three ability groups (special need, gifted and talented need and regular need) showed improvement in their knowledge and understanding of topics covered with the most significant improvement recorded in gifted and talented group (Gentry, 2008). Also instigated the effect of using ICT in the mathematics classroom to Lin. Conducted interviews of teachers who, through a workshop experience had attempted to use ICT when teaching mathematics concept. All of the participants indicated that the computer and the web resources played a significant role in helping student's motivation (Gentry, 2008).

ICT is changing the way teaching and learning occurs in the classroom (Neo & Neo, 2004). While many students possess at least basic skills on the use of ICT, the teacher has an important role to play in developing lessons that enable students to use ICT as a tool to accomplish specific learning goals.

2.3. Teachers' Beliefs

Several studies advocate that teacher's attitudes are an important element in teaching how best to use technology to accomplish learning objectives (Christensen, 2004). In particular teachers who held a traditional philosophy about teaching and learning tend to use moralistic and traditional methods while teaching with more constructive philosophies tend to use student-centered inquiry based method. According to Stoddart and Niefernanser (2001) teachers belief is one of the fundamental factors that explain technology use in schools according to different research that Erthmer, Addison, Lane, Ross and Woods (1999) have conducted for years but they do not take that serious consideration when it comes to incorporating technology.

An investigation by Windschitl and Sahl (2004) about teacher's belief, social dynamics and institutional culture concluded that technology use should be more thoughtfully considered within the context of teachers belief about what constitutes effective teaching and how technology and information access can alter the traditional roles of teachers and students in the classroom. Teachers must be willing to change their role in the classroom to realize the most success in integrating technology. Also they must see how this technology can fit to acquire the advantages of implementing them. Previous studies reported that teachers who were forced to use computers in teaching ultimately gained confidence and skills (Dwyer, Ringstaff & Sandholtz, 1996).

Teacher's needs are often neglected because of the widespread perception that students needs are more important that if students are not properly prepared in the classroom for living in a world with computers then they will be at a disadvantage, Bigum, (1998). The question is whether technology inventions in the classroom have a

benefit for students or teachers skills. But the reasons for use of ICT tools are to know the importance and understanding how to use technology to improve the learning process. However research by Kumar and Vigil (2001) revealed that teachers belief and confidence about using technology for this generation is very low. In 2001 Cuban Kirkpatrick and Peck maintained that teacher's adoption of technology was connected to their observation about what constitutes the best methods of teaching and learning. The belief and values that teachers hold drive many of the choices they make in the classroom.

2.4. Factors contributing to the use of technologies

The use of instructional technologies should be backed with “encouraging, ready access to technology, training and support before they take steps towards enhancing how and what they teach with the use of technology” (Brace & Roberts p. 324). These are several factors that contribute to the use of technology. According to reviewed studies, when these are put in place, teachers are more likely to use technology

2.4.1 Training

Training brings new skills and abilities to perform tasks which were not possible previously. It provides confidence in teachers in undertaking their duties Ochs (1993) observed that. Although, sometimes textbooks, syllabus and materials may be available for teachers to read about how to use them to teach but a good training course are almost always superior because they effectively drill concepts and foster understanding (Ochs,

1993). Training on the use of ICT tools can be done in two ways; pre-service training and in-service training.

2.4.1.1. Pre-service training

When teachers are undergoing training at the colleges of education and universities they need to be exposed to how different technologies are operated and how they can be used in the classroom to enhance teaching practical experiences on how to actually use technologies should be part of the training when in school and at teaching practice supervisors should see them using the technologies so that when they complete they can use them in the classroom.

2.4.1.2. In-service training

Just as the Ghana Education Service organized symposiums workshops for teachers on ICT tools. In this way they learn how to use these technologies. Brace and Robert (1996) noted that lack of training creates barriers to faculty's use of technology in general. Faculty requires hands of experience through workshops and orientations that are offered at convenient times.

2.4.2. Availability

For teachers to use instructional technologies in their teaching, the technology should be made available. Teaching materials can be substituted or improvised and still deliver the same message. But there are some technologies like projectors, computers, etc that cannot be substituted or improvised such material needs to be supply by the Ministry of Education. Hope (1997) noted that for technology to be exploited in an environment it

must first exist. Majed (1996) found that over half respondent indicated that technological facilities in the classroom were not adequate. For instance to use overhead projector requires supply of electricity.

2.4.3. Support

Different support systems have to be put in place to enable continuity and sustainability when new skills are learned. Leadership must foster an environment where teachers are encouraged to be creative and to explore new innovations like technology. Without leadership with a vision technology cannot reach its potential in school (Hope, 1997). Staffs also provide a huge support for the use of instructional technologies. Peers support can be one of the easiest and most available ways that teachers can get help but it also calls for collaboration with colleagues where those who know how to work with particular technology are willing to render the support needed (Hope, 1997).

2.4.4. Access

Some instructional technologies are designated in special rooms like computer lab and audio-visual rooms where projectors and videos equipment are kept. These special rooms needed to be accessed by the members of staff when they need to use a particular technology. Brace and Robert (1996) also emphasized that faculty need access of technology of all types. Some of them are network computers, audio-visual equipment. Brace and Robert recommended a check-out system that makes technology accessible anytime and anywhere. Such accessibility enhances lesson preparation and delivery and eliminates the frustrations of teachers.

2.5. Barriers to the use of instructional technologies

In addition to training, adequate supplies, support from administrators and peers and access to instructional technologies which influence the use of instructional technologies there can also be barriers that impede the use of technologies (Alston, Miller & Williams, 2003) some of them are the following.

Lack of preparation time: Sammons (1994) observed that teachers who already have too much class work and school responsibilities may find that instructional technologies require additional time to learn and prepare for using them in classroom. They may feel that they have no extra time to spare their use of technology

Lack of incentives: Research has shown that lack of incentive for the teachers who sacrifice their time for the use of technology in their classroom account for teachers' unwillingness to use technology to teach. Hope (1997) asserted that recognizing and rewarding teachers will enhance technology usage in teaching and learning process and suggest the following to overcome them,

1. Pay stipends to teachers to explore educational computing and related technologies.
2. Provide technology role models for teachers.
3. Encourage and praise teachers for using technology.
4. Set aside time during the workday for teachers to explore computers and related technologies

2.6. Five instructional technologies

The survey in the Afigya Kwabre District concentrated on the five instructional technologies i.e. chalkboard, flip charts, overhead projectors, videos and computers

2.6.1. The Chalkboard

The chalkboard is a most common used teaching and learning resource in Ghanaian schools. It facilitates teaching and learning in almost every lesson. The advantages are;

- 1) They are freely available in most classroom
- 2) They need no power (except in the case of electronic white board).
- 3) They are user friendly.
- 4) They display large number of colors

Result showed that the chalkboards were used extensively as compared to other instructional media (Majed, 1996).

Flip Charts

The visual aids available in today's technology flip charts are certainly one of the most popular. They are simple in expensive, versatile and when used with thoughtful creativity they are highly effective. Because flip charts are placed in front of the class they enable the teacher to maintain eye contact with students which help teachers to observe students reaction which makes it possible to change teaching strategies during lesson presentation.

2.6.3. Overhead Projectors

The overhead projector is a simple device that project transparent materials of any type on a screen within a normal lit rom. Teachers need to use overhead projectors since they have advantages. The judicious use of overheads in presentations is essential to captivate the audience and improve their perceptions of what the speaker is saying. When

place in front of class it gives the teacher eye contact with the students. It does not require special skills and since it is easy to use, the teacher is able to control it

2.6.4. Use of Video

Video is one of the resources that can be used for teaching and learning process. It all begins when someone sees the need of a video program on a particular topic and has some ideas on how that need might be met. At the Basic School, videos can be used when teachers want to show students various skills. For example videotaping of specific lesson skills of introduction, questioning, reinforcement, explanation and conclusion can be done in a way. These skills can be shown to students followed by discussions on the skills viewed before they practise them with their peers.

2.6.5. Use of Computers

Computers are widely used for variety of operation such as writing through word processing; class presentation; data analysis; retrieving of information and good communications (Heinich, Molenda, Rusell & Smaldino, 2001). It should be noted that currently teachers in the Afigya Kwabre District even those who know how to operate the computer have not yet used them for instructional purposes. However accessibility to this technology, allowing the teachers to type test record grades creates handouts and print materials. In all situations it is necessary to provide computer training within a social support network and to encourage teachers' empowerment over a period of time. Such training will help enhance teachers comfort level with computers. Instructional

technologies are instructional materials. What then is the nature of instructional materials?

2.7 Nature of Instructional materials

2.7.1 Brief history of instructional materials/media

For a long time in education/learning, it has been commonly acknowledged that individuals learn through both immediate and mediated experience (Seel & Richey, 1994) as cited in Sarfo and Adentwi (2011). Immediate experience is experience gained through direct communication with the expert and mediated experience is experience gained through media. Anthropological and archaeological studies have confirmed this and even indicated that the history of media starts from Cave drawing through language, → Paper and Ink, → Newspaper, → Telegraph, → Typewriter, → Photography, → Motion Pictures, → Radio Television, Video, Compact Disc to Computer Network in that order.

Around 1907, instructional media were originally referred to as Visual Aids or Visual Education. This term accurately described their first role in education. The emphasis was on the use of instructional materials such as charts, coloured photographs, pictures, lanternslides and maps in schools. The purposes of visual materials during the time were to make instructions more realistic, to add powerful visual support to the instructions, to stimulate learners thinking and to reduce the complexity of instructions or ideas (Wittich & Schuller, 1953) as cited in Sarfo and Adentwi (2011). The use of these materials was referred to as Visual Instruction or Visual Education. This was because during this time recorded sound and film were not available.

Later in 1920, film recorded sound, and radio broadcasting began to develop. Sound recording and visual instruction therefore emerged and this was referred to as audiovisual instruction. Even today most of the educators generally refer to any form of medium as audiovisual material. The growth of instructional radio occurred primarily during the decade of 1925 to 1935. By the late 1930s radio had begun its decline due to introduction of new technology.

Today, it is easier to find a television set and computers than a radio in most schools, specifically in the developed countries. School systems that operate their own radio normally do so to teach broadcasting skills and provide primarily entertainment programmes. However, at present, most of the colleges and universities in Africa still consider radio lectures as one of the most effective and efficient means of reaching a very large class. For instance, at the University of Education, Winneba radio lectures, to some great extent, has been accepted by most of the lecturers and students as one of the effective and efficient ways of delivering instruction to the large class.

During World War II the use of media declined (Heinich, Molenda, Rusell & Smaldino, 2001). This might be due to lack of equipment and materials. But during the war view graphs (the name of the first company to produce overhead projectors and the term that some military and industrial personnel still use to describe all overhead projection equipment) were developed for the Navy for map briefing and instruction (Wittich & Schuller, 1953) as cited in Sarfo and Adentwi (2011). Today, an overhead projector is one of the most widely used traditional audiovisual materials in schools/colleges and training organizations.

Soon after the war, the period of expansion in audiovisual instruction began in the industrial and military sectors. This was due in large part to its successful use during the war (Heinich et al., 1988) as cited in Sarfo and Adentwi (2011). Audiovisual research programmes were introduced with the interest of identifying principles of learning that could be used in the design of audiovisual materials.

In the 1950s, many leaders in the audio-visual movement became interested in various models of communication. The authors of these models focused on the communication process. They indicate that medium is used to facilitate communication. But communication as a system consists of several elements including medium. So, to use medium effectively to facilitate communication during planning for instruction, it was necessary to consider all the elements of communication process and not focus on just the medium.

Instructional television experienced a tremendous growth. Today most television instruction is offered via videotape with the exception of airing of news events as they take place. In the 1950s, Skinner (1958) as cited in Sarfo and Adentwi (2011), introduced a device called “teaching machine” based on his reinforcement theory. Teaching machine was a mechanical device designed to present a question, has the learner indicates the answer, and then provides the learner with the correct response. Later, teaching machine was replaced by programme instruction by Skinner. Programme instruction is a method of presenting instructional materials printed in small bits; and each of which consists of an item of information, a question to be answered, and the correct answer. Whereas the other media that have already been discussed are really presentation devices, programmed instruction utilized principles of human learning, is self-instructional-the

learner alone can use it to achieve his/her learning goals without a teacher. Later, this device was replaced by programmed texts. The period reached its peak during the 1960s and paved the way for other types of instructional approaches such as audio tutorial systems, personalized system of instruction, and program tutoring in the 1970's.

Computer-based instruction of the late of 1970s and 1980s is based on the principles of learning used in programmed instruction by B. F. Skinner. Programmed instruction and other self-instructional approaches in formal education have given way to computer-based instruction. Computer based education is also gradually being replaced by computer-based multimedia and hypermedia.

Textbooks are still in the system and they are the most commonly used instructional resources. Overhead projectors are available and used as presentation device by many teachers. Commercially produced video cassettes are gradually replacing films as the most widely used form of projected media as they are easy to use and the prices are relatively low. Film strips and commercially prepared slides along with audiotapes and printed study guides, are providing basis for self-instructional learning. Today, media and technologies for learning are providing direct educational experiences for students rather than being used just as teachers' aid.

2.7.2 Teaching and learning resources

In a study by Makori and Onderi, 2014, they reported that teaching and learning resources that are available to schools include:

- **Library resource**

The benefits of a functional and/or good library system are enormous and include (Busayo, 2011; Lingam & Lingam, 2013), the provision of access to books and other reading materials or resources. The immediate benefit of access to reading resources is the promotion of reading culture which in turn underpins the growth and strengthening of literacy skills. The positive outcomes of reading culture is a marked increase in reading fluency, vocabulary acquisition and usage, ability to express ideas and concepts more clearly and accurately (Busayo, 2011 cited in Makori & Onderi, 2014). In a school setting, a functional school library system fulfils a number of purposes (Busayo, 2011; Krolak, 2005):

- a. Provision of material resource to enhance academic growth and development;
- b. Guidance of students on the choice of relevant materials for study;
- c. Provision of support to the teaching programme of school;
- d. Provision of assistance to pupils in terms of developing of skills in the use of books and libraries;
- e. Acquisition of the relevant books and other reading materials relevant to the school curriculum. In other words libraries provide access to supplementary materials that complement and enhance the learning provided by prescribed textbooks;
- f. The library helps to guide students in all aspects of their academic endeavour including developing research skills.

Makotsi (2011 cited in Makori & Onderi, 2014) observes that:

Regular access to books while at school and developing the habit of reading for pleasure have dramatic results in terms of increased vocabulary, text comprehension, and improvement in writing skills and self-expression.

According to Krolak, (2005), libraries in general also contribute to other areas such as: lifelong learning, literacy enhancement, informed citizenship, recreation, creative imagination, individual research, critical thinking and ultimately empowerment in an increasingly complex world. Mji and Mkagato (2006) add that library usage contributes to the improvement of the learners' higher order of learning skills such as analysis, problem solving and evaluation. Sadly, in Sub-Saharan Africa, school libraries are either not available or in poor condition or both (Etsey, 2005). However, availability of libraries is one thing and utilising them effectively is another; for instance, Seniwoliba (2013) reports that in Ghana libraries are not fully utilised by either teachers or pupils.

- **Textbooks resource**

The importance of textbooks in the teaching and learning process has been widely recognised in the literature (Gichura, 2003). Textbooks provide structure and order in the teaching and learning process (Johansson, 2006; Triyoga, 2010) and in the classroom, they are considered as useful and effective tools or instruments whose purpose is to facilitate the work of the teacher on a daily basis (Johansson, 2006; Padururu, n.d.). Padururu (n.d.) observes that textbooks give students stability and confidence. Textbooks also provide security and confidence to inexperienced teachers (Triyoga, 2010). However, Glennerster, Kremmer, Mbiti, and Takavarasha(2011) observe that an average child does not benefit from textbooks. Triyoga (2010) observes that: "There is no ideal

textbook, ideal for every teacher, ideal for every group of learners and ideal for every teaching situation”. And for that reason it is advisable to use them carefully and alongside other aids or other materials (Triyoga, 2010). Similar view is echoed by Indoshi (1993) as cited in Mudulia (2012) who argues “that the use of textbooks among other materials raises academic standards and efficiency of a school system”. Triyoga (2010) further identifies a number of limitations associated with the use of textbooks. They include inauthenticity, distorting content, may not reflect students’ needs and may deskill teachers.

Poor performance in schools in Sub-Saharan Africa has been associated with shortage or lack of core textbooks (Mudulia, 2012 cited in Makori & Onderi, 2014). For instance, Eshiwani (2001) as cited in Musasia et al. (2012) argue” poor performance of mathematics in Kenya is attributed to poor teaching methods and acute shortage of textbooks. Shortage of textbooks may often result in students or pupils sharing textbooks. In some cases one textbook is shared between 6 or more pupils or sometimes no textbook at all (Makotsi, 2011). Worse cases of textbook: Pupils ratios have been reported in the literature, for instance in some schools in Macia the ratios are between 1:40 and 1:100 (World Bank, 2008). In Cameroon the ratio of textbook: pupil is 1:13 (Makotsi, 2011). In Fiji Islands, the textbooks were either outdated or not available in sufficient number in some rural schools (Lingam& Lingam, 2013). The whole situation of inadequate textbooks is exacerbated by the lack of supplementary instructional materials (Seniwoliba, 2013). Shortage of textbooks therefore put pressure on teachers and also affects the amount of homework they assign to pupils or students.

- **Laboratory resource**

Kibirige and Hodi (2013) underscore the importance of laboratories in providing learners with opportunities to experience science by employing scientific research procedures. One such opportunity is engaging learners in the inquiry processes through which they can acquire research skills. Also learners gain in terms of understanding the nature of scientific problem solving (Kibirige & Hodi, 2013). Similar views are echoed by Owolabi and Oginni (2012) who observe that one of the activities in science is experimentation because it provides a forum for practising the theoretical knowledge gained in the classroom and for demonstrating the psychomotor skills of a teacher and learner, thus reinforcing the fact that students' engaging in laboratory equipment and processes is key to achieving the learning objectives. Students who are not engaged in the laboratory equipment see science as abstract and irrelevant (Owolabi & Oginni, 2012). Kibirige and Hodi (2013), report in their study that learners who use laboratory investigation improve their understanding of physical sciences.

Mudulia (2012) reports on a relationship between availability of resources and achievement of science, arguing that high performing schools have higher availability of laboratory equipment and chemicals or consumables than low performing ones. However, acute shortages of laboratory equipment and consumables have been reported in Zambia, Nigeria, South Africa and Fiji among other countries (World Bank, 2008; Ogunmade, 2005; Lingam & Lingam, 2013; Kibirige & Hodi, 2013). There are also reports of poor quality science materials in Fiji (Lingam and Lingam, 2013). Lack of proper use of laboratories has also been reported in South Africa and Portugal (Kibirige & Hodi, 2013). Other issues highlighted in the literature in relations to teaching science include science

teachers lack teaching skills and competency and professional development is absent (Kibirige & Hodi, 2013).

- **Furniture resource**

In many countries, furniture is either lacking or poor. In some situation the shortage has been described as acute (World Bank, 2008). For instance, in the Fiji islands, school furniture was reported as poor and inadequate to the extent that in some schools furniture shortage was acute and students and/or pupils had to sit on the floor (Lingam & Lingam, 2013). In Culcutta, India, a study involving head teachers of primary schools, identified lack of electricity, space and furniture as major challenges facing the schools. In Kenya, many schools in the Nairobi inner-city have inadequate furniture; they are either broken or lost (Dierkx, 2003). Learners need physical comfort when sitting, reading and writing and furniture plays a key role in ensuring the comfort of learners. Four key areas in relation to furniture and the learning process:

- i) Well designed and constructed
- ii) Correctly sized
- iii) Fit for its purpose
- iv) If possible made and repairable locally.

Poor furniture design has been associated with back pain and more especially in girls (Higgins, Hall, Wall, Woolner, & McCaughley, 2005).

- **Sports facility resource**

It is believed that availability of functional sports facility or resources would result in significant sports and/or physical activity participation among students. Pule (2007) has highlighted the benefits of sports participation and include: unique

developmental programmes and opportunities for school learners; positive influence on self-esteem and social competency. Also, participation in sports has been reported to contribute positively to students becoming more disciplined, setting goals, organising time and developing self-confidence (Pule, 2007). However, lack of adequate and/or sufficient facilities has been associated with decline in sports participation (Pule, 2007).

Other resources

One of such resource is the classroom physical environment. Quality physical environment is very important because studies have shown that it can significantly affect student achievement (Victoria Institute of Technology, n.d.). Similar views are echoed by Siddhu (2011) who based on a study in India, observed that quality of classroom conditions have strong positive effects on girls. Adedeji and Olaniyan (2011) note that many rural schools across African countries lack essential infrastructure thus making the learning environment less safe, less efficient and less effective. In Kenya in 1999 a government commission of inquiry on education system in part linked declining standards of primary education to inadequate and unsuitable physical facilities (Dierkx, 2003). Schools with poor physical environment are less likely to attract both teachers and students or pupils (Alhassan & Adzalilie-Mensah, 2010 cited in Makori & Onderi, 2014).

2.7.3 The Concept of Instructional Materials

Instructional Materials as the name suggests, are materials of visual, audio and audio - visual category that helps to make concepts abstracts and ideas concrete in the teaching/learning process. They are also materials which the teacher uses in supplementing his teachings (Olawale, 2013).

Instructional Materials include materials used to facilitate learning for better results. Likewise, it is the use of the chalkboard, charts, models, overhead projectors, films, television and computers in teaching process (Olawale, 2013). Hence, it is not just the ' use of tools of technology alone but a systematic, integrated organization of machines hard wares and soft wares and man, teachers etc. to the solution of problems in education. For example, instructional materials at a distal level may be only represented by the availability and presence of textbooks in classrooms; whereas, at the proximal level, attainment of the grade level and skills required by the materials may be more critical for the teacher and student. For parents, it may be that having "portable" instructional materials, that are visible, durable, and easy to carry may be a significant determinant of the utilization of materials (Olawale, 2013).

The concepts of teaching aids have gone beyond simple aids, instructional technology, and media to communication and educational technology. Instructional aids include those objects that are commercially acquired or improvised by the teacher to make conceptual abstraction more concrete and practical to the learner hence the relevant materials utilized by the teacher during an instructional process for the purpose of making the contents of the instructions more practical and less vague (Iwu, et al., 2011).

In order to ensure an effective teaching learning process, it is important for the teacher to be thoroughly acquainted with the teaching resources and services available to him. The components of instructional materials available to teachers and students are in large numbers and also vary according to the functions of each of them. Pictures (motion and still) graphics, maps, radio - recording and play back and the equipment used to get some of these utilized can be regarded as the components of Audio Visual Aids, or

Instructional Aids. Examples of instructional materials are charts, maps, diagrams, comics, models, globes, slides, film strips, television, radio cassettes, video, recorders, cinema, public address system, laboratories and museums, flash Cards, flannel boards, card boards, Calendar, Computers, etc. (Olawale, 2013).

Orakwe (2000) asserts that instructional media are gradually finding their ways into the classroom where modern and versatile teachers are exploiting new ways of transferring learning to the younger generation through the use of prints, visuals and audios or the various combinations of these trios which make up all we have in instructional media. Thus instructional media are the information dissemination devices used in the classroom for easy transfer of learning.

Ema and Ajayi (2004) opined that instructional materials creates change and progress only when the teacher is knowledgeable and knows how to make use of it thus portraying the professional attributes of the teacher and the general knowledge or his creativity in selecting, developing and using instructional materials effectively. Effective communication is the outcome of careful selection of appropriate medium or combination of media available by an effective teacher. Hence an instrument for accelerating the pace of all human transformation, to shake – off inertia in people, achieve mobilization and direct their productive forces in improving their living condition. This shows the impact of the teacher in influencing the future development and growth of a learner.

The success of using teaching aids to meet the teaching objectives demands effective use and communication skills of the teacher to satisfy instructional delivery (Iwu, et al., 2011).

Lending institutions in the education sector in Africa (the World Bank, the African Development Bank, etc.) seem to be convinced that the provision of instructional materials, especially textbooks, is perhaps the most cost effective way of increasing the quality of education in Africa (Eshiwani, 1986). These institutions are concerned with the scarcity of learning materials in the classrooms in Africa. For example, in a recent major policy paper, the African Development Bank observed that the supply of appropriate teaching materials is particularly inadequate in large part of Africa. While this is to some extent a question of finance, the issue of producing and distributing adequate teaching materials for African schools goes much beyond the question of funds. As there is an urgent need not just for any teaching materials and text- books, but for materials that are more closely in tune with the realities and needs of African societies, a major field of lending activity opens up here. Bank Group Loans will support, not just some of the technical assistance needed in modifying and adapting existing textbooks and materials and preparing new materials, but also the production and distribution of these materials in Africa.

Educational Resource Centres in areas where there is a particularly serious shortage of instructional materials could be another example of this general thrust. In this area of quality and internal efficiency, as the majority of the non-salary inputs have a direct effect on the qualitative aspects of education, the Bank Group will give priority to assisting regional member countries identify and maintain minimum standards for non-salary inputs (Eshiwani, 1986).

Among the studies reviewed from Eastern, Central and Southern Africa on instructional materials indicated that there is a scarcity of teaching materials in most

schools due to fiscal stringency experienced by most countries in the region. The scarcity seems to go beyond the availability of funds. Most countries in the region have yet to develop a national capacity for the development of low-cost teaching materials that are pedagogically sound. Some of the reasons that have led to inefficiency in the production of teaching materials in most countries in Africa are: lack of expertise in the design, preparation and evaluation of materials; inadequate training of teachers in the use of these materials; lack of production capability, and poor organization of distribution (Eshiwani, 1986).

2.8 Importance of Instructional materials

The purpose of this sub-section is to outline the importance and uses of Instructional materials. Any insights provided by the search will help to determine how to effectively use the Instructional materials.

The new structure and content of Education M.O.E (1974) states that, teaching as an activity can be enhanced or done effectively when there is the use of teaching-learning materials such as wall charts, chalkboard illustrations, diagrams, photographs or pictures. The use of teaching and learning materials is very important at all levels of pre-university education.

Pictures effect communication and help to gain or maintain attention. Pictures do not only provide information but are facilitators of information for better understanding of abstract concepts. The importance of using Instructional or Teaching-Learning materials is second to none in the teaching and learning process. Instructional media involves the learners physically in the learning process. Learners observed an experience

with little or no comments during the activity. Learners enter into their experience by using their senses.

Teaching comes from the old English word “taecan” meaning to show. The term “teach” is also related to “token” meaning a sign or symbol. Therefore “to teach”, according to these derivations, means to show someone something through signs and symbols (Uljens, 1997) as cited in Sarfo and Adentwi (2011). Knowledge is in the mind of the knower. The expert can only transfer or teach the novice or dispense knowledge and skills to the novice through signs and symbols. This suggests that the concept of knowledge can be defined more precisely when taking into consideration the signs and symbols that represent knowledge.

It will be recalled from the definition of media and mode that media carry the mode (these signs, symbols and sound-stimuli) to the receiver. Therefore the basic functions/role of instructional media is to provide learners with these stimuli and evoke sensation.

It is clear from the above that media play a central role in teaching and learning. What do media actually have to do to help the students or trainees in learning? Basically, media must present students/trainees with stimuli and evoke responses. However, if the analysis of this basic function is carried further, the basic stimulus and response requirement might seem to imply a number of other functions like: (1) Gain student/trainees attention and engage their motivation; (2) Stimulate previous learning; (3) Provide learning/training objectives; (4) Provide new learning stimuli; (4) Activate the students/trainees response (motivation); (5) Give speedy feedback (education); and (6) Encourage appropriate practice (reinforcement).

2.8 Kinds and Categories of Teaching Aids

Different instructional materials are available to be used in teaching any subject effectively, but not all topics require the same type and quality of materials. These materials can be purchased, locally made, or improvised or even imported when necessary for effective instructional delivery. The criteria for classifying instructional materials or teaching aids include the degree of expertise/technical skills needed for production, nature of the material, physiological parameter or sensory modality, the place the material is produced and miscellaneous characteristics. For effective instructional delivery, instructional materials are summarized under the following categories:

- i. Projected and electronic materials
- ii. Non-projected materials
- iii. Phenomenal and manipulative materials (Iwu, et al., 2011).

Projected and electronic materials are forms of media which could be visual, audio and audio-visual in nature that requires projection and electricity in their use for teaching and learning situation. This can be categorized into tape recorders/recording, radio, slide projectors, overhead projectors, Episcopes video cassette/video disc machine and computer instructional system (Iwu, et al., 2011).

The computer has been found to be the most suitable and versatile medium for individualized learning because of its immense capacity as a data processor used for different games by children. Iwu, et al., (2011) acknowledge three broad ways by which computer contributes to teaching and learning situation, these are mass instruction, individualized information and group learning. More so, the computer technology has made it possible for teachers and students to avail themselves of interest facilities where

they can obtain needed information. The audio (deal with sound only) the visual (as in sight) and audio-visual (a combination of audio and visual i.e. sound and vision) for instance:

Audio: These include such things as Radio, Record players, cassettes, gramophone etc. These aid teaching through the sense of hearing. They can be used in teaching of and at the same time programmes can be expertly presented via them.

Visual: The category of this consist of maps, Film strips, specimen, pictures, charts, Blackboard, posters etc. This category appeals to the pupils through the sense of sight, the saying that seeing, is believing applies to some extent in this context. Until facts are presented in form of visual aid, pupils may not readily grasp the meaning of ideas, concepts and facts.

Audio-Visual: As have said already, this group consists of a combination of both audio and visual materials. They are therefore things like Television films and projector etc, the use of these aids learning greatly (Iwu, et al., 2011).

- **Non Projected Materials**

Non-projected materials are those materials that do not require any form of projection before they can be utilized. They include chalkboard/board flip chart, specimen, model, textual and non-textual materials. Textual materials are the print materials such as textbooks, journals, periodicals, newspaper among others while the non- textual materials include charts, chalkboards, films, videotapes, audiotapes, relia, festivals and games. Iwu et. al., (2011) expressed that textual and non-textual materials together assist the students in acquiring clear concepts of subject matters as well as provides security for the unprepared teacher and an escape hatch from a teacher who is

instructing outside his field of specialization. While specimens are the real objects or things a teacher can use for effective teaching of science concepts; it makes the science teachers work easier and more participatory.

- **Phenomenal and Manipulative Materials**

These are the community based resources that promote teaching-learning of moral values and cultural activities of the learners. Phenomena are instructional situations such as features, resource persons and other community resources that are directly apprehended by the learner in direct contact with experiences that far transcends volumes of recorded literature (Iwu et. al., 2011). Phenomena are under-utilized because of time, finance, knowledge of the teacher, inflexibility of the school time table and other infrastructural problems. This class of teaching aids or instructional materials deals mostly with the affective domain but do not preclude the psychomotor and cognitive domains.

Manipulate materials are those instructional materials which the learner handles skillfully and expertly to bring about the desired behavioral changes. They are very important in the development of skills in professional training (Iwu et. al., 2011). Manipulative materials promote complete mastery of the content materials and the specific objectives. They form part of instructional and performance evaluation. The greatest significance of these materials is that they express the channel through which the required learning takes place, hence cutting across all aspects of skills development and mastery learning. They are also vital for effective instructional delivery because skills

such as communication, patience and assertiveness are easily demonstrated, learnt and observed through instructional games.

2.8.1 The Significance of Instructional Materials

Many educationists agree that instructional materials bring about improvement in the teaching/learning process as well as permit teachers and students to interact as human beings in a climate where people control their environment for their own best purposes (Olawale, 2013). Also, most educators generally and equally agree that the creative use of variety of instructional materials will increase the probability that student would learn more, retain better and bring about the skills they are expected to perform. Apart from their ability to process meaningful sources of information, instructional materials help the teacher with the means for extending his horizon of experience as well as providing the teacher with rich sources of procuring communicative materials which could be produced jointly by the teacher and the students.

Furthermore, several studies have been conducted to test the value of instructional materials and other sensory devices. These researches have proved that instructional materials when properly used in teaching learning situations can accomplish a lot of complex tasks (Olawale, 2013).

The instructional materials also offer real experiences in giving the teacher basis for thinking and understanding. They supply concrete basis for conceptual thinking and therefore reduce meaningless responses of students. At the same time, they overcome the limitations of time, space and size by helping the students to understand things that are too small or too big, or too slow or too fast.

Therefore instructional materials can provide members of a group with a common or joint experience. They also break language barriers and ease difficulties and in the end make the lesson more meaningful. They save time and thus enable students grasp ideals more effectively and faster. Likewise, they help to simplify and emphasize facts and clarify difficulties. They reinforce other teaching methods and materials. They improve the efficiency of other method and effectiveness of teaching process (Olawale, 2013).

However, before a teacher selects his instructional materials, he should consider the following which will serve as his criteria for selection

(a) Reliability: As much as possible, teachers should make sure that the Instructional Materials so selected can be used to achieve the objective of the particular lesson. It is wrong for a teacher teaching pilgrimage to come into the class with an apparatus required to teach ablution. In this case, the Instructional Materials cannot be relied upon to achieve the objective of the lesson.

(b) Relevance: Care must be taken to ensure that only instructional materials that relate to the topic are used while teaching.

(c) Cost: The instructional materials should be within the reach of the teacher or the school. The cost of the instructional materials will determine whether it can be bought and used or not; otherwise the teacher selects only that instructional material that costs less. In an event of the inability of the school and age limit. It is wrong to bring into the class instructional materials that cannot be easily used to convey meaning of facts, ideas and concept to the pupils because of the limit of the pupils. A primary one school child may not be interested in a lesson in which telescope is used to present facts. This means teaching instructional materials are not just selected on the basis of their attractiveness

but on the basis of certain criteria that will ensure their effectiveness in the teaching and learning processes (Olawale, 2013).

2.9 Summary

The review was done in six parts looking at the advent of technology in teaching, promise of ICT use, Teachers' belief, factors contributing to the use of technologies, barriers to the use of instructional technologies and lastly five instructional technologies. On the advent of technology the authors largely said that ICT usage in the classroom started gradually and now it is used widely in the classroom, on the promise of ICT it was discussed that the use of technology in the classroom makes students to accomplish specific learning goals better, teachers' belief explained that the values teachers hold drive them towards the choices they make in the classroom. The factors that contribute to the use of technology in the Afigya Kwabre District was explained as training, availability of these ICT tools, the support from peers, as well as the accessibility of these tools. Some of the barriers to the use of the instructional technologies were identified as lack of incentives, lack of preparation time. The chalkboard, flip charts, overhead projectors, video and the computer usage was also discussed. Interestingly, the review has identified a gap of knowledge about the reasons for using technology in the classroom in the Afigya Kwabre District and this is what the research seeks to find. The next chapter will focus on the methodology.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0. Overview

The Purpose of the study was to specifically find out the reasons for the use of instructional technology in teaching in the Afigya Kwabre District of Ashanti. In order to achieve this purpose, the study adopted the following methodological processes: research design, population, sampling and sampling technique, research instrument, pilot – testing of instrument, reliability and validity of the instrument, data collection procedure, data analysis Procedure and ethical considerations. Each of these has been explained subsequently.

3.1 Research Design

The purpose of this study was to survey teachers in the Afigya Kwabre District to determine their reasons for the use of instructional technologies in the classroom. The researcher used descriptive survey design for the study. Gay and Airasian, (2003) stated that a descriptive survey is concerned with conditions that exist, practices that prevail, beliefs and attitude that are held, processes that are on-going and trends that are developing. Pilot and Hungler (1995) also stated that a descriptive survey aims primarily at describing, observing and documenting aspects of a situation as it occurs rather than explaining them. Descriptive survey design has the advantage of providing the researcher with more information from a large number of respondents.

3.2 Population

According to Kusi (2012), population is a group of individuals or people with the same characteristics and in whom the researcher is interested. It may also be defined as a group of individuals that the researcher generalizes his or her findings to. Population is the group of individuals that the researcher generalizes his findings to.

The targeted population for the study was all the basic school teachers in Kodie and Afrancho circuits of the Afigya Kwabre District of Ashanti. In all there were 368 teachers in the study area.

3.3. Sampling and sampling Technique

Borg and Gall, (2007), defined sampling as a technique used for selecting a given number of subjects from a target population as a representative of the population in research. To get an appropriate sample size for the study, an updated list of all the teachers in basic schools of Kodie and Afrancho circuits was obtained from the District Director of Education.

Simple random sampling was used to select 50 teachers who have been the school for more than five years from each of the two circuits, giving a sample size of 100 for the study. Simple random sampling was used to select the 100 respondent from the two circuits in the Afigya Kwabre District because it gives all the population equal chance of being selected.

3.5 Data Source

The researcher used both primary and secondary data for the study. The primary data collected was basically used for the analysis, while the secondary data enabled the work to be based on academic perspective, taking into consideration the possibility of biases of the research such as socio economic factors and subjective opinions.

3.5.1 Primary Data

The researcher used structured questionnaire for primary data collection. Structured questionnaire was used to collect data taking into consideration the features of the response rate to gather more information for the study.

3.5.2 Secondary Data

The secondary data was gathered through books, encyclopedias published and unpublished materials. The main sources of the secondary data gathered were obtained from U.E.W-Kumasi library, various textbooks and on line.

3.6 Data Collection Instrument

The main instruments used for gathering data for this study was the questionnaire. According to White (2005), questionnaire is an instrument designed to collect data for decision-making in research. A questionnaire can also be described as a systematic compilation of questions that are administered to a sample of a population in research. The questionnaires were administered personally on the 100 teachers sampled to collect more data for the study.

3.7 Pre -Testing of the Instrument

The researcher conducted a pilot study to make sure the research instruments were valid and reliable. Bell (2008) stated that the purpose for piloting is to get the bugs out of the instrument so that the respondents in the study area will experience no difficulties in completing the questionnaire and also enable one to have preliminary analysis to see whether the wording and format of questions is appropriate. Pilot testing is a small implementation of the draft questionnaire that assesses clarity, comprehensiveness, acceptability (Rea and Parker, 1997) the items needed to be clear so that respondents would not have and difficulty in trying to understanding what the questions meant and it should be related to the objectives of the study.

The questionnaire was piloted to determine its validity and reliability. Twenty questionnaires were administered on 20 teachers selected randomly from the other basic schools outside the study area. The purpose of the pre-test was to enable the researcher to make necessary changes to items which may be inappropriate, determine the level of ambiguity of the questions for corrections and determine the percentage of responses. Ambiguous items were modified and inappropriate items were made appropriate.

- **Validity**

Validity is the degree to which a test measure what it is supposed to measure. The validity of the instrument was ascertained through literature searches, expert opinions from my research methods lecturer and my supervisor.

- **Reliability**

Reliability is the degree to which an instrument yields consistency in its result after repeated trials. To ascertain this, the questionnaire were administered on the same 20 respondents sampled for the pilot study, twice in the pilot study with a grace period of two weeks between the first and second test and the result correlated to know the reliability of the instrument. A reliability test yielded cronbach alpha of 0.89.

3.8. Data Collection Procedure

The researcher went to the District Director of Education for permission to undertake the study after the University has given approval of the research topic. The Metro Director of Education gave the researcher, the permission to undertake the study; therefore the researcher visited the sampled population. There are several ways that surveys can reach respondents for completion. A researcher can contact respondents by mailing the survey to them and wait for their response.

In this research, the survey was administered in person. i.e. moved from one school to the other. Despite the time and expenses incurred, this approach helped the researcher to have a high response rate since the survey was collected immediately after completion.

3.9. Data Analysis

The data collected was analyzed using descriptive statistics with percentages and frequencies. The data was cleaned with the aim of identifying mistakes and errors which may have been made. A codebook for the questionnaire was prepared to record all the responses. The data collected was also checked for completeness of the surveys. The data was then entered into the Statistical Package for the Social Science (SPSS) for analysis. personal information about the teachers was also gathered and frequencies and percentages were used to present result.

3.10. Ethical Considerations

Johnson (2008) Suggested that Ethics are principles and guidelines that help us to uphold the things we value. For any researcher ethics is an important consideration and the researcher received a permission letter from the District Director of Afigya Kwabre to enter the various schools to distribute the questionnaires. The Researcher also with the approval from participant explained that their participation is voluntary and statement will be kept confidential also explained to them. The ethical compliance at the University of Education Winneba was also followed.

CHAPTER FOUR

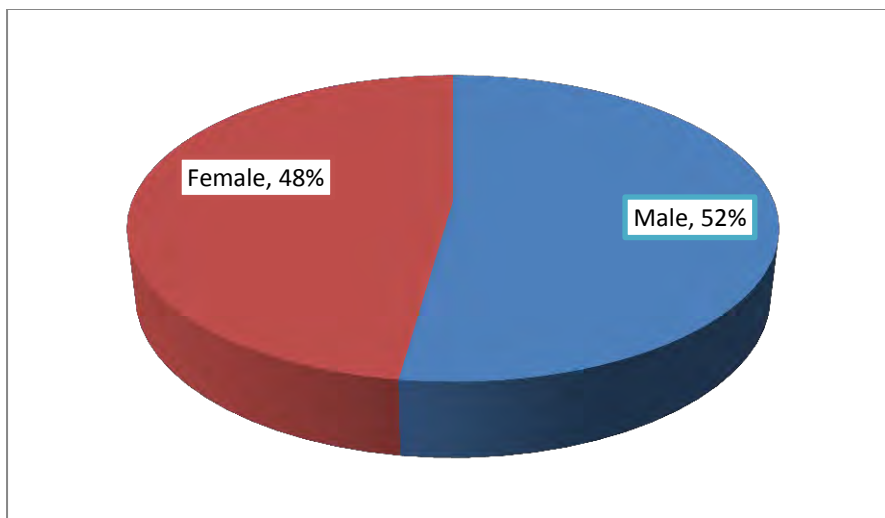
RESULTS AND DISCUSSIONS

4.0 Introduction

This chapter of the study presents analyses and discusses the result of the study. The thematic areas touched on in this chapter include both descriptive and inferential sections. The descriptive section of the chapter touched on the respondents' profile, frequent use of technology in teaching, reasons for not using technologies in teaching, factors that influence the use of technologies and attitude towards the use of technologies. The influential area of the analysis touched includes chi-square test. Results were presented in tables and figures.

4.1 Demographic Information

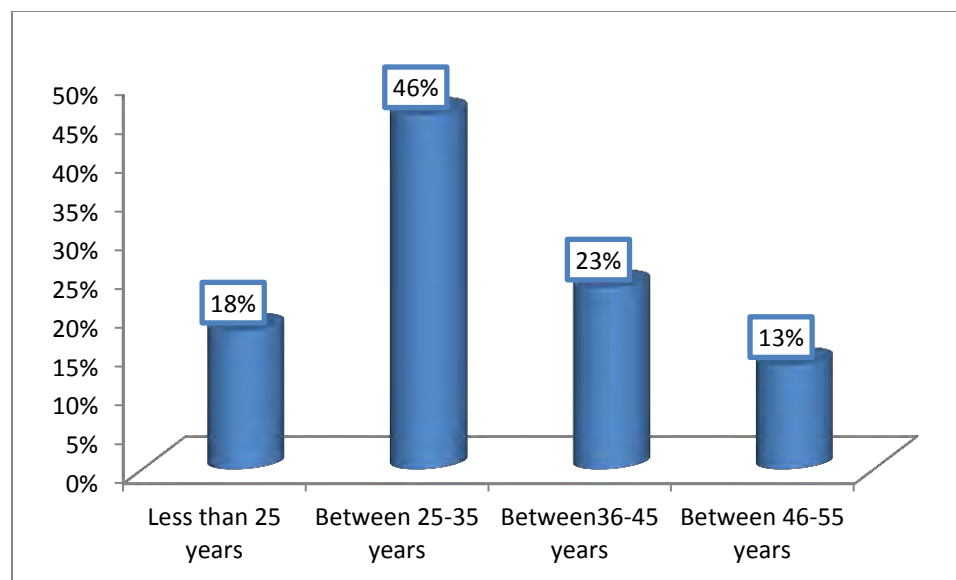
This section of the study examines the key background information of the respondents and the surveyed small-and-micro-enterprises. The key background information of the respondents discussed in this section includes gender, age and academic qualifications. The result of the section is presented in figures (Figure 4.1 to Figure 4.3).



Source: Field Survey, 2018

Figure 4.1: Gender of Respondents

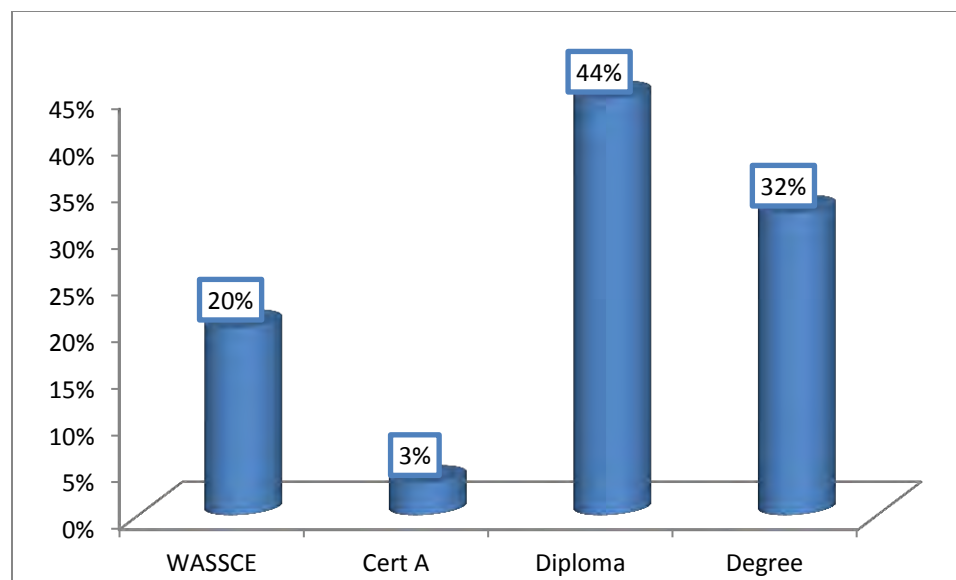
Figure 4.1 gives the general information of the gender of the respondents. The numbers of the respondents were 90 which consisted of 47 male and 43 female. On percentage wise, men and women were represented by 52% and 48% respectively. The gender distribution shows that the males are more than the females who participated in the study.



Source: Field study, 2011

Figure 4.2: Age distribution of respondents

Figure 4.2 talks about the age brackets of respondents, which ranges from below 25 years to 55 years. Those below 25 years represent a percentage of 18, followed by 46% which represents those between the ages of 25-35 years. Those between the ages of 36-45 years had 23% and the last batch of the age group which is between 46-55 years were 13%. The age distribution of respondents shows that the educational sector is going to enjoy active service from people employed by the sector because it would take about 25 years before the age bracket with the highest percent would be due for pension, all things being equal. The age distribution of the respondents shows that they would be using electronic gadgets for learning and other social uses which would be transferred to the classroom for easy teaching and learning. The teachers especially those between the ages of below 25 -35 years would be more abreast with the use of the Internet.



Source: Field Study 2018

Figure 4.3 Academic qualifications of respondents

Figure 4.3 elaborate the academic qualifications of respondents, which includes WASSCE, Cert A, Diploma and Bachelor's Degree. Those with highest percentage were those with Diploma (44%) followed by Bachelor's Degree (32%), WASSCE (20%) and Cert A (3%). The future of the county's education is vibrant since the majority of the respondents have Diploma which would propel them to further their education to the highest level for the benefit of the schools where they would be teaching. It was observed that 32% had Bachelor's Degree which shows how knowledgeable they are as far as their teaching was concerned. Those with the WASSCE would be urged to further their education through distance programs of various colleges and universities. They would be like those with Cert A who has now upgraded themselves to Diploma level.

4.2 Answers to the Research Questions

Research Question 1: How frequent do teachers use instructional technologies in basic schools of the Afigya Kwabre district?

Frequent Use of Technology in Teaching

This section of the analysis presents frequency at which respondents use technology in teaching. Frequency with percentages was used to access the respondents' responses to draw conclusion on the usage of technology in teaching.

Table 4.1: Frequency of use of technological in teaching

	Never	Seldom	Occasional	All the time	Total
	N (%)				
Chalkboard	0 0%	0 0%	0 0%	90 100%	90 100%
Flip chart	17 19%	14 16%	43 48%	16 18%	90 100%
Overhead project	71 79%	0 0%	19 21%	0 0%	90 100%
Videos	53 59%	6 7%	29 32%	2 2%	90 100%
Computer	22 24%	19 21%	4 4%	43 48%	88 98%
Local resources	0 0%	4 4%	41 46%	45 50%	90 100%

Source: Field Study 2018

Table 4.1 shows the frequency of the use of technology in teaching. From Table it could be seen clearly that there are many technologies that could be used in teaching but teachers and the educational system lacks basic logistics. Chalkboard is the most used technology as the study displays. This is the most commonly used teaching and learning resources in the schools. It is in recent years that whiteboard are used by some school cycles especially in the secondary and tertiary level. Chalkboards are freely available in most classroom, user friendly and display a large number of colours. They are used extensively as compared to other instructional media (Majed, 1996). It is seen that, flip chat was indicated by 19% of the respondents that they never use it, 16% seldom use it, 48% occasionally use it and 18% use it all the time. Seventy nine percent of the respondents have never used an overhead projector in their teaching before with 21% who occasionally used it. With Videos in teaching 59% said they have never used it in teaching, whereas 2% use it all the time in their teaching. 24% were not using the computer in their teaching, 21% seldomly use it, 4% occasionally use computer and 48% use it all the time. On the use of local resources 4% seldom use them, 46% use them occasionally and 50% use local resources in their teaching. Using local resources would help pupils to understand the content being taught because they are familiar with the resources which are within their environment.

4.3 Research Question 2: What are the reasons for non-usage of instructional technologies in basic schools of the Afigya Kwabre district?

Reasons for not using Technologies in Teaching

Table 4.2: Reasons for not using technologies in teaching

	Not Applicable	Lack of Training	Not Available	Not Accessible	Total
	N(%)				
Flip chart	6 7%	8 9%	58 64%	18 20%	90 100%
Overhead project	2 2%	44 49%	34 38%	10 11%	90 100%
Videos	2 2%	0 0%	63 70%	25 28%	90 100%
Computer	20 22%	52 58%	10 11%	8 9%	90 100%
Local resources	27 30%	2 2%	24 27%	37 41%	90 100%

Source: Field Study 2016

Table 4.2 shows the results for the reasons why most of the technologies are not used in teaching. Greater percentage of the respondents (64%) indicated flip chart was not available in their school for them to use, representing 64 percent. It was indicated by 20% that of the respondents that flip chart was not accessible. Overhead project was indicated

mostly as not used because of lack of training, unavailability and not accessible with few respondents (2%) indicating that overhead project was not applicable. The study shows that 70% of the respondents indicated that videos are not available that is the reason they do not use them in teaching. It was shown that 22 % of the respondents indicated that computer was not applicable, 58% forming the majority said they lack training, 11% said they are not available and 9 percent indicated computers are not accessible. The study shows that 41% and 30% of the respondents indicated that local resource are not accessible and applicable respectively. Twenty seven percent of the respondents said they do not use local resources because they are not available.

The main reason for not using flip chart and videos in teaching are unavailability and inaccessibility. This was in support with the concern raised by Clim & Chai, (2008) that, teachers find it difficulty in accessing these tools. This suggested that most of the schools in the study do not have flip chart and those that have them are not able to access them. The main reasons for not using overhead project were lack of training and unavailability. Teachers lack of training on computer was indicated by the majority, followed by its inapplicability. The reason for not using local resource in teaching was mainly due to the fact that they are not applicable and accessible.

Table 4.3 Usage and non-usage of the variables

Technology	Frequent Usage	Not applicable	Lack of training	Not available	Not accessible	Total	Chi-Square
Flip chart	Never	0(0%)	2(12%)	15(88%)	0(0%)	17(100%)	0.153
	Seldom	0(0%)	0(0%)	14(100%)	0(0%)	14(100%)	
	Occasional	6(14%)	6(14%)	29(67%)	2(8%)	43(100%)	
Overhead project	Never	0(0%)	27(38%)	34(48%)	10(14%)	71(100%)	0.000
	Occasional	2(10%)	17(90%)	0(0%)	0(0%)	19(100%)	
Computer	Never	20(91%)	0(0%)	2(9%)	0(0%)	22(100%)	0.000
	Seldom	0(0%)	13(68%)	0(0%)	6(32%)	19(100%)	
	Occasional	0(0%)	2(50%)	0(0%)	2(50%)	4(100%)	
Videos	Never	2(4%)	0(0%)	49(92%)	2(4%)	53(100%)	0.000
	Seldom	0(0%)	0(0%)	0(0%)	6(100%)	6(100%)	
	Occasional	0(0%)	0(0%)	14(48%)	15(52%)	29(100%)	
Local resources	Seldom	0(0%)	2(50%)	2(50%)	0(0%)	4(100%)	0.000
	Occasional	27(66%)	0(0%)	6(26%)	8(2%)	45(100%)	

Source: Field study, 2018

There was no significant association between the frequent usage of technology in teaching and the reasons for not using technology. The p-value of the chi-square ($0.153 < 0.05$) showed no significant difference. This means that, respondents who indicated they never use flip chart, seldom use flip chart and occasionally use flip chart

had the same reason for not frequently using the flip chart. It was shown that their reasons were due to lack of training and unavailability of flip chart.

The use of overhead projector was never used because of lack of training, unavailability and inaccessibility. Those who occasionally use overhead projector indicated lack of training and inapplicability. The chi-square ($p\text{-value}=0.000<0.05$) result shows that there were significant different reasons for never using overhead projector and occasional usage of overhead projector.

The reasons for the respondents who never use computer were of the reason that, it was not applicable (91%) and unavailable (9%). Those who seldom use computer said they lack training (68%) and not accessible (32%). Those who occasionally use computer also use it because they lack training and that it is inaccessible (50%).

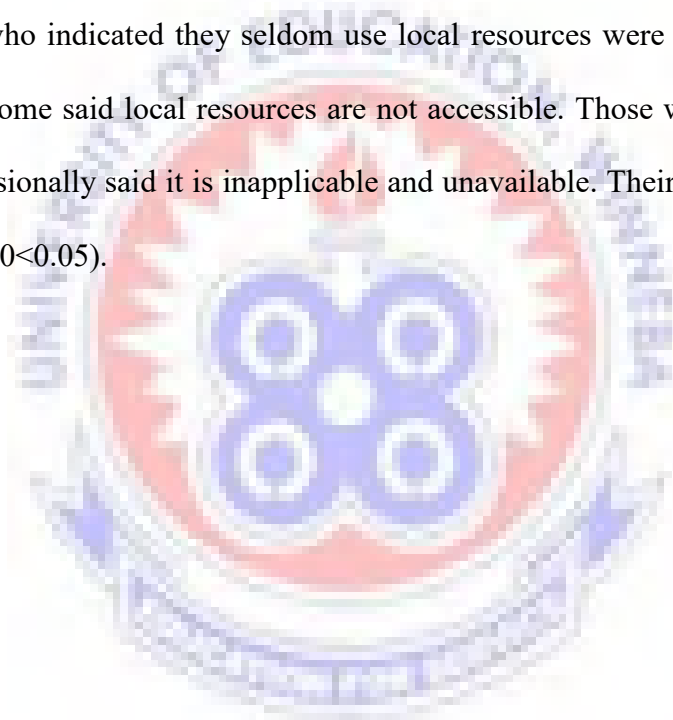
Overhead projector also provides the best and the easiest way of teaching the pupils through the use of audio and video signals. But respondents said they never or occasionally use it and their reasons for never using it are lack of training (38%), not available (34%) and not accessible (14%) and those who occasionally use it indicated that they are not available (10%), lack of training 90%. Lack of training is the main reason why the respondents do not use overhead projector occasionally.

Those who never use computer in their teaching said it is not applicable (91%) while 9% said it is not available. From the estimation the not applicability of computer do not allow respondents to use it in teaching. Under the same variable some respondents also said they seldom use the computer with their reasons being lack of training (68%) and not accessible (32%). Lack of training is the reason why most respondents seldom

use computer. Their reasons are significantly different ($p\text{-value}=0.000<0.05$). Lack of training and inaccessibility of computer makes respondents use it occasionally.

The reasons why the respondents never use the videos in teaching are that they are not available (93%) while 4% also said it is not accessible. It clearly shows that none availability of videos makes respondents never use it. Some also seldom use it with only reason been inaccessible (100 percent). Unavailability and inaccessibility of videos in the school make respondents occasionally use technology in teaching.

Respondent who indicated they seldom use local resources were of the reason that lack training and some said local resources are not accessible. Those who said they use local resource occasionally said it is inapplicable and unavailable. Their reasons were different ($p\text{-value}=0.000<0.05$).



4.4 Research Question 3: What are the factors that influence the use of instructional technologies in basic schools?

Factors that influence use of technologies

Table 4.4: Factors that influence use of technologies

	Not important	Somewhat important	Important	Very important	Total
Availability of resources	0 0%	6 7%	33 37%	51 57%	90 100%
Administrative support	0 0%	2 2%	19 21%	69 77%	90 100%
Peer support	35 39%	31 34%	2 2%	22 24%	90 100%
Access to resources	0 0%	2 3%	42 60%	26 37%	70 100%
Workshop and seminars	0 0%	13 17%	6 8%	57 75%	76 100%
Training	0 0%	13 14%	10 11%	67 74%	90 100%
Personal interest in enhancing students learning	15 17%	0 0%	21 23%	54 60%	90 100%

Source: Field Study 2018

Table 4.4 shows the respondents' response on the factors that influence the use of technologies. The factors include availability of resources, administrative support, peer support, access to resources, workshop and seminars, training and personal interest in enhancing students learning.

On availability of resources 37% of the respondents said it is important, and 57% said it is very important for resources to be available. The result supported Hope (1997), who said that technology to be used in an environment it must first exist. Availability of the materials would significantly influence their usage. Teachings materials that are available in schools are mostly used.

On administrative support, 21% said it is important and 77% said it is very important. Majority of the respondents indicated administrative support for the use of technology was very important. This support comes in different systems and must be put in place to enable continuity and sustainability when these skills are attained by teachers. This system must be established and implemented by the leadership of educational system in the country. Hope (1997) asserted that a vision on technologies can be reached its potential with visionary leaders.

Peer support had the following correspondent percentages, not important (39%), somewhat important (34%), important (2%) and very important 24%. Majority (were of the view that peer pressure do not influence the use of technology. When the technological gargets in schools are available, it must be accessible to teachers. This was well said by Brace and Robert (1996) and the study supported that check-out system that makes technology accessible anytime and anywhere. Such accessibility enhances lesson preparation and delivery and eliminates the frustrations of teachers.

Access to resources was indicated by 60% as important factor and 37% said it is a very important factor. This suggested that, access to resource is important factor that influence the use of technology in teaching and learning. The influence of workshops and seminars had 17% under somewhat important, 8% under important and 75% under very important which shows how important workshop and seminar are, in influencing the use of technology in teaching.

Training were indicated by most of the respondents (74%) as very important factor that influence the use of technology in teaching and 11% said it's important. This shows how training is important and should be organized regularly to improve the teaching competencies of respondents. Ochs (1993) also observed that training provides confidence in teachers in undertaking their duties. It was further revealed that training on the use of ICT tools and other technological materials could be happened by pre-services training and in-service training Ochs (1993).

Personal interaction was observed to be very important (60 percent). It was also indicated by 23% that personal interest in enhancing students learning was important. Training was important factor that influence the use of technology usage in teaching. Personal interest in enhancing students learning should be encouraged.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter provided a summary of the whole research work and its findings. It aimed at examining teachers reasons for the use of technology at the Afigya Kwabre District of the Ashanti Region. Lastly the chapter advances some recommendations towards the general usage of technology and suggestion for further study.

5.1 Summary of the Study

The aim of this study was to examining teachers reasons for the use of technology at the Afigya Kwabre District of the Ashanti Region. This was to ensure an improved usage of technology in teaching in the district.

The objectives of the study were to find out how frequent teachers use instructional technologies in basic schools of the Afigya Kwabre district, determine the reasons for non-usage of instructional technologies in basic schools of the Afigya Kwabre district and to ascertain the factors that influence the use of instructional technologies in basic schools.

A descriptive survey design with structured questionnaire was used for the study. The sampled population of the study was 100 teachers, who were sampled with simple random sampling technique.

5.2.1 Main Findings

Frequent Use of Technology in Teaching

It was seen clearly that there are many technologies that could be used in teaching but teachers and the educational system lacks basic logistics; flip chart, chalkboard, overhead project, videos, computer and local resources.

The study revealed that the most frequent use of technology in teaching in Afigya Kwabre District of Ashanti Region was chalkboard. It was revealed that all the teachers indicated they use chalkboard all the time. Chalkboard was identified in the study to be the most used technology. The study further revealed that overhead projector and videos were not frequently used in the district.

Reasons for not using Technologies in Teaching

The study revealed moreover that, many technologies that could be used in teaching but teachers never use them or seldom used; overhead project, videos and computers. The result showed that teachers do not use overhead projector because they are not available and teachers also lack training on the usage. Videos are also not used because they are not available and inaccessible. Lack of training and not applicability of computer in some schools make teachers not use computer in teaching.

It was also revealed that teachers in the district occasionally used flip chart. Flip charts were seen as simple and inexpensive, adaptable and when used with thoughtful creativity they are highly effective.

Factors that influence use of instructional technologies in basic schools

The study revealed that the most significant factor that influences the usage of technology in teaching was administrative support. It was indicated by majority of the teachers that administrative support is very important factor influencing the use of technology in teaching. Workshop and seminars, training and personal interest in enhancing students learning were some of the very important factors that influence usage of technology in teaching in the district. Availability of resources was also revealed to be significantly influenced the usage of technology. Access to resources was also revealed to be important factor in the usage of technology.

It was revealed that the only factor that has less significant influence on the use of technology was peer support; it was indicated mostly as somewhat important.

5.3 Conclusion

Technology is changing the way teaching and learning occurs in the classroom. Greater concerns of teachers with regards to the use of technology for teaching are the difficulty in accessing and required knowledge in using these technological tools. The study had established significant usage of technological tools in teaching, where chalkboard, flip chart, local resources and computer were at least occasionally used. Overhead project and videos were identified as never or seldom used. The reasons established were mainly lack of training and unavailability of the technologies. Factors like availability of resources, administrative support, access to resources, workshop and training and personal interest in enhancing students learning have significant influence on the use of technology. With the increasing presence of the internet and other innovation

in the field of ICT are being combined to increase the accessibility and availability of technology for educational purpose. Educational authorities have to critically look into this to enhance the use of technology in teaching.

5.4 Recommendations

The following are recommended for consideration and implementation by relevant stakeholders. It is believed that the usage of technological instructional materials positively affect teaching and learning in Ghana. Below recommendations are based on those teaching technologies which proved to be unused according to the findings of the study:

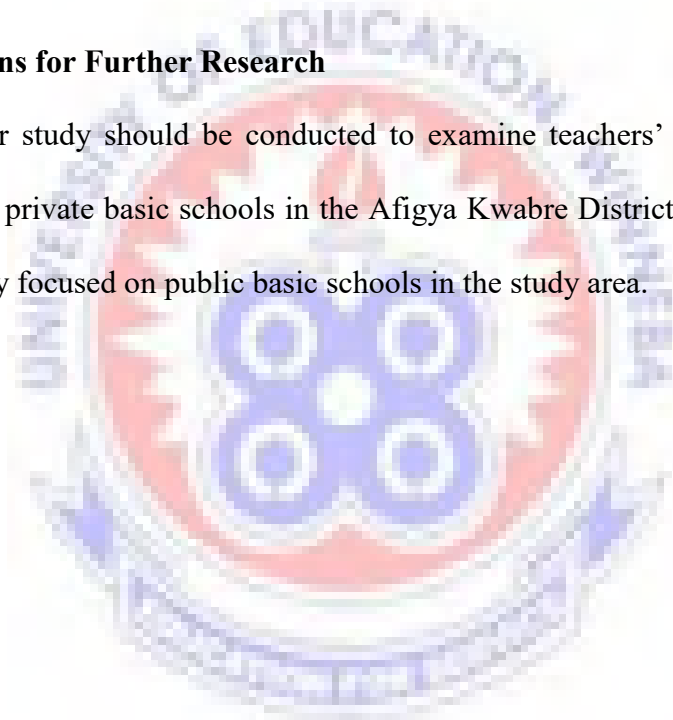
1. Training is important and should be organized regularly to improve the teaching competencies of respondents. Training and workshop officers in Ghana Education Service should organize training on the usage of technologies like overhead projector, computer, videos and local resources. There should be frequent training to teachers on technology usage in teaching. This was noted by Robert (1996) that lack of training creates barriers to the use of technology in general.
2. Teaching materials can be substituted or improvised and still deliver the same message. But there are some technologies like projectors, computers, etc that cannot be substituted or improvised such material needs to be supply by the Ministry of Education.
3. Factors like administrative support, availability of and access to resources, workshop and seminars, training and personal interest in enhancing students learning are very important influential of the use of technology. Education

authorities should endeavor to make necessary arrangement to help enhance the use of technologies in teaching and learning.

4. It was demonstrated from the findings that some of the technological materials are available but teachers cannot access them. The study therefore recommended that, heads of schools should make the available technological instructional materials accessible to teachers.

5.5 Suggestions for Further Research

Further study should be conducted to examine teachers' reasons for the use of technology in private basic schools in the Afigya Kwabre District of the Ashanti Region since the study focused on public basic schools in the study area.



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APPENDIX

QUESTIONNAIRE FOR TEACHERS

University of Education Winneba, Department of Educational Leadership, Kumasi campus. The research is specifically in partial fulfillment of requirements of Masters of Arts studies and the study is on the reasons for teachers' usage of technology in teaching in the Afigya Kwabre District. These questionnaires are for academic work and the information collected is very confidential.

A. BIO DATA

1. Gender

Male

Female

2. Age

Less than 25 years

Between 25- 35 years

Between 36- 45 years

Between 46- 55 years

Above 55 years

3. Highest academic qualification

WASSCE

Cert A

Diploma

Degree

Masters []
 P h d []

B. Please indicate a tick for each item that best represents your opinion on the issue.

1. Frequency of use of technological tools in teaching

S/N	Technology	never	seldom	occasional	All the time
1	Chalkboard				
2	Flip chart				
3	Overhead projector				
4	Videos				
5	Computers				
6	Local resources				

2. Reasons for not using technologies in teaching

S/N	Technology	Not applicable	Lack of training	Not available	Not accessible
1	Chalkboard				
2	Flip chart				
3	Overhead projector				

4	Videos				
5	Computers				
6	Local resource				

3. Attitudes towards the use of technologies

S/N	statement	Strongly disagree	agree	disagree	Strongly disagree
1	Using the chalkboard is very important				
2	Producing teaching technologies requires too much time				
3	Teaching with technology help elaborate difficult concepts				
4	Overhead projectors are easy to operate				
5	Learning about				

	computers are very difficult				
6	Videos are difficult to use in class				
7	Local resources are a good substitute for technologies				

4. Factors that influence use of technologies.

S/N	statement	Not important	Somewhat important	important	Very important
1	Availability of resources				
2	Administrative support				
3	Peer support				
4	Access to resource				
5	Workshop and seminars				
6	Training				
7	Personal interest in enhancing students learning				