UNIVERSITY OF CAPE COAST

AVAILABILITY AND UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY FACILITIES FOR TEACHING AT THE BASIC SCHOOLS IN CAPE COAST NORTH CONSTITUENCY

BY

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DECLARATION

Candidate's Declaration

I hereby declare that this dissertation is the result of my own effort and that no part of it has been presented for another degree in this University or elsewhere

Signature:……Date: ……

Gifty Broni

Supervisors' Declaration

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the University of Cape Coast.

Supervisor's Signature: …… Date: ……

Dr. Paul Nyangorme

ABSTRACT

The study seeks to determine the availability and utilization of ICT facilities for teaching in selected basic schools within Cape Coast North constituency in the Central Region of Ghana. The objective of the study is to compare the availability of ICT facilities in Cape Coast North constituency and ascertain the teachers' level of knowledge regarding the utilization of Information and Communication Technology (ICT), and how ready and willing teachers are to use ICTs facilities available. The Theory of Planned Behaviour (TPB) Model was adopted because it talks about the intension to use new technology, willingness and readiness of basic school teachers to use modern technology as innovation. Questionnaire were employed to collect data. Convenient sampling technique was used to select the sample size. Seventy three out of total population of 90 teachers were selected as sample. Data was processed using SPSS 16.0. Frequency table, cross tabulation and descriptive statistics were used to analyze the data. The result of the study reveals that there was unequal distribution of ICT facilities among schools, and some basic school teachers do not use ICT facilities in teaching at all. However, the teachers agreed that using ICT facilities help to deliver course content easily and interestingly, but lack ICT in-service training. It is therefore recommended that Government and other stakeholders should provide ICT facilities and ensure equitable distribution to all basic schools and organized regular in-service training for Basic school teachers towards the use of ICTs for teaching at the basic level.

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DEDICATION

To my late father and mother

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LIST OF ACRONYMS

BECTA	British Educational Communications and Technology Agency
CAI	Computer- Assisted Instruction
CBI	Computer Based Instructions
CRDD	Curriculum Research Development Division
DES	Integrated Learning System
ICT	Information and Communication Technology
ILS	Integrated Learning Instruction
OECD	Organization for Economic Cooperation and Development
TPB	Theory of Planned Behaviour
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization

CHAPTER ONE

INTRODUCTION

Background to the Study

All over the world, Information and Communication Technologies (ICTs) have become an integral part of education and driven power of every organization, institution and other business entities. Computer technology has become a useful tool of the modern civilisation and the driving force of the information age (Ituen, 2009). Within a short time Information and communication technology (ICT) has become one of the basic structures of modern society. The incorporation of ICT in education has the potential to enhance the quality of teaching and learning, research productivity of teachers and learners and the management for effectiveness of the institution (Kashorda, Waema, Omosa & Kyalo, 2007). Again, Hakkarainen, Ilomaki, Lipponen, Muukkonen and Rahikainen (2000) also pointed out that ICT as transformative tool, its full integration into the school system is essential to prepare learners for the information society they will inherit in the near future.

Many nations now regard the importance of ICT integration and mastering the basic skills and concepts of ICT as part of the core of education alongside the normal traditional education trend. In addition, ICT is seen as handling and processing of information (text, images, graphs, instruction, etc) for use by means of electronic and communication devices such as computers, cameras and telephone (Jimoh, 2007) as cited in Apagu and Wakik (2015). In the same way, Ofodu (2007) also see ICT as electronic or computerized devices, assisted by

human and interactive materials that can be used for a wide range of teaching and learning as well as for personal use

As education forms the fundamental for the development of every nation, integration of ICTs into education therefore becomes one of the basic ingredient on which nations or countries are trying to build upon. At the basic level, young people's minds are equipped to accept new ideas, show creativity and develop critical thinking and also enable them to absorb sound information to informed decision-making at early stage in life. In this regard, availability and utilization of Information and Communication Technology (ICT) at basic schools setup becomes extremely important. Again, the new educational reform in 2007 introduced ICT into teaching and learning in Ghanaian schools starting from the basic schools. The reform brought about supplying of ICT facilities to some basic schools. However, opportunities for utilising ICT facilities in basic schools face numerous challenges in developing countries, consequently, the education reform 2007 which emphasis on graduate from Ghanaian educational institutions should be equipped with requisite skills and knowledge needed to take part in global knowledge economy at all times(Ministry of Education, 2015, p. 17)

However, 10 years after the introduction of ICT into the Ghanaian school curriculum, there seems to be no remarkable progress in terms of availabilities and utilisation of ICT facilities. Furthermore, research conducted by the Ministry of Education reveals that out of17, 953 second cycle teachers interviewed on basic ICT skills shows that only 7,920 which represent 44.1% were abreast with skills that could promote teaching and learning in schools.

Meanwhile, one of the paramount aims of UNESCO is ensuring that all countries, both developed and developing countries have access to the best educational facilities necessary to prepare young people to play full roles in modern society and to contribute to the development of the nation. Again, Ajayi (2008) maintains that ICT can also help in good course organisation, effective classroom management, self-study, collaboration learning, task oriented activities and effective communication between actors of teaching-learning process and research activities.

More so learners therefore learn as they practice using the appropriate tools, work on real life problems in–depth, making learning less abstract and more relevant to the learner's life situation (Wastson, 2002). But a close look at the ICT in the teaching and learning in Ghana schools appear to achieve little of the numerous benefits identified, consequently, integration of ICT into teaching and learning in schools in Ghana stands at 9.4% and out of 17,953 teachers interviewed on networking only, 531 representing 3.0% of them were found to be using the technology in the teaching and learning (Ministry of Education, 2009b). Even though the focus of learning has changed from teacher-centered approach to learner-centered, and government and agencies of education in various nations are doing their best by investing heavily to procure more computers in schools so as to ensure increase access and use as needed (Papanastasiou & Angeli, 2008). It is rather unfortunate that in Ghana, computers are still under-utilised in most schools. In this background, the study seeks to determine the availability and utilisation of computer facilities in Basic schools in Ghana.

Statement of the Problem

Education remains the fundamental tool for the rapid development of societies. Nations, therefore, try to improve upon their educational systems to ensure they meet societal needs, and to achieve the best for their citizens in terms of social and economic development. An effective use of Information Communication Technology (ICT) in schools can have an immediate positive impact on the schools' learning environment such as by creating more vibrant interaction between pupils and teachers, increasing collaboration and team work in problem-solving activities, stimulating creativity in both students and teachers, and helping students to control and monitor their own learning (OECD, 2005).

Again, refurbishing the education system, there is the need to produce technologically literate workforce with positive disposition to technology use and reasonable competency of performing in a borderless knowledge based economy by Organisation for Economic Cooperation and Development (OECD, 2005). More so, the general aims of the 2007 ICT syllabus as stated by Curriculum Research Development Division(CRDD) of Ghana Education Service outlining effective usage of ICT facilities include: Acquiring basic ICT Literacy by developing basic interest and acquiring skills in the use of the internet. Pupils should be able to communicate effectively by the use of ICT facilities and equipped teachers with at least basic skills in ICT (Acquah,2012). This can be possible when computers are available and basic school teachers are ready to utilise such facilities. However, it is unfortunate that in Ghana, average computer to pupil ratio is 1: 42 (Ministry of Education, 2009b) which seems quite

disappointing with regard to achieving the vision and mission of the Ministry of Education. In addition, report by the Ministry of Education showed that out 17,953 second cycle teachers interviewed on basic ICT skills, only 7,920 representing 44.1% teachers showed evidence of possessing basic ICT skills, while only 531 representing (3.0%) showed internet skills and 1,161 teachers representing (6.5%) demonstrated trouble shooting skills, (Ministry of Education, 2009) utilization of ICT in secondary schools in Ghana.

From these statistics it is obvious that the ICT facilities are woefully inadequate in basic schools in Ghana and hampering the utilisation of ICT resources leading to low level computer literacy of teachers. Studies have been conducted on availability and utilization in universities, college of education and secondary schools. Little or no studies have been conducted at the basic schools in Ghana on the availability and utilization of ICT facilities in the basic schools in Ghana. In the view of that this study seeks to find out the availability and utilization of ICT facilities in basic Schools in the Cape Coast North constituency in the Central region of Ghana.

Purpose of the Study

The purpose of this study is to find out the availability Information Communication Technology facilities and utilization of such facilities by teachers in basic schools in Cape Coast North constituency.

Research Questions

The research questions for the study were:

1. What ICT facilities are available in the basic schools within Cape Coast North constituency?
2. What is the teachers' level of knowledge regarding the utilization of ICT facilities in Cape Coast north constituency?
3. What is the perception teachers in basic schools within Cape Coast North Constituency have about ICTs utilisation in content delivery?
4. What challenges do teachers in basic schools within Cape Coast North Constituency face in utilizing ICT facilities?

Significance of the Study

This study provides insight into the state of integrating ICT in basic schools. It will guide policy-makers in making decisions as to the improvement of ICT facilities in basic schools in Cape Coast North constituency for the enhancement of quality education. It will call the attention of Ghana Education Service, P.T.A, NGOs and Chiefs on the need to integrate ICT facilities to all basic schools in Ghana. It will also help teachers, students, and entire community to call for an equal opportunity when it comes to the sharing of national asset or distribution of computers and its accessories. Finally, it will encourage the head teachers in rural and urban schools to see the need to conduct in-service training for teachers to be competent in using ICT facilities.

Delimitation of the Study

The aim of the study was to collect data from public school teachers in the Cape Coast North Constituency in the Central Region of Ghana. However, the study focused on JHS teachers from public schools within the constituency. Because the JHS teachers are those who handle final year students and they need more facilities to improve their teaching methods. Again, the teachers were chosen because they must be equipped with skills and techniques in the usage of ICT facilities. More so, to know from teachers their views on ICT usage in content delivery. Finally, to gather information from teachers if there were some challenges hindering integration of ICT for teaching and learning,

Limitations

Four schools in the Cape Coast North Constituency were chosen because of limited time and financial constraint. Teachers were not readily available to conduct random sampling as a result convenient sampling was employed in collecting data. Therefore, conclusion and recommendation made out of this study will not be applicable to all public basic schools and JHS teachers in Ghana. Therefore, any attempt to generalise should be done with care.

Organisation of the Study

This study was organised into five chapters. The first chapter deals with the background of the study, statement of the problem, purpose of the study, research objectives, research questions, significant of the study, delimitation and limitation of the study. The second chapter deals with the review of related. It will include a review of relevant theories and concept in ICT, availabilities and

utilization of ICT facilities in basic schools. The third chapter focuses on the methodology which is made up of research design, study area, target population, sampling techniques and sample size and data collection procedure. The fourth chapter examines and discusses the results and key findings from the collected data with reference to the literature. The fifth chapter presents the summary, conclusion and recommendation of the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

This chapter reviews available literature related to the study. It provides the understanding and insight to develop a conceptual framework on Information and Communication Technologies (ICTs) availability and utilization in education, Education policy in Ghana and the use of ICTs, the Role of ICT in Education and its impact on teaching and learning. It also examines the factor hindering the ICT utilization in basic schools as well as empirical studies on teacher's perception about ICT facilities in content delivery. This chapter identifies, criticizes, compares and contrasts existing studies in terms of theories models and empirical data

Definition of Information and Communication Technology

All over the world, Information Communication Technologies (ICTs) have become an integral part of education and driven force of every organization, institution and other business entities. The term ICT stands for information and communication technology. Information and Communication Technology elaborates the importance of communication in data handling. Thus, it deals with how technology is engaged to access and circulate information. ICT integrates information technology (IT) to provide easy access to information through several communication technologies such as computers, television, radio, cell phones, internet, satellites, video conferencing and e-learning (Rouse , 2015).

Information Technology may also be looked at in a wider dimension to embrace all aspects of computing technology. Several scholars and institutions have defined ICT from different perspectives. However, all the definitions have some common basis which has to do with employing technologies in accessing, manipulating and communicating of data. For example, Information and Communication Technologies (ICTs) are defined as "an umbrella term that includes the full range of electronic tools by means of which we gather, record and store information, and by means of which we exchange and distribute information to others"(Anderson, 2010, p. 4).

These tools are now able to work together, and merge to form our 'network world' a massive infrastructure of interconnected telephone service, standardized computing hardware, the internet, radio and television which reaches into every angle of the globe". According to Mondal and Mete (2012), Information and Communication Technologies is an umbrella term that covers communication devices or application such as computers, television, radio, networks, satellites, video conferencing and e-learning. In addition, Imhonopi and Urim (2012) stated that the existence of ICT has provided quick and better ways to communicate and use information.

A more recent definition of ICT is the use and application of computers, telecommunications, and microelectronics in the attainment, storage, retrieval, transfer and dissemination of information to a wider and dispersed audience (Aina, Okunnu & Dapo-Asaju, 2014). In the same way Ofodu (2007) define ICT

as electronic or computerized devices, assisted by human and interactive material that can be used for a wide range of teaching and learning and personal use.

Again, information and communication technologies (ICTs) are information handling tools that are used to produce, store, process, distribute and exchange information. These ICT tools are now able to work together and combine to form network world which reaches into every corner of the globe by United Nation Development Programme Evaluation Office (2001). ICT again is an increasingly powerful tool for participating in global markets, promoting political accountability, improving the delivery of basic services and enhancing local development opportunities (Mutula and Vanbr Brakel, 2006). According to Ogunsola (2005), information and communication technology is an electronic based system of information transmission, response, processing and retrieval, which has significantly changed the way we live and the environment in which we live. Dutton & Loader (2005) stated that learners who normally use ICT facilities gain deeper understanding of complex topics and concepts, and are more likely to recall information and use it to solve problems outside the classroom.

Information and Communication Technology Facilities: This refers to as computer hardware and software such as video/audio, projector, projector screen, television, digital cameras, internet, scanner and many more.

Availability of ICT: refers to the situation where ICT facilities are present and are functioning.

Access refers to the availability of ICT facilities to teachers and learners for teaching and learning purposes. In this study, access is measured by the existence of a computer laboratory, adequate computers, and other facilities like projectors and maker board, internet and electricity

Utilisation of ICT: refers to a situation where teachers and pupils have knowledge and skills to manipulate computer system, access information and learn with or from the computer. Looking at the availability and utilisation of ICT facilities by basic schools in the Cape Coast North Constituency, it is important to review past studies which are related to this study.

Availability and Utilisation of ICT in Education

In the world, the utilisation of information technology in education has been regarded as an essential factor for economic growth, although the educational practices and structure and the economic growth have been a complex and common relationship (Kozma, 2005). President Clinton of USA also laid out four similar goals: computers accessible to every student, classrooms wired to one another for computers connectivity, and to the outside world, educational software to be integrated with the curriculum, and teachers to be ready to use and teach with technology (Cuban, 2001).

In addition, the role of information technologies in education development is established even to the extent that it is believed there would be no educational development without ICT usage (Nivala, 2009; Selwyn, 2002; & Waters, 1998). Furthermore, through the use of ICT, pupils can deepen their knowledge, investigation, and inquire according to their needs and interest when access to

information is available on multiple levels (CEO Forum on Education Technology, 2001).

Proper utilisation of ICTs has great influence on teaching, learning research and school administration in many ways. Again, in ICT usage, the network technologies have been found to encourage active learning, support innovative teaching, reduce the isolation of teachers and encourage teachers and learners to become active researchers and learners. The use of ICTs can be strengthening, teaching through the provision of powerful tools for teachers (Craddler & Bridgforth, 2002).

The use of ICTs can help reduce the teacher's workloads in lesson preparation and worksheet, writing of students' cumulative report and analysing students' attainment information for target settings, recording and analysing attendance and disciplinary information, and maintaining link between the school and parent to ensure parental involvement in school activities (British Educational Communications and Technology Agency, (BECTA, 2004). The utilisation of ICTs can help to get necessary instructional content of subjects, and collaboration with teachers globally. Teachers can update their knowledge of a subject area and help learners' development through the use of internet. Kashorda et al (2007) emphasis that, the use of ICT in education has the potential to enhance the quality of teaching and learning, the research productivity of teachers and students, the school management and effectiveness of institutions.

Furthermore, ICTs as information tools are used to produce, process, store, distribute and exchange information and has lots of benefits for both teachers and the pupils when it is available, accessible and properly utilized. Effective used of ICTs would help in some many areas in teaching and learning such as to:

1. Facilitate and improved teaching and learning processes.
2. Provide for flexibility of lesson delivery.
3. Foster collaboration, creativity, higher order of thinking ability.
4. Improve consistency and quality of instruction both for formal and informal education.
5. Increase opportunities for more student centre pedagogical approaches.
6. Improve teacher knowledge, skills and attitude and inquiry.
7. Improve educational management processes.
8. Provide multiple avenues for professional development of both pre-service and in- service teachers, especially through distance education.

Information and Communication Technology has also been considered as a strategy to improve teaching and learning to implement and facilitate the new pedagogy of the information society (Cuban, Kirkpatrick & Peck, 2001; Voogt & Pelgrum, 2005).

Teaching and Learning Process

Teaching and learning is the process of transferring knowledge in the classroom from the teacher to students. In recent times, some researchers have criticized the approach to teaching and learning where the teacher supplies knowledge to students. They advocate for an approach in which the teachers

facilitate the teaching and learning process and helps students construct their own knowledge to solve problem. In this study, both approaches are seen as most important role in facilitating teaching and learning through the use of ICT.

Education Polices in Ghana and Use of ICTs

The Government of Ghana is devoted to the transformation of the agro-based economy of Ghana into an information rich knowledge-based economy and society using the tools of Information and Communication Technology (ICT). The government has acknowledged the need for ICT training and education in the schools, colleges and universities and the improvement of the education system as a whole (Ministry of Education, 2008).

The exploitation of ICT into education will result in the creation of new possibilities for teachers and learners to engage in new ways of information acquisition and analysis. ICT will enhance access to education and improve the quality of education delivery on equitable basis. The government is therefore committed to a comprehensive programme of speedy deployment and utilisation of ICT within the education sector to transform the education system and thereby improve the lives of people (Ministry of Education, 2008). It is the government's desire that through the deployment of ICT in education, the culture and practice of traditional memory-based learning will be transformed to education that stimulates thinking and creativity necessary to meet the challenge of the 21st century.

Massive expansion of primary and Junior High Schools did not match with infrastructure provisions (ICTs). Consequently, many basic schools in rural and urban areas lacked good infrastructure in terms of ICTs Little (2010). The 2002 education policy review system seeks to assess the education structure, delivery, challenges and the application of Information Communication Technologies (Kwapong, 2010).

Apart from the 2007 education reforms, none of the policies gave serious attention to the integration of Information and Communication Technologies (ICT) in teaching and learning at the basic level. The ICT introduction in education as a key priority area of the 2007 reforms was based on the belief that ICTs play a major role in enhancing access to education to a wider section of the population as well as in facilitating educational delivery and training at all levels of education (Ministry of Education, 2008). From 2008, the Information and Communication Technology was introduced into the curricula of Primary and Junior High Schools and teachers were encouraged to use it for teaching. The success of this initiative largely depends on the availability and accessibility to ICT infrastructure (Sey, 2013).The general vision of the ICT in Education policy is to use Information Communication Technologies to uphold the Ministry of Education's policies, objectives and strategies to facilitate reasonable access to education, quality of teaching, educational administration, science and technology and labour market demands (Ministry of Education, 2008).

Some of the specific objectives of the ICT in Education policy are:

1. To facilitate the utilisation and development of ICT within the educational system to improve educational access and delivery to support teaching and learning from the primary level upwards.
2. To change the education system in order to improve the quality of teaching and training at all level of the educational system and expanding access to education, training and research resources.
3. To achieve extensive basic education and to improve the quality of basic education and computer literacy in the nation.
4. To adjust all levels of the country's educational system to the teaching and learning of science and technology in order to accelerate the assimilation of science and technology in society and many others.(Ministry of Education, 2008).

Furthermore, the policies consist of four key factors that inspire the strategies for achieving the specific objective outlined in the policy. They are equity in the allocation of resources, affordable and continuous access to Information Communication Technology infrastructure, capacity building of users and the development of norms and standards with regard to ICT use. The policy further stated seven thematic areas, which outline the guiding principle and strategies to be in place to accomplish the goal of integrating ICT in education. Some of the thematic include: areas that seeks to enhance education management by the building of the capacity of Ministry of Education and all its agencies. By doing so, ICT can be effectively used to generate data for decision making.

Another area of concern is building the ICT capacity of all persons involved in education delivery, especially teachers to facilitate the incorporation of ICT into teaching and learning at all levels of education in Ghana. The third thematic area is concerned with infrastructure provision, e-readiness and equitable access to ICT in all schools. Other areas of concern are content development, ICT integration into the curriculum, technical support, maintenance and sustainability of ICT infrastructure Ministry of Education (as cited in Sey, 2013). The belief in the transformational capabilities of ICT in education has been the major reason behind investment in ICT infrastructure in schools by most countries.

Ghana's commitment of introducing ICT in education manifests in the formulation of the Ghana ICTs for Accelerated Development and the ICT in Education policy of 2003 and 2008 respectively. Essential to the success of these policy initiatives towards integrating ICT into education is availability of ICT facilities and utilisation by teachers and learners to enhance quality of teaching and learning. All these policies were implemented to support integrating of ICT into all levels of education, but most of basic schools are not having the ICT facilities and those who are having it, are not utilizing the ICT facilities.

The Role of ICTs in Education

Information and Communication Technologies are transforming the world into an information society rapidly. This transformation requires that the education sector is able to connect the full prospective of ICTs to improve the quality of teaching and learning. Therefore, ICTs are being used in many educational institutions because it serves numerous purposes in teaching and

learning. ICTs can be utilized for three main purposes in education system: The first role of ICT is to improve teaching and learning using application software. The second purpose is to facilitate administrative roles such as grading and keeping records in schools for tracking students' learning history and performance. The third purpose of ICT in education is to build information literacy of teacher and learners Fan and Ho (2012). The motive behind ICT investment in education is based on the affirmation that traditional teaching and learning methods in which knowledge is forced on learners and not providing enough opportunities for learners to create their own knowledge and develop critical minds need to be changed. According to Osin (1998), the use of computers in classrooms offer key ingredients in teaching and learning that were lacking in all previous tools that raised high prospect when introduce in the educational system. The blackboard which was used previous is a tool that presents only information to learners.

The use of computers have resulted in what is call "individualised interactivity", granting the opportunity for information to be given to pupils as well as presenting to pupils' needs and preferences. Jonassen (1995) have the view that ICTs could be used to provide visualization and variation in many disciplines. He further notices that some students have prior knowledge of ICT skills from home and that the education sector has a role to play in furthering those skills. When ICTs are treated as integral part of teaching and learning, learner from low Socio-economic backgrounds could be equipped with skills for work and life.

Impact of ICT on Education

The literature on the role of ICT in education reveals that ICT have the potential of enhancing teaching and learning if appropriately used. This revelation is a major driver of national policies, strategies and investments in ICT in the education sector in many countries. In the past few years, researchers in the field of education technology have spent time assessing the impact of ICT in education. Some researchers focused on cognitive measurements while others resorted to motivation as a way of measuring ICT impact on education.

Some case studies have examined the impact of using ICT on the changes in pedagogical practices. ICT skills were taught in a context integrated into the curriculum and as part of complex skills such as information handling, collaboration and communication, and were embedded in an authentic context (Voogt and Pelgrum, 2005). Learning projects became student-centered, they were longer, more time-consuming processes, and many of the ICT-based innovation involved multidisciplinary and collaboration projects, such as project based learning and independent inquiry (Kozma, 2003; Ruthven et al, 2005).

ICTs in Teacher Education

Information and Communication Technology is capable to transform the way education is delivered and promotes opportunities thus, enhancing quality education. This can be done when teachers who are still the key to learning, have developed and utilized the necessary pedagogical competencies for instructional delivery through ICT utilization. According to Jones (2003), the effective learning is dependent on the will and competencies of the teacher in the instructional

delivery of lessons. This means that teacher must undergo ICT facilities training to enable them utilize the facilities effectively. In addition, information and communication technology facilities are instructional delivery tools used to investigate, explore, solve problem, interact and learn concepts in the classroom.

This innovation allows alternative types of education patterns for facilitating the teaching and learning process (Umoren, 2006). Olaofe (2005) observed that the need for the integration of ICT has become a global decision and has been a subject to a great significance to all mankind. Information and communication technologies includes: computers, software, networks, satellite and many more are links and related systems that allow people the right to use, analyze, create, exchange and manipulate data, information and knowledge in the ways that were almost imaginable (Association of African Universities, 2000).These technologies have become central to modern societies. The prevalence and rate of the development of ICTs has transformed human society from the information technology age to the knowledge age (Galbreath, 2000).

Teachers and Utilisation of ICT Facilities in Content Delivery

The use of Information and Communication Technology facilities such as video and digital movies in the lesson delivery in classrooms enhances learning. According to Marshall (2002), new uses of technology such as podcasting are constantly up-and-coming. Marshall, further explain that various technologies delivers different kinds of content and serves different purpose in the classroom. Becker (1994) explain further that word processing and e-mail promote communication skills, database and spreadsheet programmes promote

organisational skills and modeling software promotes the understanding of mathematics, science and subject concepts.

Moreover, the availability of ICT in classroom today start from simple tool base application such as word processing to online repositories of scientific data. Others are the primary historical documents, handheld computers, closed circuit television channels and two way distance learning classrooms (Prensky, 2005). According to Zhao, Lei and Frank (2006) each technology is likely to play a different role in student learning, rather than trying to describe the impact of all technologies as if they are the same, researchers have to think about what kind of technologies are being used in the classroom and for what purposes.

Two distinctions could be drawn from the literature, thus, learners acquire knowledge from computer where technology is used essential when it is well demonstrated by the teachers and learners can also learn with computers where technology is used as a tool that can be applied to a variety of goal in the learning process and can serve as a resources to help develop higher order of thinking, creativity and research skills (Reeves, 1998; Staff &Kelley, 2002).

Murphy (2014), noticed that the primary form of student learning from computer is described as Discrete Educational Software (DES), Integrated Learning System (ILS), Computer-Assisted Instruction (CAI) and Computer – Based Instruction (CBI). These software applications are commonly available applications of educational technology in schools today, along with word-processing software, and have assisted in the classroom for more than twenty years Becker, Ravity and Wong (1999). Murphy (2014) further explained that

teachers use DES not only to supplement instruction, as in the past, but to introduce topics, provide the means for self-study, and offer other opportunities to learn concepts which are not accessible to learners.

The software is categorised into two main assumptions about how computers can assist learning. The first one deals with the ability to interact with information and communications technology specifically for teaching and learning purposes and the other one talk about how ICT in education involves the embracing of the general component of information and communication technologies in the teaching and learning processes (Olakulehin, 2007). Teachers who use this system of instructional strategy would be to stir up the hearts of the learner's a desirable attitude towards information technology in their entire life (Haddad and Draxler,2002), further explained that the pedagogic application of information and communication technologies involves effective learning with the resource of computers and other information technologies serving the purpose of learning aids, which plays different roles in the teaching, and learning situation, rather than adding to the teacher.

The computer is regarded as add-on rather than a replacing device. The pedagogical uses of the computer require the development among teachers as well as learners, of skill and attitude related to effective use of information and communication technologies. Apart from the literacy, information and communication technologies also facilitate learning to programme, learning in subject areas and after school activities, these require the use of new methods

such as modeling, simulation, use of data base, word processing, guided discovery, courseware, games and drills etc.

The implications in terms of changes in the teaching strategy, instructional content, role of the teachers and context of the curricula are obvious and cannot be prevented. The methods of application of ICTs has the advantage of increasing the degree of motivation of learners by helping them to recall previous learning, providing new instructional stimuli; thus activating the learner's response by providing systematic and steady feedback (Olakulehin, 2007). Teachers who use this system of instructional strategy would be to stir up the hearts of the learners a desirable attitude towards information technology in their entire life. Haddad and Dexter, Seashore and Anderson (2002) further explained that an effective teaching and learning process must stimulate intellectual curiosity and offer a sense of enjoyment that will move the learners from passive role of recipient of information to the active role of builders of knowledge.

However, teachers engaging the learners in this can be the most challenging task for teachers. Information and communication technologies are effective instructional aides to engage learners in the learning process. The teacher primary task is to teach the learners how to ask questions and pose problems, formulate hypotheses, locate information and then critically assess the information found in relation to the problem posed. Learners also learn more quickly, demonstrate greater retention, and are better motivated to learn when they work with computers with the help of teachers (Amenyedzi, Lartey & Dzomeku, 2011).

Teachers with pedagogical proficiency who are ready and willing to convey knowledge and support learners to construct knowledge will normally make a difference in any learning process. In this age of information and communication technology and its integration in the educational system, the role of the teacher, just like in the traditional classroom, should not be ignored or underestimated. If teachers possess little knowledge of ICT, it will then boost the integration of ICT into pedagogical practices (Boakye & Banini, 2008). Again, it is not the acquisition of ICT knowledge that is important, but teachers need to understand how to use ICT facilities effectively and be ready for it. Proper utilisation of ICTs can stimulate the development of higher cognitive skills, deepen learning and contribute to the acquisition of skills needed for working in today's job market (Tchombe, Maiga, Mbangwana, Diarra and Karsenti 2008).

Teacher's on ICT Utilisation

Studies have proved that most teachers have low knowledge and proficiency in the usage of ICT facilities. Studies conducted on the teachers instructional materials utilization competencies in secondary schools in sub-Sahara Africa found out that teachers are not well trained in using ICTs for teaching as a means for educational sustainability in-terms of technology and that the level of the teachers' exposure to the tools handling on ICT has been minimal (Ololube, 2006). Also, Olufunde, Kehinde and Pius (2010) in their studies on the access and utilisation of ICT among lecturers and students in South West-Nigerian public universities indicate that 89% of the respondents (tutors) claimed to have never had access to ICT facilities.

Hindrance of ICT utilisation in Basic Schools

Integrating information technology and its utilisation in Ghanaian schools of modifying traditional teaching come with benefits as well as hindrances. With regard to hindrance to ICTs integration, into Ghanaian schools, there have been lot of studies done in this area hence; the researcher will outline some of these hindrances identified by several scholars and researchers. The most challenging factors were: Lack of qualified teachers, electricity supply and inadequate number of computers. The rest are frequent breakdown of computers, high prices of ICT resources, burglary, computer phobia by both administrators and teachers and the abuse of internet by people in watching inappropriate materials (Haneefa, 2007).

Furthermore, Langat (2015) and Saxena and Dubey (2014) identified some barriers affecting the implementation of ICT in schools as shortage of teachers, lack of clear digital curriculum, political factors, poor timing and poor planning, high cost of implementation, communication barriers, corruption, moral issues and high crime rates. Among the way forward suggested by Langat (2015) includes assessment analysis by all stakeholders, establishment of proper communication channels, professional development of teachers and technicians, establishment of digital curricula and creation of partnerships in education.

The hindrances to utilisation of ICT have two broad ways and they are: manipulative and non-manipulative. Manipulative factors are those the school can influence like, teacher's attitudes towards ICTs, teachers ICT skills and knowledge, school commitment towards implementation of ICT and availability of ICT support. While non-manipulate factors are those factors which the school

cannot influence such as age, teacher experience and computer experience of teacher, government policy and availability of support for the school Afshari, Bakar, Luan, Samah and Fooi (2009). Mahmood, Halim and Ghani (2014) also asserted that lack of ICT utilization in schools are firstly due to lack of exposure and expertise on the part of teachers who are computer illiterate as against modern student who are quick to self- educate and highly computer literate. Secondary, the forcing of teachers to use technology in the classroom without giving them enough training, lastly, lack of confidence amongst teachers in the use ICTs facilities.

Theoretical Framework

Many scholars have conducted studies using various educational theories. These theories include: Behaviorism, Cognitivism and Constructivism.

Behaviourism

This theory was developed by some psychologist researchers such as Ivan Pavlov, Edward Thorndike and B F Skinner and many others. These researchers used animals to explain and experiment that it is parallel to human being learning. Behaviorists believe that new knowledge can be acquired by operant conditioning where response were learned from repeated stimuli and reinforced by rewards (Skinner,1953).This learning process could be conceptualised as a series of small progressive steps leading up to a defined final performance. Regardless of the criticism leveled against this behaviorist's theory, teachers will gain confidence as they use ICTs in their lesson delivery and pupils will look forward to the next lesson with expectation of learning a new concept.

Cognitivism

This theory was developed by Piaget in 1971, and he describes cognitive development as a symbiosis between child's physical and mental interaction with the world and biological maturation of his or her nervous system. Cognitive science has changed the way educators view learning. Since the very beginning of the cognitive revolution of the 1960 and 1970s, learning theory has undergone a great deal of change which much of its empirical framework of behaviourism was retained, even though a new paradigm had begun. Cognitive as theories look beyond behavior to explain brain based learning rather cognitive considers how human being memory works to promote learning. It then important to note that computer science and information technology has had a major influence on cognitive science theory. Since teachers serve as a guide to pupils to memorise information on diary basis in teaching and learning environment, teacher's active utilisation of ICT facilities in content delivery will be of important as cognitive is concerned.

Constructivism

Constructivism as a learning theory holds that a person actively construct his/her own ways of thinking a as result of innate capacities of interacting with his/her experiences to gain understanding. Recently, efforts to integrate technology in the classroom have been within the context of a constructivism framework. Borich and Tombari (1997, p.144) defined constructivism as "an approach to learning in which learners are provided the opportunity to construct their own sense of what is being learned by building internal connection or

relationship among the ideas and facts being taught." So, the constructivist perspective emphasizes the learning procedure where learners actively engage their cognitive structures in schema building experiences (Fosnot, 1996).

Regardless of philosophical differences, however, all views of constructivism imply that all teachers need to go beyond lecturing and telling as teaching method. The basic idea of constructivism is that knowledge must be formulated by the learner and not to be spoon-fed by the teacher (Holzer, 1994). He added that, learning can be nurtured provided by Piaget's definitions of knowledge, which is an interaction between subject object and it is a perpetual construction made by exchanges between thought and its object. It is not copy of reality by the subject that approaches object without ever attaining it in itself.

Therefore, the construction of knowledge is a dynamic process that requires the active engagement of the learners who will be responsible for one's learning while the teacher only creates an effective learning environment like the use of ICT facilities. One example of constructivism theory is discovering learning which includes inquiry based integration strategies. Constructivists believe that all knowledge is constructed in an individual's mind by participating in certain experiences (Roblyer, 2006).

This study is based on the constructivism theory which emphasizes on cooperative and collaborative learning. In cooperative learning, is when pupils work together to accomplish a learning task given to them by the teacher. This can be accomplished through a division of labour between teachers and pupils

whereby a teacher giving a general guidance to pupils through the medium of ICT utilization Dillenbourg, Baker, Blaye & Malley, 1996).

With the collaborative learning, is a coordinated, synchronous activity that is the result of continued attempt to construct and maintain a share conception of a problem (Roschelle & Teasley, 1995). The integration of ICTs in the teaching and learning process makes it possible for pupils to learn on their own as the teacher gives the guidance on a concept and supervisees the work of the pupils. Once the pupils learn how to manipulate computer with the help from teachers, teaching and learning becomes more practical and enjoyable. This motivates teachers to employ the use of modern technology in teaching and learning environment.

Theory of Planned Behaviour (TPB) Model

The Theory of Planned Behaviour (TPB) Model deals with the intention for use of a new technology. It assumes that for someone to adopt an innovation, he or she must be willing to use modern information technology as innovation. This theory identifies three independent variables that will affect the adoption of the innovation. The first variable is an attitude towards the behavior which refers to the extent to which an individual is able to opt for or against the innovation (Ajzen & Fishbein, 1977). Second variable is subjective norm which also refers to the perceived social pressure on how to perform or not perform behavior. This suggests the influence the environment has on the individuals to acting or response in a certain manner. The third variable considers perceived behavior control which refers to the perceive ease or difficulty of performing behaviour.

The perceived behaviour control is hoped to reflect on past experiences as well as predictable hindrance and obstacles (Ajzen & Fishbein,1977).This model's identifies three independent variables namely; teacher competency, the availability of ICTs facilities and technical support which is similar to the independent variables of this study. The teacher competency determines whether a teacher is willing to use Information and Communication Technologies facilities in teaching and learning or not. The availability of ICTs is whereby the school authorities or stakeholder provides the necessary ICTs facilities in support of teaching and learning and they expect the teachers to use such facilities, when it happens like that it put demands or pressure on the teacher to perform the said behaviour.

The technical support is a special service or training given to teachers on how to use ICTs facilities in order to gain confidence in the use of ICTs, this then map to the third independence variable of perceived behaviour control. Some teachers in Ghana education service passed through Teacher training without using ICTs facilities which then put some fears into some of the basic school teachers, because during their time of their training, some of them were not introduce to ICTs in their syllabus which makes some of them unwilling and unable to use ICT facilities with ease.

However, once they discover the usefulness of ICTs in the teaching and learning activities such as lesson note preparation and delivery, as well as keeping lesson note on computer with little update, adoption becomes the norm rather than the exception. It will also increase teacher's competency and change lesson

delivery method and cause teachers to adopt technology and make it part of teaching and learning activities. This model could be adopted by teachers who have embraced use of technology in their everyday activities. The willingness to use technology together with modern trend of using ICTs among colleagues for teaching and learning activities could help teachers to admit the use of new technology. The complexity in using ICT facilities has now reduced thereby giving opportunity to more users such as teachers. As a result of that, the theory of planned behaviour introduces the use of ICTs in teaching and learning among teachers.

Conceptual Framework

The conceptual framework of this study was developed from the review of concept/theories such as the Theory of Planned Behaviour (TPB) as well as Constructivism learning theory and other related literature of scholars in relation to the topic.

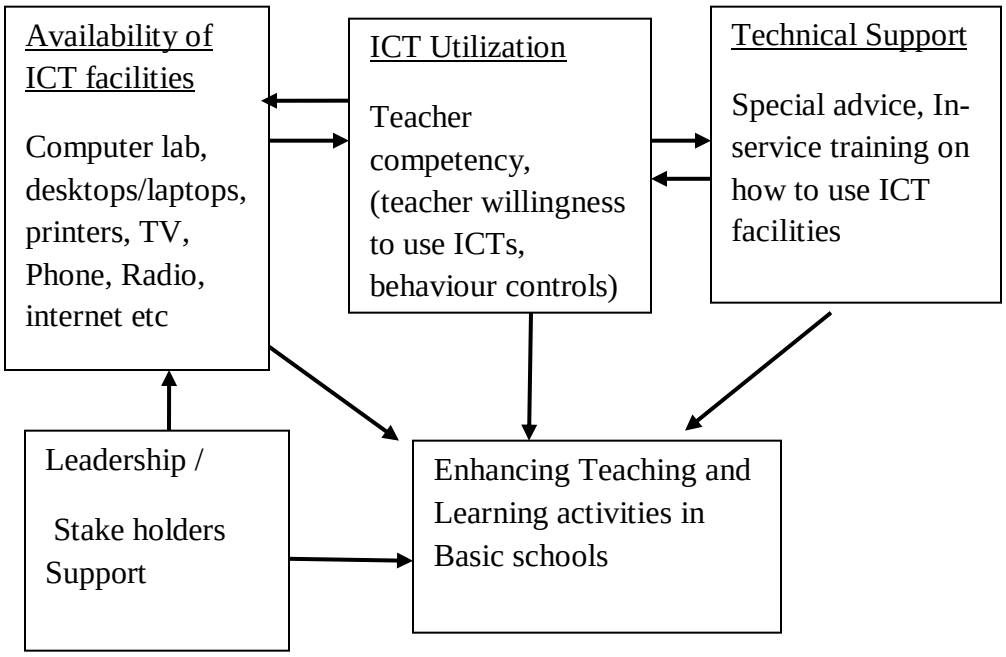

Figure 1 Conceptual Framework

Source: Broni (2017)

Research has proved that teachers' attitudes towards technology influence their acceptance of the usefulness of new technology and its integration into teaching, (Huang and Liaw2005). However, evidence suggests that small number of teachers believe that the benefits of ICT are not clearly seen. The Empirical survey revealed that a fifth of European teachers believed that the use of ICT in teaching did not benefit their students' learning, (Korte and Hüsing, 2007). But in this modern era, things have changed and it has become necessary to adopt and integrate ICTs into teaching and learning governed by education policy. It is therefore important for teachers to be equipped with knowledge of ICTs and these can be achieved if basic schools are supplied with ICT facilities

ICT Availability

Availability and accessibility to ICT infrastructure and resources in schools is an important factor to the integrate ICT in education (Plomp, Anderson, Law, & Quale, 2009). Effective use and integration of ICT into teaching in schools depends mainly on the availability and accessibility of ICT resources such as hardware, software such as computers and its accessories, printer and other electronic appliances and other educational software (games, drill, courseware etc.).

Obviously, if teachers cannot access ICT resources, then they will not be able to use them. In Yildrim (2007), research findings agreed that availability and accessibility to technological resources is one of the effective ways to teachers' pedagogical use of ICT in teaching and learning. Again, basic school teachers must have change of attitude to adopt innovation and willingness to utilize the ICT facilities in order to improve quality of teaching and learning, since teachers play vital role in education setup, teacher's readiness and competence in use of ICT is required to change traditional ways of teaching.

Leadership Support

Authorities and stakeholders support of ICT infrastructure is imperative, school technology leadership is a stronger predictor of teachers' use of computer technology in teaching (Anderson & Dexter, 2005). Yee (2000) also believed that a leader who implements technology plans and also shares a common vision with the teachers stimulate them to use technology in their lessons. Schiff and Solomon as cited were of the view that effective utilisation of ICT by teachers, there is the

need for a strong leadership to drive a well designed technology plans in schools in Lai & Pratt, 2004, p.462). Furthermore, it is important for the stakeholders should be in position to support ICT implementation and equip teachers in basic schools provide technical such as organising in-service training for the teachers to embrace contemporary method of teaching as well as empowering them to evaluate the effects of modern technology usage in their teaching.

Technical Support

In every ICT setup there must be a technical support unit. Jones (2004) reported that the breakdown of a computer causes interruptions and if there is no technical assistance in place, it will lead to irregular repairs of computers resulting in teachers not using computers in teaching. In Ireland, the National Council for Technology in Education, NCTE 2005 census on ICT infrastructure (as cited in ICT strategy group report, 2008-2013) found that about 85.3% of schools reported that technical support and maintenance is 'high' and claimed that it should be an important factor of the school ICT environment with proper technical support being made available to maintain hardware and infrastructure. (Tong & Trinidad, 2005), stated that if there is no technical support for teachers, they become frustrated resulting in their unwillingness to use ICT.

In the same vein, teachers' competence and willingness as well as professional development to adopt new technology is a key factor to successful integration of computers into classroom teaching. Several studies have revealed that whether beginner or experienced, ICT related training programs develop teachers' competences in computer use (Bauer & Kenton, 2005). Other research

studies again revealed that quality professional training program helps teachers implement technology and transform teaching practices (Brinkerhoff, 2006; Diehl, 2005).

Chapter Summary

The present information age calls for the integration of ICT in education. The arguments for integrating ICT into education prove to the fact that, ICTs have the power to improve teaching and learning if it is used appropriately. However, a review of empirical studies on ICT impact on education reveals that successful integration of ICT in education depends on the availability of ICT facilities and utilization by the teachers and learners for educational purposes. Many studies on ICT in education have been focused on universities, polytechnics, training collages and most of secondary schools in the urban areas. Debatably, very little has been done in basic schools of Ghana. Besides, most of the studies were carried out in contexts that are characteristically different from that of Ghana and in particularly Cape Coast North Constituency in the central region of Ghana. This study seeks to add to the body of existing knowledge on availability and utilisation of ICT facilities in enhancing teaching and learning environments at basic schools (JHS) in Cape Coast North constituency.

CHAPTER THREE

RESEARCH METHODS

Introduction

This research has been designed to access availability and utilisation of ICT facilities in teaching and learning at the four Basic schools in Cape Coast North constituency in the central region of Ghana. This chapter encompasses research design, description of the population, sampling technique, and data collection instrument and data procedure.

Research Design

Descriptive research design was employed for this study. Descriptive research requires questionnaire items that are set based on research questions and objectives. Research design is defined as "a blueprint for conducting a study with maximum control over factors that may interfere with validity of the finding"(Polit, Hungler & Beck, 2001, p. 195).Again, research design is defined as "researcher's overall plan for answering the research questions or testing the research hypothesis" (Burns & Grove, 2003,p.30).

Quantitative research approach was used to gather data. It is research approach that deals with numeric variable such as how many, how much and how often. It is more reliable and objective; it often reduces and restructures a complex problem to a limited number of variables. The quantitative research methods have some strength and weaknesses. Quantitative method of collecting data has a lot of benefits. It helps to gather lots of information from many people. It is less time consuming, as compared to experimental research which needs much time to

monitor the control group and experimental group until the final result is achieved. Surveys research also tends to be a reliable method of inquiry. This is because surveys are standardized such that, the same questions or phrases are posed exactly the same way to respondents and many researchers had adopted this type of research design. This is not to say that all surveys are always reliable, a poorly phrased question can cause respondents to interpret its meaning differently, which can reduce that question's reliability. As with all other methods of data collection, quantitative research design comes with few setbacks or drawbacks. One might argue that survey are flexible in the sense that we can ask any number of questions on any number of topics in them, the fact is that the survey research at times stuck with a single instrument for collecting data (questionnaire), which makes it inflexible. For example, you send questionnaire out for the respondents to answer and later researcher finds out that some phrase or particular question seems to be confusing to respondents, it would be difficult or too late to change the questions or correct them unless if it is face-to-face-form of interview

Study Area

Cape Coast North Constituency was selected for the case study. The constituency was formed in 2012 from Cape Coast South Constituency in the Central Region of Ghana. The constituency has 19 basic government schools. It is one of the urban cities in the central region; the researcher selected this area for the study because it is assumed that schools in urban areas are equipped with Information and Communication Technology (ICT) facilities and infrastructure.

Population

There are 19 basic government schools in Cape Coast North Constituency, but only four schools were selected for the study based on the following reasons: cost effective, time constrains and they are easy to reach them. Again, these four particular schools were considered because they are old schools within the constituency; they have larger teaching staff and students' enrollment. Teachers were targeted for the study because effective learning is largely depending on the will, readiness and competencies of the teacher in the instructional delivery of lessons (Jones, 2003).The four basic schools selected for this study are Kakumdo M/A Basic school, Esuekyir M/A basic school, St. Lawrence Cath. Basic School and Abura T I Ahmadiya basic school all within Cape Coast North constituency. The population size of teachers from the four selected schools for the study is 90.The breakdown of total population comprises Kakumdo basic A and B with the total teacher population of 25, Esuekyir basic 15 teachers, Abura T I Ahmadiya basic A and B 23 teachers and St. Lawrence A and B basic with 27 teachers.

Sampling Procedures

Sample is a representative subset of the population from which generalizations are made about the population. Probability sampling helps every member of a population to have an equal chance of being selected and ensures that the sample is representative of the population in general. Convenience sampling techniques was also considered for the study because it is a non-probability sampling that involves the sample being drawn from the part of a

population that is close at hand during the time of administering the questionnaire. It is also based on the availability and the willingness of respondent to participate in answering of questionnaire. Again, convenience sample was selected for this study because during the time of administering the questionnaires, the head teachers of selected schools requested for the questionnaire to be given to them and they would give it out to their teachers to answer at their convenient time, preventing the researcher to get the chance to apply either simple random sample or stratified sample techniques.

Furthermore, Krejcie and Morgan (1970) sample size techniques were also considered to select the sample size. According to Krejcie and Morgan sample size determination table, indicates that a population of 90 should have a sample size of 73. This 73 was the sum up of various sample from selected schools thus; Kakumdo M/A basic A&B with total number of 25 teachers, 20 teachers were sampled, total number of 15 teachers at Essuekyir M/A Basic 12 teachers were sampled. Again at Abura T I Ahmadiya 19 out of 23 teachers was sampled and 22 out 27 teachers at St. Lawrence A&B were sampled for the study. Out of 73 teachers sampled, 42 were females representing (56.0%) and 33 males representing (44.0%).

Data Collection Instruments

A questionnaire is a research instrument consisting of a series of question and other prompt for the purpose of gathering information from the respondents and it was invented by Statistical Society of London in 1838 (Gault, 1907).

Questionnaire comes with different modes administering which include: face-to-face questionnaire, where an interviewer presents the items orally. Computerized questionnaire is where the items are presented on the computer for the respondents to answer. Adaptive computerized questionnaire, is where a selection of items are presented on the computer and it is based on the answer on those items, the computer selects following items optimized for the respondent estimated ability or trait and finally paper and pencil questionnaire, is where the item are presented on paper (Mellenbergh, 2008). Pencil and paper questionnaire was considered for this research because it is inexpensive, quick and easy to analyze than the others. It has advantages over other types of research instrument and do not require much effort from the respondents as verbal or telephone surveys, and often have standardized answers that make it simple to compile data,

A questionnaire usually consists of two format and these are open-ended and close-ended questions. An open-ended question asks the respondent to formulate his or her own answer, whereas a closed-ended question gives the chance to a respondent to pick an answer from a given number of options. A close ended questionnaire was considered for this research because, it is easier to compile the result. Questionnaires are inexpensive, quick and easy to analyze, often the questionnaire can have more problems than the benefits. For example, unlike interview, the people conducting the research may never know if the respondent understood the question that was being asked (Kaplan & Saccuzzo, 2009).

Data Processing and Analysis

The data analysis for this study was done according to research questions. The Statistical Package Service Solution (SPSS 16.0) was used to processing data. All the data collected were entered into SPSS. The frequency distribution of each variable in the data files was processed. The outputs were reviewed for any missing data and unusual or unexpected entries. Frequency tables cross tabulation and descriptive statistics was used to analyze the data.

Data Collection Procedure

The researcher sought permission from the head teachers of schools selected, on 10th July, 2017; questionnaires were distributed to various selected schools and collected on 13-14th July, 2017. Few challenges occurred thus some questionnaires were returned unanswered and in some school few teachers were not willing to answer the questionnaires.

Chapter Summary

In this chapter the purpose of the study was recaptured that is the availability and utilization of ICT facilities enhancing teaching and learning at the four Basic schools in Ghana. The chapter encompasses research design, description of the population, study area, type of sampling techniques selected, and data collection instrument as well as data collection procedure and data analysis. The study area used was Cape Coast North constituency; population size was 90 and sample size 73. Convenience sampling techniques was employed; strength and weakness of survey questionnaire was given. Finally, frequency table, pie chart and cross tabulation were used to analyze the data.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter deals with the results and discussion of the study. The purpose of this study was to find out the availability and utilisation of Information and Communication Technology facilities for teaching in basic schools in Cape Coast North Constituency.

The result talked about the outcome of processing of data based on research questions and how tables appear using various analytical methods such as frequency table and cross tabulation.

Discussion talked about the detailed explanations and interpretation given to the outcome of the result thus how tables appear, the understanding of it in connection to related literature reviews.

Research Question 1

What ICT Facilities are available in your school?

Table 1 to Table 10, shows the Cross Tabulation of Availability of ICTs facilities in various schools.

Table 1: *Computer Lab*

Name of School	Available	Not Available	Total number of Teachers
Ahmadiya JHS	19	0	19
St. Lawrence JHS	0	22	22
Esuekyir MA JHS	0	12	12
Kakumdo MA JHS	20	0	20
Total	39	34	73

Source: Field survey, Broni (2017)

Table 1 in research question one (1), is to compare the availability of ICT facilities among four selected basic schools. From the table, it indicates that, 19 teachers from TI Ahmadyia basic and 20 teachers from Kakumdo M/A basic claim that they have computer lab, but not equipped with adequate facilities for teaching and learning. However, 22 respondents from St. Lawrence M/A basic school and 12 respondents from Esuekyir M/A basic school responded that they do not have computer lab at all in their schools.

Table 2 shows the availability of Computers at the selected schools

Table 2: *Computers*

Name of School	Available but ,not adequate	Total number of Teachers
Ahmadiya JHS	19	19
St. Lawrence JHS	22	22
Esuekyir MA JHS	12	12
Kakumdo MA JHS	20	20
Total	73	73

Source: Field Survey, Broni (2017)

From Table 2 analysis, it shows that all the four basic school selected for the study responded that there are computers available but, not adequate for teaching and learning activities. However, (British Educational Communications and Technology Agency, (BECTA, 2004) stated that the use of ICT by teachers will help them in setting their target for the term, recording, analyzing attendance and disciplinary information, as well as maintaining link between the school and parents to ensure parental involvement in school activities. This implies that the benefits of working with computers by every teacher to reduce the teacher's workloads in lesson preparation, worksheet, writing of students' cumulative report and analszing students' attainment have not been achieved per the analysis in Table 2.

Table 3 Shows the email service availability in the selected schools in the Cape Coast North Constituency.

Table 3*: Email Services*

Name of School	Available	Not Available	Total Number of Teachers
Ahmadiya JHS	4	15	19
St. Lawrence JHS	3	19	22
Esuekyir MA JHS	2	10	12
Kakumdo MA JHS	5	15	20
Total	14	59	73

Source: Field Survey, Broni (2017)

It is shown in Table 3 that in Ahmadiya basic school, out of 19 teachers selected, four of them said they have email services whiles 15 are without email services. From St. Lawrence basic school, three out of 22 have email services; whiles 19 are without email services. Also two teachers from Esuekyir basic school have email services, whiles 10 teachers do not have. Again, from Kakumdo basic school five teachers have email services, while 15 teachers do not have. In summary, out of 73 teachers from the four selected schools, 14 of them have the email services, whiles 59 of them do not have .This implies that, majority of teachers selected for studies do not possess email services.

Table 4 displays whether there were LCD Projector availability at selected basic schools in Cape Coast North Constituency.

Table 4*:Availability of LCD Projector*

Name of School	Available, but not Adequate	Not Available	Total Number of Teachers
Ahmadiya JHS	2	17	19
St. Lawrence JHS	0	22	22
Esuekyir MA JHS	0	12	12
Kakumdo MA JHS	7	13	20
Total	9	64	73

Source: Field Survey, Broni (2017)

It is shown in Table 4 that, in TI Ahmadiya basic school, 2 teachers out of 19 said there is LCD projector but not adequate, whiles 17 said LCD projector is not available. Also 22 teachers from St. Lawrence basic school, and 12 teachers from Esuekyir M/A basic school said LCD projector is not available. Again, from Kakumdo M/A basic school seven teachers agreed that there is LCD projector available but not adequate, while 13 from the same school said LCD projector is not available. So from Table 9 analysis it is clear that, out of 73 respondents, 64 respondents said LCD projector is not available against nine respondents who said there is LCD projector, which means most basic school teachers do not use LCD projector during teaching.

Table 5 shows the details of selected schools that have the projector screen but not adequate and schools that do not have the projector screen.

Table 5: *Projector Screen*

Name of School	Available, but not adequate	Not Available	Total number of Teachers
Ahmadiya JHS	2	17	19
St. Lawrence JHS	0	22	22
Esuekyir MA JHS	0	12	12
Kakumdo MA JHS	5	15	20
Total	7	66	73

Source: Field Survey, Broni (2017)

From the analysis shown in Table 5, two respondents from TI Ahmadiya basic school claim to have projector screen but not adequate, whiles 17 respondents from the same school said the school does not have the projector screen. It may be that, there is one projector screen, but it is not known to other teachers. Similarly, five respondents from Kakumdo M/A basic school said the school has projector screen whereas 15 respondents said no. On the other hand, both St. Lawrence basic and Esuekyir M/A basic school claim not to have projector screen, which could imply that, not all basic school have been supplied with projector screen.

Table 6 shows the schools with internet facilities to support teaching and schools that do not have internet facilities.

Table 6*: Internet Facilities*

Name of School	Available	Not Available	Total Number of Teachers
TI Ahmadiya JHS	2	17	19
St. Lawrence JHS	1	21	22
Esuekyir MA JHS	1	11	12
Kakumdo MA JHS	3	17	20
Total	7	66	73

Source: Field Survey, Broni (2017)

It is shown in Table 6 that, TI Ahmadiya basic school two respondents used internet (modem) whiles 17 respondents do not use internet because school computer lab is not connected to internet. Similarly, at St. Lawrence basic school, a respondent uses internet whereas 21 respondents do not use internet. At Esuekyir M/A basic school, a respondent uses internet whereas 11 respondents do not and at Kakumdo M/A basic school, three respondents use internet (modem) whereas 17 respondents do not. In general, the analysis then suggests that, the schools under study do not have or use internet facilities.

Table 7shows whether there was a printer available at the selected schools for the study

Table 7: *Printer*

Name of School	Not Available	Total Number of Teachers
Ahmadiya JHS	19	19
St. Lawrence JHS	22	22
Esuekyir MA JHS	12	12
Kakumdo MA JHS	20	20
Total	73	73

Source: Field Survey, Broni (2017)

From the Table 7, it shows that all the seventy-three respondents said printer is not available. This implies that all administrative work and exams questions are printed outside the school.

Table 8 shows whether there was a television available at the selected schools for the study

Table 8*: Television*

Name of School	Not Available	Total Number of Teachers
Ahmadiya JHS	19	19
St. Lawrence JHS	22	22
Esuekyir MA JHS	12	12
Kakumdo MA JHS	20	20
Total	73	73

Source: Field Survey, Broni (2017)

It is shown in Table 8 that, all the seventy-three respondents' reported that television is not available for teaching and learning at the selected basic school.

Table 9 displays whether there was a radio available at the selected basic schools

Table 9: *Radio*

Name of School	Not Available	Total number of Teachers
Ahmadiya JHS	19	19
St. Lawrence JHS	22	22
Esuekyir MA JHS	12	12
Kakumdo MA JHS	20	20
Total	73	73

Source: Field Survey, Broni (2017)

From Table 9, it indicates that, the use of radio in support of teaching and learning is not available in the selected basic schools.

Table 10 shows the availability of maintenance workshop of repairing computers at the selected basic schools.

Table 10*: Availability of Maintenance Workshop*

Name of School	Available	Not Available	Total Number of Teachers
Ahmadiya JHS	2	17	19
St. Lawrence JHS	2	20	22
Esuekyir MA JHS	0	12	12
Kakumdo MA JHS	5	15	20
Total	9	64	73

Source: Field Survey, Broni (2017)

From Table 10 analysis, it shows that out of 73 respondents, nine respondents said there is maintenance workshop, whereas 64 respondents said there are none. This implies that spoilt computers are not repaired regularly to improve teaching and learning.

In conclusion, Tables 1 to 10 shows the analyses for research question 1 and it indicates that most of ICT facilities needed for teaching and learning were not available whereas those available were not adequate. This concurs to Sibanda, Mapenduka and Furusa (2016), in their findings on availability and utilization of ICTs for teaching and learning in Secondary Schools in Zimbabwe also indicated that ICTs for teaching and learning were not available.

Research question 2

What is the teachers' level of knowledge regarding the utilization of ICT facilities in Cape Coast north constituency?

Table 11 shows the Mean and Standard deviation of teacher's level of knowledge in using ICT facilities at basic school. The following variables were used to represent the scale in the Table 11; 1-very often, 2 - often, 3- quite often and 4-not at all. Data were interpreted using following means: Very Often 1.30, Often 1.79, Quite Often 1.80 and Not at all 2.00.

Table 11*: Mean of respondents level of knowledge on utilization of ICT facilities*

Statement	Mean	Std. Deviation
Desktop is used for lesson note preparation	1.82	.385
Laptop are used in teaching	1.82	.385
Using internet for teaching aids	1.85	.360
Projectors are using for teaching	1.90	.296
Television is used for teaching	2.00	.000
Videos are used in lesson delivery	1.99	.117
Teachers communicate with students using email	2.00	.000
Test items are typed on school computers	1.32	.468
Cumulative records are kept on school computers	1.79	.407
Computers are repaired at school	1.88	.331

Source: Field survey, Broni (2017)

Table 11 represent ten items of ICT utilization by teachers in basic school, it was realized that seven items were not used at all by teachers in the teaching and learning processes they are: desktop, laptop, internet, projector, television, video and email services. Again pupils' cumulative records were not kept on school computers and spoilt computers were not repaired regularly this was indicated by means of 1.79 to 2.00. Few teachers typed their test items on school computer representing 1.32, it was considered as the ICT facility used regularly by teachers. Generally, the responses given by teachers suggest that ICT facilities were underutilized. This also concurs to the findings by Al-Oteawi (as cited in Bordbar, 2010), that majority of teachers showed negative attitude towards the integration of ICT into teaching and learning processes, lacked knowledge and skills that would allow them to make informed decision.

Research question 3

What is the perception of teachers in basic schools within Cape Coast North Constituency has about ICTs utilisation in content delivery?

Table 12 shows the Mean and Standard deviation of teacher's perception in using ICT facilities for lesson delivery at basic schools.. The following variables were used to represent the scale in the table 12, 1= Agree, 2= Disagree. Data were interpreted using following means: Agree 1.00 and Disagree 2.00

Table 12*: Mean and Standard deviation of Teachers' Perception on ICTS Utilization in Content Delivery*

Statement	Mean	Std. Deviation
Using ICTs in lesson preparation lessens the work for teachers	1.26	.442
Using ICT in lesson delivery enhances quality of work for teachers	1.15	.360
ICT utilization makes teachers to be up to date in various disciplines.	1.07	.254
Using ICT facilities help to deliver course content easily.	1.10	.296
Using computer in lesson delivery waste lot of time	1.60	.493
Only ICT teachers should be allowed teach using ICT facilities.	1.89	.315
ICT helps in making teaching and learning more interesting	1.11	.315

Source: field data, Broni (2017)

Table 12 displays responses of basic school teachers' perception about ICT utilization in content delivery. The responses of basic school teachers which generated the highest mean of 1.89 shows that most of teachers disagree that only ICT teachers should be allowed to teach using ICT facilities. Again they also disagree to the statement which says that using computer in lesson delivery waste lot of time with mean of 1.60.

However, they agreed that ICT utilization makes teachers to be up to date in various discipline, Using ICT facilities can help to deliver course content easily as well as making teaching and learning more interesting. These yielded means of

1.07, 1.10 and 1.11 respectively. In sum, a mean of 1.31 approximately 1.00 suggest that most teachers have good perception that ICT utilization can help in content delivery. Jones (2004) reported that teachers' competence is directly related to teachers' confidence as well as teachers' perceptions in relation to the use of ICT facilities in the classrooms. But responses from research question 3 do not conform to Jones statement.

Researches Question 4

What challenges do teachers in basic schools within Cape Coast North Constituency face in utilizing ICT facilities?

Table 13 shows the Mean and Standard deviation of response given by teachers on challenges of using ICT facilities at basic school The following variables were used to represent the scale in the table 13: 1= Strongly Agree, 2= Agree, 3=Disagree and 4=Strongly Disagree. Data were interpreted using following means: Strongly Agree =1.00, Agree =1.50, Disagree 2.00 and Strongly Disagree = 2.50

Table 13*: Mean and Standard deviation of Challenges Facing the Utilization of ICTs*

Challenges statement	Mean	Std. Deviation
Lack of functional computer lab	1.82	.481
Time constrain in using ICT	2.33	.708
No electricity supply	1.88	.706
No reward system to encourage ICT usage	1.68	.664
Inadequacy of computers for teachers	1.49	.556
Frequent break-down of ICT resources	1.74	.602
Lack of ICT facilitator	1.84	.624
High cost of ICT resources	1.89	.591
Lack of school Authority to finance internet	1.81	.430
Lack of ICT in service training for teachers	1.78	.692
Lack of motivation	1.73	.750

Source: field data, Broni (2017)

Table 13 indicates that. 28.80% teachers were strongly agreed to the challenges facing the utilization of ICT facilities in various basic schools under study, while 36.37% teachers agreed, 25.37% teachers disagreed to and 9.80% teachers strongly disagreed that there is no challenges. It imply that majority of teachers agreed there are challenges facing the utilization of ICT facilities at the basic schools. Similarly, Sibanda, Mapenduka and Furusa, (2016), in their research findings also agreed that there were lots of challenges in accessing ICT facilities in secondary school at Kwekwe high school in Zimbabwe.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter deals with summary, conclusion and recommendation. The main aim of the study is about the availability of (ICT) Information and Communication Technology facilities and effective utilisation by the teachers in public basic schools. Teachers at the Junior Higher Schools were considered for the study. Again the main questions for the study were: to compare the ICT facilities available in the selected public basic schools within Cape Coast North Constituency, ascertain the teachers' level of knowledge regarding the utilization of ICT facilities, find out about teacher's perception on ICTs utilization in content delivery and challenges that prevent teachers for utilising ICT facilities in basic schools. Four Public Basic Schools were selected for the study within Cape Coast North Constituency.

The following research methods were employed to help analyze and discuss the data. Questionnaires were used to collect data. Convenient sampling technique was employed to select the sample. Data was processed using SPSS 16.0. The result was analyzed and discussed based on research questions. Frequency table, cross tabulation and descriptive statistics were used to interpret the results.

Key Findings

Some key findings were identified looking at the results from the analyses

1. It was revealed in research question 1, that almost all the ICTs facilities listed were not available at the selected Basic schools in Cape Coast North Constituency.
2. The ICT facilities that were available were not adequate for teaching.
3. It was clear in research question 2 that most JHS teachers in basic school do not use the ICT facilities for teaching
4. Teachers again agreed in research question 3 that the use of ICT facilities enhances teaching and learning activities
5. In research question 4, teachers attest to the fact that there were some challenges associated with the utilization of ICT facilities in most basic schools in Cape Coast North Constituency.

Conclusion

The purpose of study thus the availability and utilization of ICT facilities in basic schools revealed that some schools have the facilities, other have but not adequate and some schools do not have the facilities at all for effective teaching. In conclusion ICT facilities were not adequate for teaching in Cape Coast North Constituency. With regards to ICT utilization by teacher, it appears most of the basic school teachers do not use ICT facilities in support of teaching and learning. Again majority of basic school teachers attest that ICT facilities were underutilized. However, teachers' perceived that proper utilisation ICT facilities make teaching and learning more interesting. Finally, it is noted that teachers lack

in-service training in updating their knowledge in using ICT facilities for teaching and learning.

Recommendations

Considering the following findings of this research, it is recommended that: Government and other stakeholders should provide ICT facilities and ensure fair distribution to all basic schools.

There must be continuous monitoring and evaluation of government policy on ICTs in education and its implementation

There must be routine ICT training for teachers to upgrade their skills on how to utilize modern technologies and should be carried out to all calibers of teachers no matter one's qualification.

School computers and other ICT gadgets must be in good shape to enhance quality of teaching.

Suggestions for Further Research

I suggest that further research can be conducted on teachers' computer self-efficacy.

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APPENDIX

QUESTIONNAIRE ITEMS FOR BASIC SCHOOL TEACHERS

I am a student of the named university carrying out research on availability and utilization of ICT facilities in enhancement of quality education. Basic schools at Cape Coast North Constituency are selected for this study. The information provided would be used only for academic purpose and confidentiality is assured. Your participation in this exercise would very much appreciate.

Personal Information

1. Name of school…….

2. Gender: Male ( ) Female( )

3. Subject area…….

4. Qualification……..

5. No of years in teaching a) below 2 years () b) 3-5years ( ) c) 6-10 years ( ) d) above 10 years ( )

Research question 1

Availability of ICT Facilities Tick (✓) in the appropriate columns

No	Name of items	Available or available,but not adequate	Not available
1	Computer laboratories		
2	Computers		
3	E-mail services		
4	LCD projector		
5	Interactive board		
6	Printer		
7	Internet facilities		
8	Projection Screen		
9	Television		
10	Radio		
11	Maintenance workshop		

Research question 2

Level of utilization of ICTs facilities by teachers

No	Item statement	Very often	Quite often	Often	Not often
12	Desktop/laptop is used to prepare lesson note				
13	Computers are used during teaching of ICT and other subjects				
14	Using internet for teaching aids				
15	Projectors are used for teaching				
16	Television is used for teaching				
17	Videos are used in lesson delivery				
18	Teachers communicate with students using e-mail				
19	Maintenance is done to fault computers				
20	Test items are typed using school computers				
21	Cumulative record of pupils are kept in computers				

Research question 3

Teacher's perception on ICT facilities utilization in content delivery

Tick (✓) in the appropriate column using the following terms Agree and Disagree to statement below

ITEMS	Agree	Disagree
22. ICT facilities help in making teaching more effective		
23. Using ICTs in lesson preparation lessens the work of teachers		
24.Using ICT in lesson delivery enhances quality of work for teachers		
25. ICT utilization makes teachers to be up to date in various discipline		
26. Using ICT facilities help to deliver course content easily		
27. Using computer in lesson delivery waste lot of time		
28. Only ICT teachers should be allowed teach using ICT facilities		
29.ICT helps in making teaching and learning more interesting		

Research question 4

Challenges facing the utilization of ICT in basic schools

No	Item statements	Strongly Agree	Agree	Disagree	Strongly Disagree
30	Lack of functional computer laboratory				
31	Time constraints in using ICT				
32	No electricity power supply				
33	No reward systems to encourage ICT usage				
34	Inadequacy of computers for teachers				
35	Frequent breakdown of ICT resources				
36	Lack of ICT facilitators				
37	High cost of ICT resources				
38	lack of school authorities to finance monthly internet usage				
39	Lack of ICT in- service training for teachers				
40	Lack of motivation				

Personal Data of the Respondents

Table A:*Name of the Selected Schools*

Name of School	Frequency of number of Teachers Sampled	Percentage %
Abura TI Ahmadiya JHS(Basic)	19	26.0
St. Lawrence JHS(Basic)	22	30.1
Esuekyir MA JHS(Basic)	12	16.4
Kakumdo MA JHS(Basic)	20	27.4
Total	73	100.0

Source: Field Survey, Broni **(2017)**

Table A: reveals the details in terms of the sample size of each school. St. Lawrence School has the greatest number of 22 of teaching staff representing (30.1%), Kakumdo M/A basic school 20 (27.4%), Abura TI Ahmadiya19 (26%) and Esuekyir M/A basic12 (16.4%). From the analysis, it can be concluded that ST. Lawrence Basic School has the greatest number of teaching staff as compared to the other three schools.

Table B**:** *Gender of Respondents*

Gender	Frequency	Percentage (%)
Female	42	57.5
Male	31	42.5
Total	73	100.0

Source: Field survey, Broni (2017)

Table B: shows the frequency of male and female teachers selected for the study. From the frequency table, the females are 42(57.5%), whiles male teachers are 31(42.5%). This indicates that female teachers are more than the male teachers under study. This also could implies that more female teachers are employed into basic schools in the Cape Coast North Constituency, but from Sey(2013), in his gender analysis, male were 61% while females were 39%, with this differences one cannot conclude that male teachers in basic schools in Ghana education service are more than female teachers or otherwise.

Table C**:** *Subject Taught by Respondents*

Subject area	Frequency	Percentage (%)
Maths	9	12.3
Social studies	4	5.5
English	11	15.1
Science	7	9.6
BDT	8	11.0
ICT	6	8.2
Class Teacher	13	17.8
R.M.E	7	9.6
Ghanaian Language	6	8.2
French	2	2.7
Total	73	100.0

Source: Field survey, Broni (2017)

Table C: shows the various subject areas of the respondent from the basic schools selected for the study. From the table out of 73 teachers respondent, 2(2.7%) teachers teach French, 4 (5.5%) teachers handle social studies, , 6 (8.2%) teachers handle Ghanaian language, 6 (8.2%) teachers handleICT,7 (9.6%) teachers handle R.M.E 7 (9.6%) teachers handle integrated science, whiles 9 (12.3%) teachers handle mathematics, 8 (11.0%), teachers handles BDT, 11 (15.1%) teachers teach English and 13 (17.8%) teachers are class teachers. From this analysis, it appears that class teachers and English teachers were more than the respondents in other subject areas, whiles the French teachers were the least.

Table D**:** *Qualification of Respondents*

Teacher's qualification	Frequency	Percentage%
Cert .A	3	4.1
Diploma	19	26.0
1ST Degree	50	68.5
2nd Degree	1	1.4
Total	73	100.0

Source: Field survey, Broni (2017)

Table D: shows the various qualifications of teachers for the study. From the table 50(68.5%) teachers hold1st Degree, 19(26.0%) are Diploma holders, 3 (4.1%) hold teacher's certificate 'A' and only 1 (1.4%) is 2nd Degree holder. It can be discerned from the analysis that a greater number of the respondents (68.5 %) in basic schools are 1st degree holders. This concurs to Sey (2013), study's

finding which suggest that majority of teachers in basic school are 1st degree holders

Table E: *Number of Years in Teaching of Respondents*

Number of years in teaching	Frequency	Percentage%
below 2	13	17.8
3-5	14	19.2
6-10	20	27.4
above 10	26	35.6
Total	73	100.0

Source: Field survey, Broni (2017)

Table E: shows the number of years the respondents has taught. The data revealed that 13 teachers representing 17.8% have taught for 2 years, 14(19.2%) have taught for 3-5years, 20(27.4%) of the respondents have taught for 6-10 years whereas 26 (35.6%) teachers have had 10 years of teaching experience. It can be discerned that a greater number of respondents have had teaching experience within a decade and above. In regard to Table 1 to 5, it indicate the personal information such as educational level, age, gender, educational experience, with the use of computer for educational purpose and attitude towards embracing of computers technology can influence the adoption of a new technology, (Schiller, 2003).