

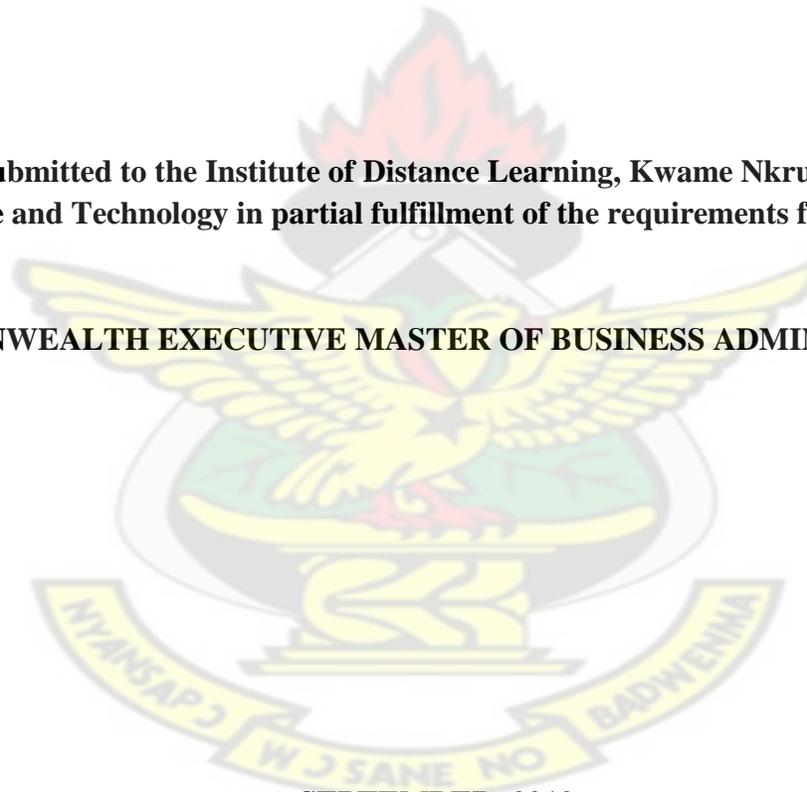
**ASSESSMENT OF I.C.T SITUATION IN SENIOR HIGH  
SCHOOLS, A CASE STUDY IN LOWER MANYA KROBO DISTRICT**

By

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**A Thesis submitted to the Institute of Distance Learning, Kwame Nkrumah University  
of Science and Technology in partial fulfillment of the requirements for the degree of**

**COMMONWEALTH EXECUTIVE MASTER OF BUSINESS ADMINISTRATION**



**SEPTEMBER, 2012**

**DECLARATION**

I hereby declare that this submission is my own work towards the Executive Master of Business Administration and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the university , except where due acknowledgement has been made in the text.

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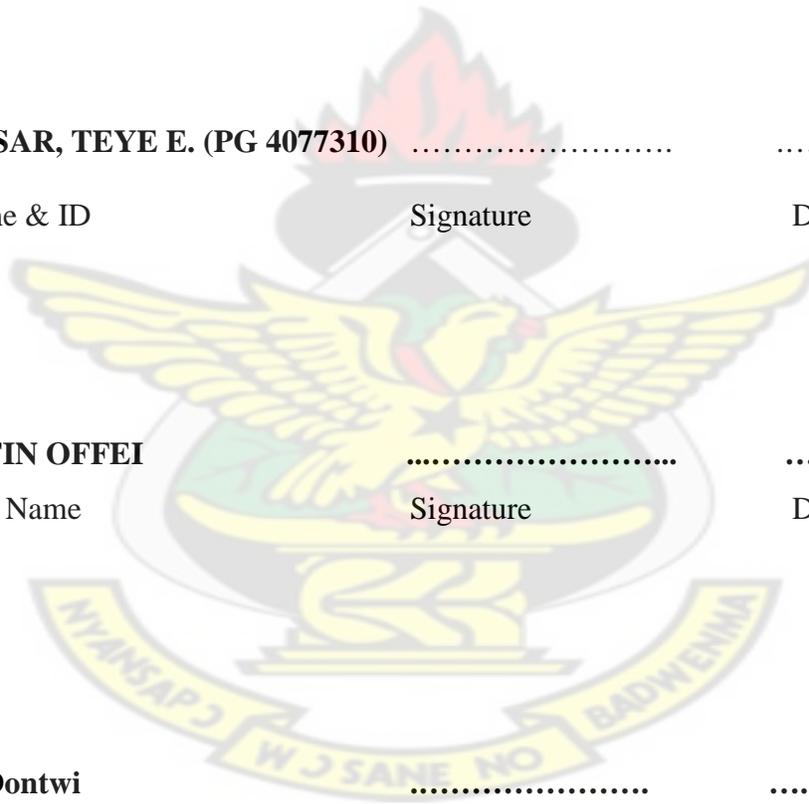
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## ABSTRACT

The use of ICT has impacted to some extent on almost every facet of our daily activities be it health, education, sports etc. Children of today grow up with an array of technology, both at home and at school. Educators and governments have also devoted huge resources to the provision of technology in the learning environment. Despite the increase in ICT tools in Ghanaian Senior High schools, most of the schools seem to be teaching ICT literacy instead of a complete integration of the ICT tools in the curriculum to enhance the teaching and learning process. The general objective of the study was, to assess whether ICT tools are really being used to assist and enhance students' knowledge in the teaching and learning process in four schools in the Lower Manya Krobo District of the Eastern Region. A total sample of 154 teachers took part in the studies. The four (4) schools were considered as strata. Proportional allocation was then used in calculating the number of respondents to be selected from each school. With the help of the headmaster and his assistants the teachers of all the schools used in the study were called to their staff common room and with a simple random sampling the questionnaire was administered. SPSS version 17 was used in generating the various outputs for analysis. Microsoft Excel 2007 was also used in drawing some of the graphs. The main findings of the study were that most of the teachers lack training and knowledge about computers and have no previous experience in the use of computers. Also inadequate ICT infrastructure in the schools is the other major factors inhibiting the integration of ICT into the learning and teaching process. The study also revealed that in spite of the fact that the teachers had computers at their disposal; most of them are not making the best out of it. This clearly shows the negative attitude towards the attainment of the 21<sup>st</sup> Century Educational Goal. The study also revealed that virtually all the schools did

not have the required number of computers for studies considering the total number of students. Finally it was revealed through the study that majority of the respondents considered the use of the ICTs as the preserve of the younger generation and that ICT should be taught as a subject on its own and not integrated into all the other subjects.

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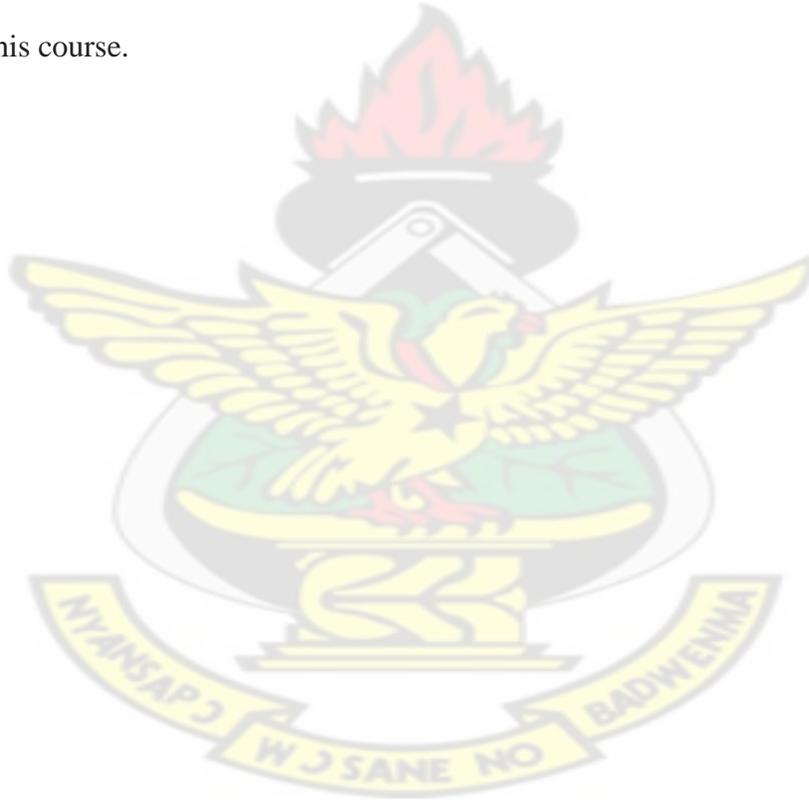


## DEDICATION

I dedicate this project work to the Almighty God for His numerous mercies, blessings and guidance bestowed on me throughout the course.

Also to my wife, Mrs. Florence Adebí-Caesar and the children Djago Adebí-Caesar Rockson, Pearl Oyodi Adebí-Caesar, Ohui Adebí-Caesar, Naomi Twum and the entire family for their support and prayers in making my dream come true

To all my study group members; Ken Adzawude, Joyce Nsiah, Godfred Odonkor, Djan Opare-Addo, Desmon Devoh, Edward Nnuru for being my source of inspiration and support throughout this course.



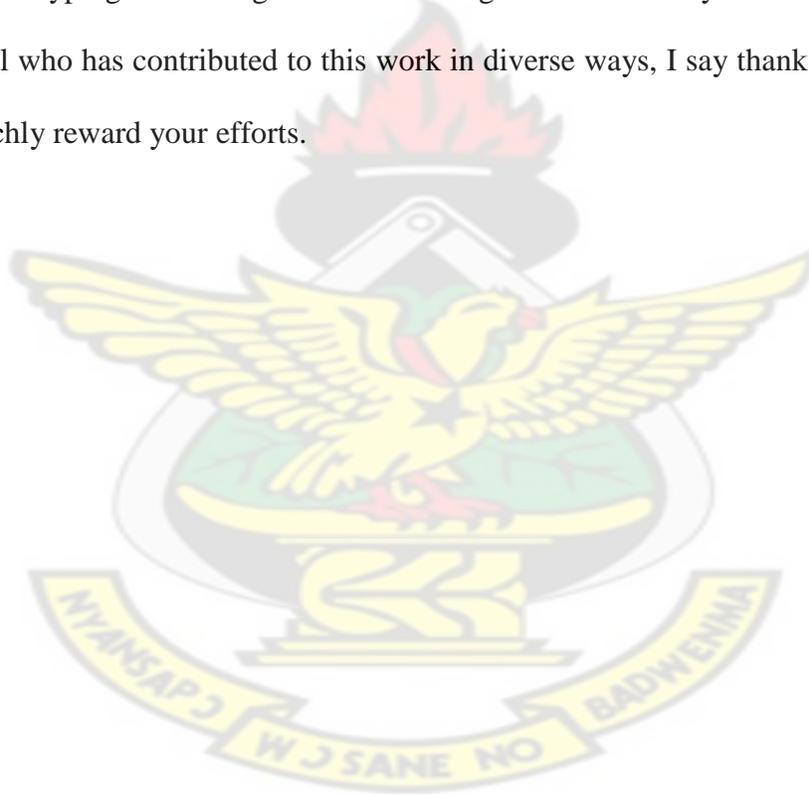
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I also want to thank all the special people in my life more especially my sister, Mrs. Juliana Ohui Indome, Agnes Adebi-Caesar, not forgetting my mother Madam Christiana Dede Oyodi for their immense support.

My warmest gratitude also goes to Mr. Anthony of Koforidua Polytechnic Planning Department for typing and setting the tables and figures for the analysis of this work

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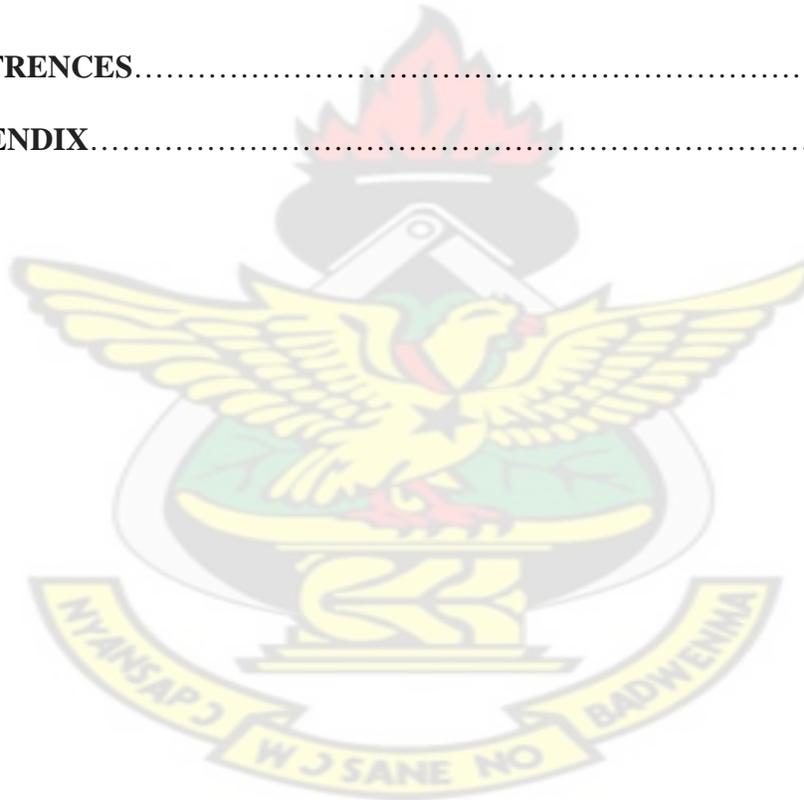
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## **CHAPTER ONE**

### **1.0 INTRODUCTION**

The use of information and communication technology has penetrated every facet of life today and for this reason, it is widely embraced in the society today. Mathew (1997) (online) state that the use of information and communication technology is clearly shaping the ways in which we learn, work, and spend our leisure time. As such, our success as individuals or as a nation depends on our ability to understand the use of I.C.T (computer). No one can afford to ignore the importance of computer technology in one's everyday life today.

The way computer technology has revolutionalized the way we do things today has led to the investment of millions of Ghana cedis at both government and school levels for the integration of computer technology into the curriculum in pre-tertiary education. In the early 90's most of the moneys was spend on the purchasing computers and software through private I.T companies, P.T.A, old Boys and/Girls Associations, N.G.Os etc. The early 90's saw the account of internet and by late 90's, the number of internet host skyrocketed to most of the communities (Ferguson). Once again it become imperative for government to provide more funding for internet connectivity in all public schools to make ICT accessible to all students especially Senior High School Students.

### **1.1 BACKGROUND TO THE STUDY**

The developments and exploitation of Information and Communication Technology (ICT) in schools in Ghana has had an operational history that is just over a decade or two old. Although at the beginning, there had been several efforts at developing ICT in schools, there had not been any defined policy direction for ICT in education as to what specifically was

needed to be achieved and the strategy for it. In the process, several initiatives on ICT in education were started by different interest groups to meet different needs. Towards the end of 2003, the tempo increased with the development of the national ICT for Accelerated Development Policy

As at now, the use of ICT (computer) is becoming more persuasive in Ghana and the number of computers for educational purposes in our institutions is growing. In the process, there is a proliferation of equipment standards for seemingly different goals. This situation has arisen because even though government has come out with a national policy for ICT, there is the need for a well defined policy direction in the development and exploitation of ICT in the arena of education.

It is on these premises that the government of Ghana is committed to the transformation of the economy through the agro – based economy of Ghana into an information rich and 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.

The development of ICT in education will result in the creation of new possibilities for learners and teachers to engage in new ways of information acquisition and analysis. ICT however will enhance access to education and improve the quality of education delivery on equitable basis. Hence the government commitment to a comprehensive program of rapid development and utilization of ICT within the education sector to transform the education system and hence improve the lives of people.

It is the desire of government that through the development of ICT in our Educational Institutions, the culture and practice of traditional memory – based learning will be transformed to education that stimulates thinking and creativity necessary to meet the challenges of the 21<sup>st</sup> Century (National Policy on ICT in Schools Education). Hence government collaboration with *rlg* Company to give each pupil a laptop throughout the country is a laudable idea.

Although this bold remarkable step which will contribute to knowledge production, communication and information among teachers and students in schools have been taken, it is however worthy of note that the policies and reforms have been besieged with some challenges which must properly be examined and worked at. Some of the issues include;

- Lack of adequate planning for implementation of ICT.
- Inadequate teacher training.
- Lack of information regarding the distribution of ICT facilities.
- Low levels of literacy in general.
- Lack of relevant content and technological applications to meet the needs of diverse societies.
- High cost of infrastructure development.
- High cost of acquisition of hardware and software.

It is however interesting to note that in Ghana, computers are found in some of the well endowed educational institutions, including the basic schools and senior high schools in the urban areas all over the country although they will be writing the same final examination in ICT with their colleagues in less endowed schools. More so these electronic devices are scarcely being used for teaching purposes. This phenomenon is not surprising as the whole

technology of using the computer for teaching purposes is at its infant stage in the country and Africa as a whole.

Tchombe et al 2008 posited that it is not just acquiring the knowledge of ICT that is important but also teachers need to understand how to use ICT pedagogically. They asserted that ICT if used appropriately can stimulate the development of higher cognitive skills, deepen learning and contribute to the acquisition of skills needed for learning all lifelong and for working in today's job market.

## **1.2 STATEMENT OF THE PROBLEM**

Asiedu – Akrofi (1982) posited that since the introduction of formal education in Ghana, educational provisions have been skewed in favour of those in the urban communities and there have been inequitable distribution of educational resources and services. Dankwa, (1997) claimed that the provision of ICT to Senior High Schools is skewed in favour of the first class or category ‘A’ schools in the urban areas. Asesewa Senior High School which is formally community based school in the newly carved Upper Manya Krobo District in 2007 in the Eastern Region of Ghana can definitely not compare herself to the category ‘A’ schools. The question of accessibility of proper ICT facilities therefore arises. Accessibility they say is greatly influence by availability of resources. ICT is therefore accessible if only the infrastructures are available. ICT is available if there are funds to procure them or they are donated by bilateral and multilateral donor organizations.

In Ghana it is very interesting to note that educational reforms, policies and practices that were drawn and made in the postcolonial era have done little in bridging the gap that have been created between schools in the urban areas and those in the rural communities. Most

often than not, these schools in the rural areas are faced with a lot of problems such as the lack of qualified teachers, inadequate infrastructure and poor implementation of government policies etc. The situation for teachers in this new field of study might even be worse. As a result of the lack of the properly qualified ICT professionals or teachers, stakeholders in those rural areas are heavily dependent on teachers of other field of study with a little knowledge to remedy the situation. Some other stakeholders even go to hire the services of people in their communities with a fair knowledge to assist their students. Almost all of these people are not professional teachers and fully baked professionals in IT. It is clearly evident that these incompetent, low-level ICT users will have to impart knowledge of the use of the new technology to students, then the competency level of their student may also be low and students may not be benefiting from the use of the new technology. According to Gregoire et al., (1996), John and Sutherland (2004) and cited in Iddrisu (2009) that the benefits to students of using new technology is greatly dependent on the technological skills of the teachers and the teacher's attitude to the presence of the technology in teaching and learning.

In short the essence of using technology is to help accomplish a task with least minimum input. If teachers and students perceive the use of ICT to be given optimal results in teaching and learning with minimum effort then teachers and students would use ICT more frequently. According to Davies et al (1989) and cites in Iddrisu (2009) said technology acceptance model has it that the more positive the factors of perceived usefulness and perceived ease of use are, then the more positive the attitudes of teachers and student would be to the use of ICT and more likely they would use ICT in teaching and learning. It must however be known that ICT can never solve all the problems of education although the appropriate use of it can

stimulate the development of higher cognitive skills, deepen learning and contribute to the acquisition of skills needed for learning all lifelong and for working in today's job market.

Educational systems around the world are under increasing pressure to use ICT to teach students the knowledge and skills they need in the 21<sup>st</sup> century and beyond. The challenge is whether the benefits of ICT would commensurate the cost, because most developing countries are now spending a lot of the taxpayers money on ICT for teaching and learning without considering setting up criteria, standards, norm or conditions that could be used in evaluating the performances of ICT in teaching and learning. Hawkins (2002) posits that while many educational ministries around the world have made the commitment to computerize schools, few have developed coherent strategies to integrate its use fully as a pedagogical tool in the classroom. It is against this backdrop that the researcher wanted to assess the situation of ICT in the four Senior High Schools in the Lower Manya Krobo District.

### **1.3 RESEARCH OBJECTIVES**

#### **GENERAL OBJECTIVES**

The main purpose of the study is to assess the LCT situation in Senior High Schools in the Lower Manya Krobo District of the Eastern Region.

#### **SPECIFIC OBJECTIVES**

1. To find out the barriers hindering the integration of ICT into Education in the Senior High Schools in Lower Manya Krobo District
2. To examine whether the teachers have gotten the adequate training and qualification in the use of ICTs

3. To examine the attitudes of teachers in the use of computers
4. To unravel the perception that teachers in the Senior High Schools have with respect to the use of ICT in the teaching and learning process
5. To assess the extent of ICTs tools or equipments in the schools

#### **1.4 RESEARCH QUESTIONS**

1. What are the barriers preventing the integration of ICT in education in the Senior High Schools in the Lower Manya Krobo District?
2. Do the teachers have the requisite training and qualification in the use of ICT to teach?
3. What are the attitudes of teachers toward the use of computers in teaching?
4. What perceptions do teachers in the Senior High Schools in Lower Manya Krobo District have in relation to the use of ICT in the classroom?

#### **1.5 RELEVANCE OF THE STUDY**

This research study has the potential to contribute to existing research in relation to the obstacles preventing ICT integration in the teaching and learning process. This research is expected to benefit educators by extending the knowledge base that exists already, as it presents empirical evidence in relation to these barriers

.The study may be of significance to other teachers, since many of them may also experience the same difficulties, as those encountered by teachers who responded to the research questions. The findings from this research could be generalized to other schools.

This study may help to raise awareness among Policymakers, Directors of Education, Headmasters and teachers, about the barriers to ICT integration that exist in most Senior

High Schools. A thorough understanding of barriers, will inform educators, in deciding how to address them, with the hope that they can be minimized if not eliminated entirely from the teaching and learning process.

## **1.6 LIMITATION OF THE STUDY**

The study was limited by the following:

The limited time and logistics at the disposal of the researcher prevented him from carrying out the study in other rural schools in the Eastern Region of Ghana

- The unwillingness of some of the respondents to return the questionnaires.
- The initial unwillingness of the school administrators in allowing the researcher to use their institution for the research study and the provision of requested information.

## **1.7 ORGANIZATION OF THE THESIS**

The study is organized into five (5) different chapters. The first chapter talks about the background to the study, the statement of the problem, the research objectives and questions. The chapter also deals with the significance of the study, the limitation encountered in the study. The second chapter deals with the review of the related literature. The third chapter talks about the research methodology that was used in the study. The fourth chapter dealt with the presentation and analysis of the data that was collected. It also discussed the data that has been analyzed. The last chapter talks about the summary of findings, the conclusions that were drawn and the recommendations thereof.

## CHAPTER TWO

### REVIEW OF RELATED LITERATURE

#### 2.0 INTRODUCTION

The use of ICT in the classroom has become important, as it provides opportunities for students to learn how to operate in an information age. The study of obstacles to the use of ICT in education may assist educators in overcoming barriers and support students in becoming successful technology adopters in the future. This literature review analyses some relevant literature and aims to identify the perceived barriers to technology integration in education.

The availability of computer equipment per say does not in itself guarantees ICT integration in education. Granger et al (2002) posited that successful implementation is a complex process, determined by pedagogical values, attitudes, curricular needs and physical infrastructures. Akbaba – Altun (2006) concluded that successful integration of technology is not simple, because it depends on such interlinking variables. ICTs are radically transforming the curriculum in a number of ways, demanding that teachers reflect on new pedagogy and not the traditional methodologies.

Educators themselves assert that the integration of ICT into the classroom will greatly enhance the learning experience (Sutherland *et al* 2004). The growth of ICT itself dictates that in order for students to adjust to modern society and the global economy, the way in which they are taught and what they are taught, requires adjustments to and around ICT (Watson 1999).

Balanskat et al (2006), however argue that although educators appear to acknowledge the value of ICT, difficulties continue to be encountered in adopting and integrating such

technologies. Mueller et al (2008), conclude that although many teachers are comfortable with technology in general, they still may not be ready or capable to integrate such technology, in their classrooms. The following section will provide a brief overview of what ICT integration means.

## **2.1 MEANING OF ICT INTEGRATION IN EDUCATION**

In order to appreciate what is meant by ICT integration in education, it is important that we know the origin of ICT and what it really is. Research has it that the use of computers became popular in the 1980's when personal computers became available to consumers. Again research has shown that it is this global competition that has influenced governmental policies all over the world in ensuring that they keep pace with these technological advancements. These policies motivated the mass production of computers for schools. Several researchers suggested that ICT will be an important part of the education process for the next generation.

According to Pelgrum & Law (2000) history has it that towards the end of the 1980's, the term 'information technology' began to replace the word 'computer'. The term information technology therefore referred to computer's processing ability, indicating a shift from computing technology to the capacity to store and retrieve information. Pelgrum & Law (2000) again posited that the term ICT emerged, signaling the introduction of e – mail and electronic messaging with computer technology. Simply put ICT is an accepted acronym of the word information communication technology. It is a diverse set of technological tools and resources used to communicate and to create, disseminate, store and manage information (Blurton, 1999). This means that ICT helps in the storage and management of information. Also Ayo (2001), defined ICT

as the use of computer systems and telecommunications equipments in information processing. Finally ICT as described by Scott (2002) encompasses a range of applications, communications and technologies which aid information retrieval and research communication and administration. These include: Internet access, electronic mail, CD-ROMS, telephone, on line databases, library services and fax machines.

The emerging phenomenon was welcomed in the 1980's that educational systems needed to prepare students to adjust to and survive in this new technologically driven society. This meant preparing students for "lifelong learning in an information society" (Pelgrum and Law 2003, p.20). Allied to this, early advocates of ICT integrated education, saw it as a catalyst for change, fostering skills in problem solving and critical thinking, as well as the development of student centred learning (McGrail 2005, p.6).

According to Kozma (2008) there are three rationales for the introduction of ICT into education. The first one is the economic rationale which refers to the role it can play in preparing students as future workers and in supporting economic development. The second is the social rationale where ICT investment aims to: increase knowledge sharing, encourage cultural creativity, increase civic participation, make government services more accessible and finally enhance social cohesion. The third and final rationale is the educational and pedagogic rationale where ICT can advance educational reform and improve educational management structures. Similarly, Hepp et al (2004) broadly concur, identifying three reasons for the use of ICT in education: the development of new skills for the information age, increased productivity and the development of quality learning.

Whereas Kozma (2008) posits that there are three rationales for the introduction of ICT into education, Hawkrigde (1990) proposes four rationales for the utilization of computers in

schools. He notes these as social, vocational, pedagogical and catalytical. The social and vocational rationales point to the increased use of ICT in all spheres of human activity. The pedagogical and catalytically rationales relate to the effects of technology on students and schools. According to Bigum (1997) arguments for using computers in schools stem from technological and socially determined points of view. His standpoint is that the school systems within which the computer is used, is driven by computers. He argues that a change occurs within the education system using the computer and that change is as a result of the effect of technology. Bigum (1997) argues that the social context sees computers as neutral technology-technical means of achieving a defined purpose in education. Two contexts emerge and are used in this study. The social context and the pedagogical context. The social context runs along the lines of Hawkrigde (1990) social and vocational rationales, while the pedagogical context agrees with Hawkrigde's pedagogical and catalytical rationales. The pedagogical context also agrees with the views of Bigum (1997), Drent and Meelissen (2008), identify three objectives for the integration of ICT in education. They are: the use of ICT as a 'discipline or profession'; ICT as a 'teaching or learning medium' and the use of ICT as an 'object of study' (Drent and Meelissen, 2008, p.187). It can be gleaned from these objectives that integration involves aiding the teaching and learning process (apart from the third objective which is a discipline in itself). Successful integration of ICT in education can lead to a number of benefits. The next session will look at some of the benefits.

## **2.2 BENEFITS OF ICT USE IN EDUCATION**

The use of technology in the learning environment has become an unstoppable force in recent years. (Cohen et al 2004; Laubsch 2006). ICT impacts on a large section of education, from record keeping and school websites to the creation of online learning communities (Bishop

2007). Educational institutions can use specialized websites to make learning resources available online at any time. Some educational institutions do not even require students to be physically present. Virtual classrooms have flourished in tandem with improved internet accessibility. The significant barriers of time and distance are rendered almost obsolete in such virtual classrooms (Stennes 2008).

However, the benefits of ICT use in the classroom depend on the success with which it has been integrated (Condie and Munro 2007). Dawes (2001) asserts that new technologies could support education across the entire curriculum, providing innovative opportunities for effective communication. ICT in education has undoubted potential, to be influential in changing teaching methodologies.

Studies have also demonstrated that computer use can result in effective literacy gains. There is empirical evidence that students, who are having difficulties with reading, can be motivated and engaged through the use of ICT (Lynch et al 2000; Ó Murchú 2000; Segers and Verhoeven 2002).

Condie and Munro (2007, p.5) conclude that the use of ICT has had positive effects in a number of subjects, as well as being constructive in assisting students that are marginalized as a result of personal or familial issues. Schofield and Verban 1988 (cited in Parr 1995), concluded that using Computer Aided Instruction (CAI) considerably diverts the teacher's focus to weaker students.

Research has shown that many students benefit from the use of ICT (Frear and Hirschbuhl 1999). Wishart and Blease (1999) claim that students get immediate feedback or rewards.

Papert (1993) asserts that the computer is a tool, allowing for the construction of higher order thinking, facilitating users to take responsibility for their learning, while

Korte and Husing (2007) as cited in Rodden (2010) refer to its ability to motivate learning.

Modern educational software uses sound, animation, video and interactivity, assisting the different intelligences proposed by Gardner (1993) in his Multiple Intelligences Theory.

Forrester and Jantzie (2000) assert that the computer has enormous potential in developing the various multiple intelligences proposed by Gardner.

Kozma (2005) suggests that ICT can be used to improve delivery of and access to education.

In learning ICT skills, the student becomes better equipped for the world of work, which increasingly demands such competency.

Furthermore, Kozma and Anderson (2002) claim that ICT is transforming education by introducing new curricula based on real life problems, providing different tools to enhance learning, providing students and teachers with more opportunities for feedback and reflection. Social Constructivism places emphasis on this type of student centred learning, viewing the teacher as a guide or facilitator, motivating students to discover things for themselves (Vygotsky 1978).

Schoepp (2005) claims that constructivist approaches must dominate the learning environment for technology to have a significant impact on learning. However, it must be remembered that the use of ICT in classrooms is a relatively new phenomenon when compared to traditional teaching methods. While there have been notable critics (Cuban 2001; Kirkpatrick and Cuban 1998; Oppenheimer 1997; Palak and Walls 2009; Townsend

1997), most research strongly supports the premise that ICT enhances the teaching and learning process.

Furthermore it has been argued by Heinecke et al, (1999) and cited in Iddrisu (2009) that if one defines student learning as the retention of basic skills and content information. as reflected in standard tests, then evidence suggests that there is a positive relationship between computer-assisted instruction or computer-based learning and standardized tests.

According to Hawkrige (1990), computers as pedagogical tools in Computer Assisted learning or Computer Assisted Instructions offer advantages over other methods of teaching and have revolutionized education in advanced countries. Tinsley et al.. (1995). concurs with Hawkrige (1990) that computers are useful tools for pupils drills and practice. Tutorial activities, guided discover, building intellectual structures, data retrieval and data manipulation.

The computer serves as a cognitive tool. Its software programs are able to amplify, extend or enhance human cognition (Kozma, 1994). They are designed to aid users in task relevant, Cognitive components of a performance, leaving the performance open-ended and controlled by the learner (Fouche, 1995). The impedance of ICT in teaching and learning has prompted Todd (1997) to declare that a real learning revolution has started, in which educators use information technologies to provide learning experiences that are qualitatively different from their predecessors. Despite the advantages that computers offer in education,

Bigum (1997) recommends that ICT should not be seen as the only educational tool, but as one of a number of possible tools which could be used to teach content and skills.

Newman (1997), suggested that the advent of ICT has revolutionized learning related to accessing, evaluating and using information resources in digital library environments today in schools. In line with that Todd (1997) recommends that a sound understanding of computers and information technology with a pedagogy centering on developing students' knowledge and skills is required, Todd's recommendation is to manage, process and utilize the enormous variety of information that ICT provides.

Hawkrige (1990) considering the relevance of computers in schools, is of the opinion that computers have become catalysts for teaching, helping students to be less dependent on teachers and enhance collaborative learning, Thapisa and Baribwa (1998) however, state that evidence shows that to innovate and create stocks of information and knowledge by utilizing ICT, developing nations need telecommunication networks that can support electronic data exchange. Dankwa, (1997) and Parthemore, (2003) points out that many secondary schools in Ghana can boast of a computer laboratory through which students are gaining basic computer literacy. A number of these schools have Internet facilities, enabling students to deepen their connection to the outside world. Although this is encouraging information, extensive review of documents of NGOs that are spearheading ICT implementation in Ghanaian schools reveals that most secondary schools now benefiting from ICT are either located in urban areas or are classified as premier secondary schools (Dankwa, 1997; Hawkins, 2002; Parthemore, 2003).

According to Parthemore (2003), computer literacy education in Ghana has been concentrated in major urban areas. A few better schools in countryside have attempted to "catch up" with their urban counterparts by contracting with private companies to provide computer education. Contrary to the promising notion of ICT as a means of knowledge production, numerous scholars have highlighted the need to address the numerous problems that the introduction of ICT will bring. These issues include: a lack of adequate planning for implementation of ICT (Mooij and Smeets, 200 I); inadequate teacher training (Webb, 2002), inequalities in ICT distribution (Nachmias, Mioduser, & Shemla, 200 I; Sutherland-Smith, Snyder & Angus, 2003), lack of information regarding the distribution of ICT, low levels of literacy in general, and lack of relevant content and technology applications to meet the needs of diverse societies (ETS, 2001; Hakkarainen et al, 2000). The literature identifies the tendency for ICT to lead to a digital divide between urban and rural schools (Hartviksen & Akselsen, 2002). A review of the available literature reveals significant inequity in the implementation of ICT in Ghanaian schools. The literature (Dankwa, 1997; Parthemore, 2003) reveals that ICT provision in schools is skewed in favor of schools categorized as premier schools and schools in urban areas. Unfortunately, this is not a new trend. Since the introduction of formal schooling in Ghana, educational resources have been unequally distributed in the school system (Folson, 1995; Foster, 1965; Graham, 1971; and McWilliams and Kwamena-Poh). It is critical that policy makers ensure that ICT does not become another tool for perpetuating educational inequalities in Ghana's school system. Educational policy makers, nongovernmental organizations (NGO), bilateral and multilateral donor

organizations, and school administrators are making the collective efforts to promote ICT in Ghanaian schools.

### **2.3 ICT AND OTHER SUBJECTS**

Although, ICT is being taught in SHS in Ghana as a subject which is fused with integrated science as an examinable core paper and may be could be used as an elective subject to be examined in the near future. But the question is how is ICT used by other teachers in their day to day teaching activities? This however can be done by the use of power point: Internet connectivity of the school, the use of Skype in linking other interesting areas or institutions, and software with maps animation, market scenes, teleconferencing formulae etc for subjects like Mathematics, Geography, Economics and the like.

### **2.4 OBJECTIVES OF USING ICT**

There is a considerable amount of research describing how ICT is being used effectively in schools. DFES (2003) set out the objectives for effective use of ICT in teaching and learning as;

- “Broadening horizons with more opportunities for creative expression.”
- Flexibility to study where, when and how best suits individuals need and preferences
- Increased motivation through learning that stimulates interest
- Wider access to learning and participation
- Sensible choices about when, when not and how to use new technology to enhance, enrich and sustain learning.

It further suggests that ICT can make significant contribution to teaching and learning across all subjects and ages. Thus it can engage, and motivate children and young people and meet their individual needs” (DFES 2003). Cox (1997) also suggested some benefits of using ICT in lessons;

- Increased commitment to learning tasks
- Enhanced enjoyment and interest in learning the subject
- Increased in self –directed independent learning
- Enhanced self-esteem leading to expectations of achieving goals.”

Becker (2001) documented a study of over 4000 teachers in the USA and suggested the following objectives of using ICT in lessons

- “Getting information and ideas
- Expressing self in writing
- Mastering subject skills just taught
- Learning computer skills and
- Analyzing information”

## **2.5 POSITIVE IMPACTS OF ICT ON STUDENTS LEARNING**

There are so many positives that students can derive from the effective and efficient use of ICTs in the teaching and learning process. Some of the positive impacts are:

- Increased motivation to stay on-task, behave well and produce higher quality output,
- Learn more independently and at their own pace
- Do things they cannot do using traditional methods and resources

- Do more work
- Resources
- Integrate several subjects into project-based activities

### **2.5.1 INCREASED MOTIVATION**

Many studies have describe the motivating effect of using ICT in schools and the positive effect it can have on students attention and effort in class Trimmel and Bachman (2004) studied the impact of introducing laptops into classrooms and one of their conclusions was that “information technology has a positive impact on school attendance and learning interest: The DFES (2003) drew on a number of research projects to support it’s statement that ICT can play an important role in motivating pupils and encouraging them to engage in learning within and beyond the classroom.”

The ICT objectives were useful in their own right as it is a key element of the ICT curriculum that students learn how to present information in a professional way. Most students enjoy working on computers and if it a novelty rather than the norm, then that make it more motivating. However, whilst student enjoyment is an important factor in education, adherence to the curriculum is more important and therefore careful planning is an essential element of teaching with ICT in our schools.

### **2.5.2 HIGH QUALITY OUTPUT**

Using ICT improves the quality of students work “Watts and Lloyd (2004). Thus the quality of students work produced on ICT is generally of much higher quality than if it hand-written. Homework reports with images and screen shots explain what they have done and embellished with fancy fonts and word-art titles. Though this may not improve the substance of work, it does demonstrate that students care about they are doing and put in more efforts for it appearance.

A good example of ICT being used imaginative to create high quality output is where Geography lesson on volcanic eruption can be taught using power point to create animation presentation.

### **2.5.3 LEARNING INDEPENDENTLY**

It is a common place for schools to use the internet as a research tool to allow students to find their own information. John and Sutherland (2004) describe the way in which the internet can be used in Geography to develop a “digital earth” concept to enhance students understanding of many aspect of subject. The internet is often used to augment text books at lower cost for instance “a Secondary School Art class uses the internet extensively for research and gathering ideas, and even interacting directory with contemporary artists via their websites” (Becta 2001)

### **2.5.4 DO MORE WORK**

ICT enables high quality output to be produced at a speed that cannot be matched using the traditional methods and resources. Teaching applications such as graphing packages in

mathematics, multimedia authoring software and data analysis packages in Geography and science all allow students to work much faster than if they had to do the task manually. Morgan and Tidmarsh (2004) studied a work of a Geography teacher using ICT in their lessons; they describe the advantages of using ICT as a tool to increase the breadth and speed of learning, increasing the efficiency of both teacher and students. ICT was used to gather, analyses and present information. This reduces time where one wants to analyze information. The integration of ICT into the teaching and learning process is extremely difficult and will most likely meet a number of challenges. The next session looks at the challenges that prevent the use of ICTs in education.

## **2.6 CHALLENGES TO THE USE OF ICT IN EDUCATION**

A challenge is anything that retards the progress or achievement of any set objective or aim. It therefore means that the removal of one or more of these challenges or barriers such as the ones in ICT integration should assist perhaps significantly advance the process of integration. Computer integration in the classroom is the application of technology to assist, enhance, and extend student knowledge (Omwenga, 2004). Using ICT in education means more than simply teaching learners how to use computers. Technology is a means for improving education and not an end in itself. Muriithi (2005) has argued that in Kenya, like most developing countries ICT usage is still limited to computer literacy training.

A study conducted by Organization for Economic Cooperation Development (OECD) in 2009 and cited in Rodden (2010) confirmed that there are a number of barriers or challenges

that inhibit the use of ICT in education. These barriers included an inconsistent number of computers to students, a deficit in maintenance and technical assistance and finally, a lack of computer skills and/or knowledge among teachers (OECD 2009f). Jenson et al (2002) classified these barriers as: limited equipment, inadequate skills, minimal support, time constraints and lack of interest or knowledge by teachers.

In a research report conducted by British Educational Communications and Technology Agency (BECTA) in 2004, a number of other important barriers were identified. These were: lack of confidence, accessibility, lack of time, fear of change, poor appreciation of the benefits of ICT and age. Ertmer (1999) concurs with Schoepp (2005), asserting that if teachers are aware of and understand such barriers, they can initiate strategies to overcome them.

According to Iddrisu (2009) although valuable lessons may be learned from best practices around the world, there is no one formula for determining the optimal level of ICT integration in the educational system. Significant challenges that policymakers and planners, educators, education administrators, and other stakeholders need to consider include

- Educational policy and planning,
- Infrastructure,
- Language and content,
- Capacity building, and
- Financing

Research has classified these barriers in different ways. Several studies have divided the barriers into two categories: extrinsic and intrinsic. However, what was meant by extrinsic and intrinsic, differed among studies. In one such study, Ertmer (1999) referred to extrinsic barriers as first order barriers citing as examples: lack of time, support, resources and training. She referred to intrinsic barriers as second order barriers, citing as examples: attitudes, beliefs, practices and resistance to change.

Balanskat *et al* (2006) classified barriers as ‘micro level’ (teacher attitude) and ‘meso level’ (institutional). He added a third category called ‘macro level’, to account for the wider educational system. Meanwhile, Pelgrum (2001) identified material barriers as a lack of real or physical equipment and non material barriers as somewhat intangible entities such as lack of knowledge, confidence or time.

The challenges that confront the successful integration of ICT into education will be looked at from two (2) major angles. This approached which was adopted from what the British Educational Communications and Technology Agency (BECTA) used in 2003 will firstly looked at the barriers from the teachers’ perspective. The second will consider the barriers that confront the school itself

### **2.6.1 TEACHER RELATED BARRIER**

The researcher is of the view that the teacher (s) is/are the principal actors or stakeholders in the learning process. This belief of the researcher is affirmed by the view of Baylor and Ritchies (2002) who posited that teacher related issues were crucial in determining ICT use

in the classroom. Again Gressard and Loyd (1985) asserted that teacher's attitude towards ICT is one of the key factors which determined successful integration, while Jegede (2008) recognizes the teacher as a key instigator in fostering ICT integration in education.

From the above it is clear that the teacher is one key determinant factor among the others factors in the integration of ICT. It therefore implies from the above that the barriers of integration with relation to teachers can have a negative impact on the whole integration process. The following sessions will look at some of the teacher related challenges or barriers.

#### **2.6.1.1 LACK OF KNOWLEDGE OR COMPETENCE**

According to Bingimlas (2009) teacher competence refers primarily to the ability to integrate ICT into pedagogical practice. Lack of knowledge/competence is regarded as a significant teacher related barrier to ICT integration.

A teacher's lack of knowledge serves as a considerable challenge to the use of computers in teaching methods and practices. Tezci (2009) as cited in Roden (2010) posits that if teachers have a high level of ICT knowledge, then there will be a higher level of ICT use in education.

These barriers according to some researchers vary from country to country. Pelgrum (2001) found that lack of knowledge/competence in technology, among teachers in developing nations, is the primary obstacle to the uptake of ICT in education.

### **2.6.1.2 LACK OF CONFIDENCE**

Numerous studies carried out posit that the lack of confidence prevents teachers from using ICTs. According to a BECTA report in 2004, many teachers who are unskilled in ICT are not prepared to use them in the classroom or in front of students who might probably know more than them. This lack of confidence is further deepened with the expectation of students on the competence of the teacher in the use of ICTs. This is so because students are of the view that their teachers know more than them and with this at the back of the mind of the teacher if he/she is even having a fair knowledge about ICTs will not be willing to go and disgrace himself before the students.

The lack of confidence in the use of ICTs is in most instances accounted for by the inconsistency between training and usage. This is so because most teachers even if they have received training in the use of ICTs can still fail to integrate it into teaching. BECTA report 2004 says that the lack of confidence is linked to other barriers affecting the use of ICT in education. The report mentioned the fear of ICT as a factor that can compromise the level of confidence. Other factors that were mentioned included the lack of technical assistance which can lead to low confidence levels, lack of competence and the quality of training received.

According to Jegede et al (2007) as teachers become more appreciative of the use of ICTs as a pedagogical aid, attitudes and interest become positive. The rationale therefore, is that increased interest fosters commitment to honing skills and thereby boosting competence levels. Beggs (2000) posits that fear of failure is a possible cause of lack of confidence whereas Balanskat et al (2006) said the limitation in the knowledge base of the teacher in

ICTs use make them feel anxious about using it and thus not confidence to use it in teaching. Some researchers are also of the view that the lack of confidence and experience with the use of technology influences the motivation of teachers in the use of ICTs. Cox *et al* (1999a) found that teachers who have confidence in using ICT, identify that technologies are helpful in their teaching and personal work and that they need to use them more frequently.

From the above it can be concluded that when most of the barriers to the use of ICTs in education is removed many of the problems associated with lack of confidence will be resolved.

### **2.6.1.3 FEAR**

Computer anxiety or fear is a key barrier, limiting or preventing the use of ICT by teachers. Underlying these anxieties are a fear of humiliation when using computers and a fear of losing professional status through the downgrading of traditional teaching skills.

According to a BECTAs 2004 report, teachers who admitted to a lack of confidence ascribe this lack of confidence primarily to fear. According to several reports the some teachers have the fear that computers might challenge or compromise their vocation by downgrading their role. The researcher is of the opinion that if teachers are trained in ICT and ICT integration, they should realise, that rather than downgrading pedagogical skills, ICT aims to enhance those skills, in the same way it aims to enhance the learning process and skills acquisition.

#### **2.6.1.4 LACK OF TRAINING**

A full and complete integration of the use ICT in education requires high quality frequent training and professional development. If this training is not provided, then attempts at integration will inevitably be unsuccessful. This is significant, as according to most researchers another barrier that is frequently cited, is the lack of effective training. A study by Pelgrum in 2001 revealed that there were not enough training opportunities for teachers in the use of ICTs in the classroom.

The training of teachers in the integration of ICT in the learning and teaching process as cited in Rodden (2010) is a difficult one. This is so because it involves a number of complex factors in order to render the training effective. These complex factors include finding the time for training, training in pedagogy, skills training and the use of ICT in the teacher's initial training (Bingimlas 2009). BECTA (2004) concurs, asserting that training is particularly complex, because it is important to consider several components to ensure the effectiveness of the training. A similar study conducted by Cox et al (1999) argues that ICT training for teachers needs to incorporate pedagogical aspects. This study concluded that when teachers received basic ICT training without considering the pedagogical aspects of ICT, they still did not know how to use ICT in class. Schoepp (2005) maintains that if new technology is going to be integrated into education, teachers should receive training on how to use the specific ICTs, while Trotter (1999) concludes that training in ICT integration must be preceded by and supplemented with basic skills training. Research by Gomes (2005) also concluded that lack of training in digital literacy, lack of pedagogic and didactic training in how to use ICT in the classroom and lack of training concerning the use of technologies in specific subject areas, were obstacles to the use of new technologies in classroom practice.

Cox et al (1999) again assert that if teachers are to be convinced of the value in using ICT in their teaching, their training should focus on pedagogical issues. This in the view of the researcher is due to the fact that found that even after teachers had attended professional development courses in ICT, they still did not know how to effectively use ICT in their classrooms. This was because too much emphasis was placed on acquiring technical ICT skills during training, as opposed to skills in how to incorporate ICT into the curriculum.

Some studies as cited in Rodden (2010) assert that attention must be given to both skills training and pedagogical training (Becta 2004; Schoepp 2005; Snoeyink and Ertmer 2001). According to Newhouse (2002), some training is still needed for teachers to develop appropriate skills, knowledge and attitudes, regarding the effective use of computers to support learning by their students. He argued that this also requires continuing professional development, to maintain these appropriate skills and knowledge.

According to (Osborne and Hennessy 2003) when there are new tools and approaches in education, teacher training is essential if they are to integrate them into their teaching

In conclusion the researcher is of the opinion that enough training can address some of the barriers in the integration of the use of ICTs in the teaching and learning process. This is because acquiring the necessary skills will enhance their knowledge base and competence and by extension the level of confidence. The result of this is that it would in the long run reduce the fear of ICT and the anxieties related to student expectations and perceptions.

#### **2.6.1.5 EXTENT OF PREVIOUS ICT EXPERIENCE**

Poor previous ICT experience among teachers can clearly be regarded as a very real barrier to ICT integration in the classroom. Drent and Meelissen (2008) posits that solid experience in the use of ICT and the changes related to ICT, support the development of a learner centered pedagogical practice, while Becker (1994a) views substantial previous computer use by teachers, as one of the key determinants, in his classification of teachers, as either 'exemplary computer-using' or 'non-exemplary computer-using'.

#### **2.6.1.6 DIFFICULTY IN CHANGING TEACHING METHOD (PEDAGOGY)**

Teachers have to accept that the widespread use of ICT in schools is having an impact on teaching methods and requires a significant rethinking of approach. Becker (2000) describes two main teaching methods and their effects on the ways in which ICT is used in lessons.

Traditional transmission institution assumes that students will learn through teacher explanation or reading from texts. Skills are learnt through practicing skill in a sequence prescribed by the teacher.

Constructivist institutions assume that understanding comes from relating new ideas to the learners' prior beliefs skills acquisition comes in as unstructured way as new skills are used as required to solve practical problems.

In conclusion one could deduced that using ICT in lessons, the constructivist approach is more likely to lead successful out comes. Furthermore, teachers with the most constructivist philosophies tend to use computers more often and in a more challenging way both in classroom and as users themselves.

### **2.6.1.7 AGE**

The researchers personal observation has it that the age of an individual is a factor in the persons quest to adapt to changes, more especially in the areas of technology. It is against this backdrop that this literature is being reviewed to find out the view of other researchers.

Kumar et al (2008) posited in his study with some teachers that age is a significant factor to the use of ICT. The researcher concurs with this but believes that the age factor in relation to the use of ICTs is not only peculiar to teachers in the classroom but also permeates all spheres of life.

Young (2009) as cited in Rodden (2010) asserts that younger less experienced teachers use computers more, because they are more likely to be computer fluent, had more technologically rich teacher training and are less likely to be limited by previous habits, perceptions or attitudes, than older teachers. Lee (1997) points out that many older teachers have not had any computer education when training and as a result are in need of training to allow them to make use of computers in their work.

Cavas et al (2009) revealed that there is a relationship between teacher's age and their computer attitudes. Another study by Korte and Husing (2007) conclude that younger teachers appear to be less sceptical about the benefits of ICT in learning.

A report by the European Commission in 2002 and cited in Rodden (2010) found that age is a factor in the use of computers and the internet, arguing that the percentage of teachers using computers falls as their age increases, although the report acknowledged that the importance of this factor is declining.

Bradley and Russell (1997) again cited in Rodden (2010) point out that, although computer anxiety may increase with age, this does not mean that training or professional development should be specifically targeted at older teachers. They strongly dispute the notion that because computer anxiety may increase with age, younger teachers are unlikely to need training in ICT. Despite this, a substantial body of research literature strongly argues that age has no bearing on the use of ICT by teachers (Al-Senaidi *et al* 2009; Lau and Sim 2008; Wang and Chan 1995).

### **2.6.2 INSTITUTION RELATED BARRIERS**

The environment or conditions prevailing in the various institutions or schools can also be a factor that will inhibit the integration of ICT into the learning and teaching process. These conditions can be varied depending on where the school is located and the class or category of the school. Some of these include but not limited to the following:

- Technical problems and shortage of computers in laboratory
- Lack of detailed planned into how ICT can be used to enhance the teaching and learning
- Timetable difficulties

- Willingness of school authorities to provide the needed funds when the need arises

### **2.6.2.1 TECHNICAL PROBLEMS AND SHORTAGE OF COMPUTERS IN LABORATORY (ICT INFRASTRUCTURE IN PLACE)**

It is important to acknowledge that ICT can have technical problems and contingency planning is necessary to ensure alternative strategies are in place. Where the infrastructure and the platform for the application are unreliable, the output may be affected and this can adversely affect student motivation.

As computers are becoming more sophisticated and the range of software used by schools continues to increase, the schools must recognize the need to employ more and highly qualified technical staff. However, with pressure on budgets and competition from the commercial sector for the best staff, it is becoming increasingly difficult for schools to attract and retain technical staff with the appropriate skills and experience.

### **2.6.2.2 LACK OF DETAILED PLANNING INTO HOW ICT COULD BE USED TO ENHANCE THE TEACHING AND LEARNING PROCESS**

Much of the research highlights the need to plan carefully the use of ICT in lessons. Sutherland (2004) sums this up as, "ICT alone does not enhance learning. How ICT is incorporated into learning activities is what is important". Abbott et al (2001) also stress the importance of detailed lesson planning when using ICT and that, students must be encouraged to understand the process involved rather than simply focusing on the output. Some teachers may use ICT as a way of encouraging independent learning skills to be planned and supervised with the teacher directing the student's activities and outputs. ICT though is an effective tool in the hands of an effective teacher, and not a panacea in its

own right. It would seem that prerequisite for success is the subject knowledge of the teacher and his ability to weave the use of ICT into the existing curriculum. Becta (2001) suggested that success comes when teachers use applications that open up new ways of working. It acknowledges that this involves planning and imagination, and the result will be “spectacular”

### **2.6.2.3 TIMETABLE DIFFICULTIES**

Incorporating ICT across curriculum requires careful timetabling and corporation among department. Sutherland et al (2004) point that in Science department; it may not be possible to move practical classes to ICT because of health and safety consideration or site computers in Science laboratory due to space constraints. On other subjects, the time ICT suites are available may not suit the schemes of work planned by the teacher's. Hence much more cross-curricular and departmental planning is required than most schools do in the past.

## **2.7 POLICY ON ICT EDUCATION IN GHANA**

The government of Ghana is committed to the transformation of the agro-based economy of Ghana into an information rich and knowledge – based economy and society using the tools of information and Communication Technology (ICT). The government of Ghana 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.

The development of ICT into Education will result in the creation of new possibilities for learners and teachers 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 rapid development and utilization of ICT within the education sector to transform the educational system and thereby improve the lives of our people. It is the government's desire that through the development 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 challenges of the twenty first Century (C21). Given the magnitude of the task ahead, the government enjoins both the public and private sector to join hands to ensure that our children receive high quality teaching and learning. (Draft Copy of ICT policy 2006)

### **2.7.1 POLICY CONTEXT**

The ICT policy statement of the Ministry on ICT is an epitomized version of the ultimate goal to transform educational system. It is designed to provide a picture guide of the process of the deployment and exploitation of ICT's within the framework of the national ICT division.

The Ministry of Education and its agencies such as Ghana Education Service at the Regional and District levels are responsible for the administration and implementation of the provision and the delivery of Education and training at all levels within the education system of Ghana. They also have a responsibility to systematically promote the development of all approved

and recognized competing individuals, groups and nations as well as providing realization and pleasure and improve on the health and general well being of Ghanaians.

The Digital Divide is essentially the extent of disparity between those that have and those who do not have access to information and associated technologies. It also borders on collective knowledge generation, local content development for a domestic knowledge economy required for promoting online transactional capacity for consumers, business and government sectors. It is expected that an enabling environment needs to be created by government corporate agencies civil societies and individuals to facilitate access and capacity building as well as full exploitation of the potentials of ICT.

The policy document is to provide a policy direction for what needs to be done and how it is intended to be done. It also relates to programmes of implementation of the outlined policy actions.

However, the policy document is informed by the following considerations;

- The dawn of information age, characterized by ICT, is making information and knowledge based economies more globally competitive
- New areas of comparative advantage, the Country must develop, utilize and exploit ICT to bridge the poverty and development gap. This is because poverty is not lack of money in people's pockets but lack of knowledge in educational gap.
- For the labour market, environment, ICT user and professional skills are required and the education sector which has the responsibility of developing the human resource base for national development is therefore obliged to put in place the necessary

resource mechanisms to ensure that the human resource outputs of education can be suitably absorbed.

- ICT will also help Ghana achieve its goals set within the wider developmental objectives as defined by the Ghana Poverty Reduction Strategy, the Education Strategic Plan, Ghana Government white paper on the report of the Education Reform Review Committee, the Science Technology Policy among others.
- The digital age has brought with it a number of security issues that the policy needs to address.
- The need to enhance efficiency and effectiveness of the management and administration of education institutions.

After having considered the above factors and many more, the committee which was set up in 2003 to outline an ICT education policy for the country finalized its work and launched the policy in 2007. One can see from the above that the committee was launched in 2003 and finally finished its work in 2007. This delay was due to three (3) main reasons. The first was the complete lack of coordination among the various stake holders and the ministries. Secondly, the other Ministries were not actively involved in the policy formulation process. Thirdly, there was lack of human resource capacity to devise and implement an appropriate ICT policy for Ghana. The policy which was finally launched as stated above in 2007 through the help of several agencies including Global e-Schools and Communities Initiative (GeSCI), gave the objectives of the policy as:

- Ensure that students have ICT literacy skills before coming out of each level of Education

- Provide guidelines for integrating ICT tools in all levels of education
- Provide means of standardizing ICT resources for all schools
- Facilitate training of teachers and students in ICT
- Determine the type and level of ICT needed by schools for teaching and Administration purposes.
- Promote ICT as a learning tool in the school curriculum at all levels

### **2.7.2 VISION STATEMENT OF THE POLICY**

Formation of well balance individuals with the requisite knowledge, skills, values aptitudes and attitudes to become functional and productive citizens who are adaptable to the demands of a fast changing world driven by modern Science and Technology to the extent that they are capable of using ICT's confidently and creatively to achieve personal goals for full participation in the global and knowledge economy.

### **2.7.3 MISSION STATEMENT**

To provide relevant education to all Ghanaian at all levels to enable them to acquire skills that will assist them to develop their potential to be productive, to facilitate poverty reduction, promote socio-economic growth and national development and to formulate and implement policies to accelerate development for the welfare of Ghanaians for national interaction and international recognition.

Finally the researcher is of the opinion that a more coherent national ICT in education policy be provided and that it should be set around identified objectives, priorities and time-frames for ICT utilization in Ghanaian Senior High Schools. It is also important that the policy be marketed as much as possible, especially among school administrators.

# KNUST



## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.0 INTRODUCTION**

This chapter talks about the methodology that was employed in the study. It is made up of the research design, the target population, and the sampling technique(s) that was employed. The chapter also talked about the sample that was used in the study, the data collection method that was employed and the data collection instrument that was used. The chapter also looks at the data analysis method that was used.

#### **3.1 RESEARCH DESIGN**

According to Katundu (1998) the purpose of a research and its objectives determine the type of research design employed for a study. Considering the nature of the research problem and purpose of this study, the most appropriate research methodology that was used is the descriptive survey design.

Generally speaking descriptive study according to Busha and Harter (1980) is capable of collecting background information and hard – to – find data and the researcher would not have the opportunity to motivate or influence respondents' responses. Sproull (1995) and cited in Iddrisu (2009) recommends the survey technique for research where attitudes, ideas, comments and public opinion on a problem or issue are studied. The descriptive survey design approach was used for the study.

### **3.2 POPULATION**

Population is made up of all the individual or items of interest under consideration. For this study the target population was made up of sixty – two (62) teachers each respectively from Akro Senior Secondary Technical School and Akuse Methodist Senior High School (AMESS), sixty five (65) teachers from Manya Krobo Senior High School (MAKROSEC) and sixty (60) teachers from Krobo Girls Senior High School (KROGISS). All this four (4) schools are located in the Lower Manya Krobo District in the Eastern Region of Ghana. Apart from the Krobo Girls Senior High School which is a single sex school in the district, the rest are mixed schools.

### **3.3 SAMPLE AND SAMPLING PROCEDURE/ TECHNIQUE**

Sampling is a procedure of selecting a part of a population on which a research or study can be conducted. These samples are normally supposed to be selected in such a way that conclusions or inferences drawn from the study can be generalized for the entire population. Leady (1993) simply defines sampling as the process of choosing from a much larger population, a group about which a generalized statement is made, so that selected parts represents the total group. Sampling per say is not a technique for getting information but it ensures that any technique used will help in getting information from a smaller group, which could accurately represent the entire group.

From the above it can be seen that the total number of teachers ideally to be used in the study is two hundred and forty nine (249). The formula that was developed by Yamane 1973 for calculating sample size was used. The formula is produced below.

$$n = \frac{N}{1+N(e)^2} \text{ where}$$

n = is the required sample size.

N = the population size

e = Tolerable error (which in this study was pegged at 0.05).

The sample size was thus calculated as follows:

$$n = \frac{249}{1+249(0.05)^2}$$

$$n = \frac{249}{1+0.6225}$$

$$n = \frac{249}{1.6225}$$

$$n = 153.4668721$$

$$n = 154$$

From the above the ideal sample size to be taken is one hundred and fifty four (154) teachers.

Considering the fact that the total population was made up of the sum from four (4) different schools with different populations there is therefore the need that the sample taken from each school is taken with respect to the real size of the school involved.

The four (4) schools were grouped into four (4) different strata. Proportional allocation was used calculating the size that is supposed to be taken from each stratum. The formula that was used in calculating the sample to be taken from each stratum is presented below:

$$n_h = \frac{N_h}{N} \times n$$

Where

$n_h$  = sample size of stratum h (that is the sample size for each school)

N = Total size of population

n = Total sample size

$N_h$  = Population size of stratum h (population size of each school)

The sample to be taken from each school is calculated as follows:

$$\begin{aligned} \text{Akro Sec Tech} &= \frac{62}{249} \times 154 \\ &= 39 \end{aligned}$$

$$\begin{aligned} \text{Manya Krobo Senior High} &= \frac{65}{249} \times 154 \\ &= 40 \end{aligned}$$

$$\begin{aligned} \text{Akuse Methodist} &= \frac{62}{249} \times 154 \\ &= 39 \end{aligned}$$

$$\begin{aligned} \text{Krobo Girls Senior High} &= \frac{60}{249} \times 154 \\ &= 37 \end{aligned}$$

Simple random sampling was then used in selecting the respondents from the various schools.

This sampling technique was used because it affords all the members under consideration the equal chance of being selected.

### 3.4 SOURCES OF DATA

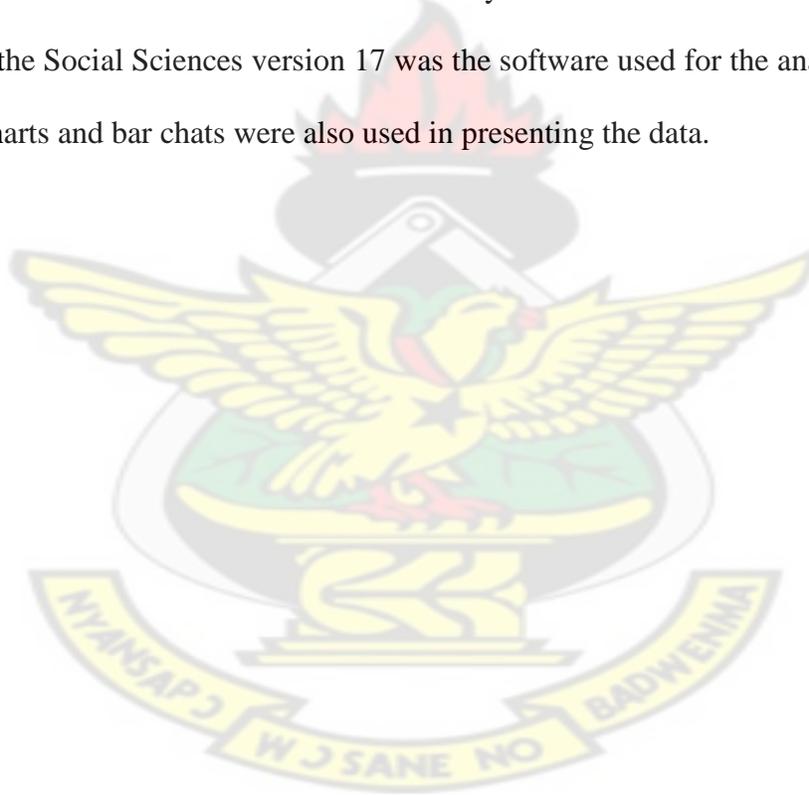
The main source of data used in this study was the primary data. Primary data or sources of data are data that have been collected from first-hand-experience. It is normally collected through the use of both open – ended and close – ended questions.

### **3.5 INSTRUMENT FOR DATA COLLECTION**

The main instrument used in this study is questionnaire. Both closed ended and opened ended questions were used. The opened ended questions were used to allow the respondents to express themselves without any given limit. The questionnaire which was used was adapted and modified from Rodden (2008).

### **3.6 METHODS OF DATA ANALYSIS**

The data collected was checked for consistency. Microsoft Excel 2007 and Statistical Package for the Social Sciences version 17 was the software used for the analysis. Frequency tables, pie charts and bar charts were also used in presenting the data.



## **CHAPTER FOUR**

### **DATA PRESENTATION, ANALYSIS AND DISCUSSION**

#### **4.0 INTRODUCTION**

This chapter presents the data that was collected during the study. It also talks about the analysis of the data and its discussions. In all one hundred and fifty four (154) questionnaires were administered. A total of one hundred and forty (140) questionnaires were retrieved. This represents a total response rate of 90.9%.

The chapter is made up of five (5) sections. The first section talks about the demographic characteristics and background information of the respondents. The second session discusses the first objective which is the barriers hindering the integration of ICT into Education. The third session examine whether the teachers have gotten adequate training and qualification in the use of ICTs. The fourth session which talks about the third objective also examined attitudes of teachers in the use of computers. The last but not the least session looks at the perceptions of the teachers with regards to the integration of ICT into the learning and teaching process. The final session will look at the assessment of the extent of availability of ICT tools or equipments in the school

## 4.1 Demographic Characteristics and Background Information

**Table 4.1.1 Gender of Respondents**

Response	Frequency	Percent
Male	113	80.7
Female	27	19.3
Total	140	100.0

Source: Field survey, 2012

The table above shows that as many as 113 (80.7%) of the respondents were males while the remaining 27 (19.3%) were females. From the above it can be concluded that majority of the teachers used in the study were males.

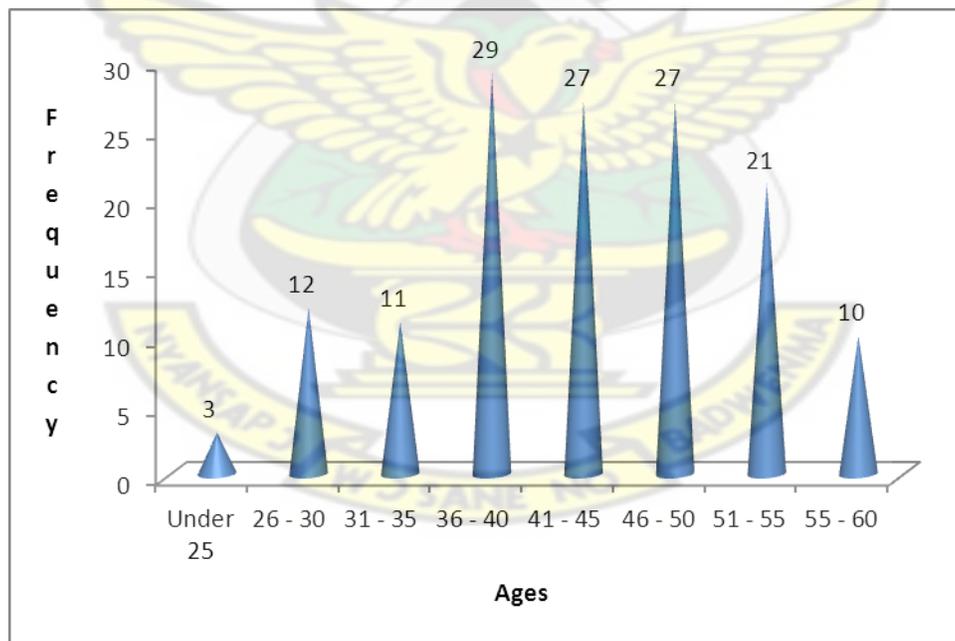


Figure 4.1.1 Ages of Respondents

Source: Field survey, 2012.

Figure 4.1.1 which shows the age distribution of the respondents indicates that 3 (2.1%) of them fell under the twenty five (25) age bracket. 12 (8.6%) and 11 (7.9%) fell in the 26 – 30 and 31 – 35 age brackets. 29 (20.7%) and 27 (19.3%) of them respectively fell in the 36 – 40 and 41 – 45 age brackets. Another 27 (19.3%) of them fell in the 46 – 50 age bracket while 21 (15.0%) of them fell in 51 – 55 age bracket. The remaining 10 (7.1%) fell in the 55 – 60 age bracket. Respondents were then asked of the highest educational level that they have attained. Their response is presented in table 4.1.2

**Table 4.1.2 Highest Level of Education Attained**

Response	Frequency	Percent
HND	17	12.1
Post Diploma	11	7.9
1 <sup>st</sup> Degree	110	78.6
Masters	2	1.4
Total	140	100.0

Source: Field survey, 2012

Table 4.1.2 shows that 17 (12.1%) and 11 (7.9%) of the respondents had a Higher National Diploma certificate and a Post Diploma certificate as their highest level of education. As many as 110 (78.6%) had a first degree with the remaining 2 (1.4%) having a masters degree. A deduction from the above is that majority of the respondents are first degree holders.

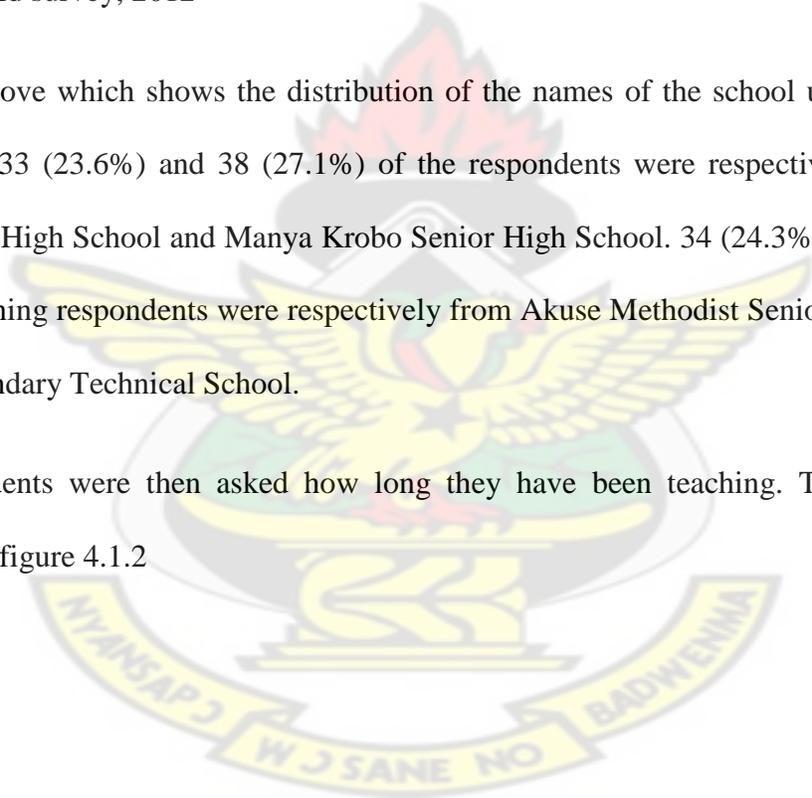
**Table 4.1.3 Name of School**

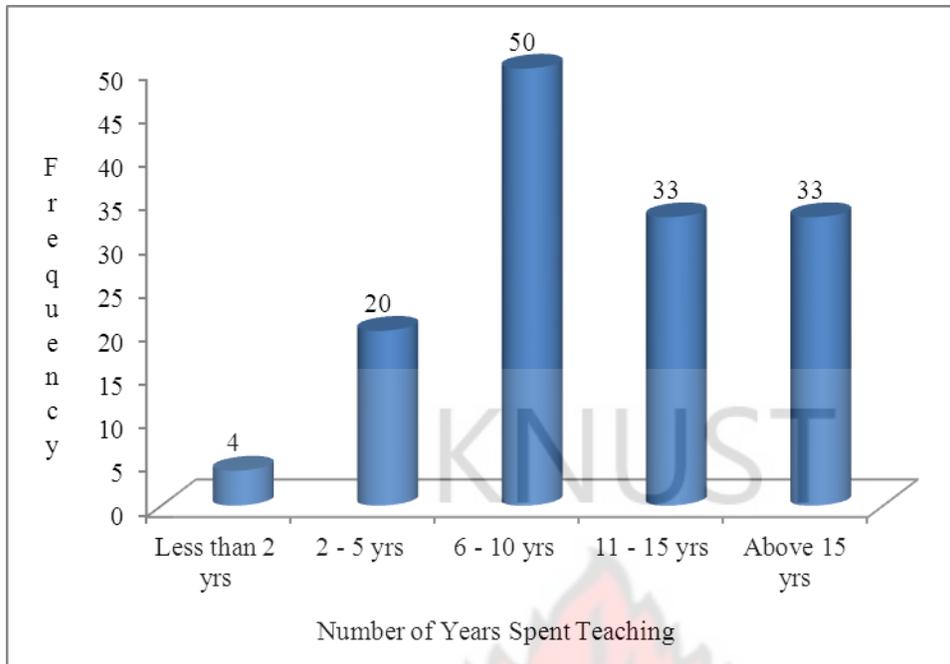
Response	Frequency	Percent
Krobo Girls	33	23.6
Manya Krobo Senior High	38	27.1
Akuse Methodist Senior High	34	24.3
Akro Sec Tech	35	25.0
Total	140	100.0

Source: Field survey, 2012

The table above which shows the distribution of the names of the school used in the study reports that 33 (23.6%) and 38 (27.1%) of the respondents were respectively from Krobo Girls Senior High School and Manya Krobo Senior High School. 34 (24.3%) and 35 (25.0%) of the remaining respondents were respectively from Akuse Methodist Senior High and Akro Senior Secondary Technical School.

The respondents were then asked how long they have been teaching. Their response is presented in figure 4.1.2





**Figure 4.1.2 Teaching Experience**

Source: Field survey, 2012

Figure 4.1.2 indicates that 4 (2.9%) and 20 (14.3%) of the respondents have spent less than two (2) years and 2 – 5 years respectively in teaching. 50 (35.7%) and 33 (23.6%) of the respondents have respectively spent 6 – 10 years and 11 – 15 years teaching. The remaining 33 (23.6%) have taught well over fifteen (15) years. An inference from the above is that majority of the respondents have spent more than five (5) years as teachers.

#### **4.2 First Objective: What are the Barriers Hindering the Integration of ICT into Education**

In trying to answer this question respondents were asked what was preventing them from using ICTs to teach during their periods. Their response is presented in table 4.2.1

**Table 4.2.1 Factors preventing teachers from using ICTs in their lessons in the classrooms**

Response	Responses		Percent of Cases
	N	Percent	
Lack of time to use computers	83	8.1%	64.8%
Lack of knowledge about computers	128	12.4%	100.0%
Lack of confidence	98	9.5%	76.6%
Fear	101	9.8%	78.9%
Lack of training	128	12.4%	100.0%
My age	102	9.9%	79.7%
Little previous experience	126	12.2%	98.4%
Not sure how useful computers are	77	7.5%	60.2%
Computers not accessible	35	3.4%	27.3%
Management does not care if I use computers or not	68	6.6%	53.1%
Computer equipment is not reliable	14	1.4%	10.9%
No support if something goes wrong with computer	71	6.9%	55.5%
Total	1031	100.0%	805.5%

Source: Field survey, 2012

It can be seen from table 4.2.1 that 128 (12.4%) responses each respectively went in favour of lack of knowledge about computers and the lack of training as the reasons that is preventing the respondents from using or introducing the use of ICTs in their teaching and learning. 126 (12.2%) and 102 (9.9%) of the response also went in favour of little previous experience with computers and their age respectively as the factors restraining respondents from using ICTs to teach. 101 (9.8%) and 98 (9.5%) responses respectively went to the fear in the use of the ICTs and the lack of confidence as the inhibiting factors in the use of ICTs in the classrooms. 83 (8.1%) and 77 (7.5%) responses went in favour of lack of time to use the computers and not being sure of how useful computers can be as the factors that hinder the use of ICT in the classroom. Another 71 (6.9) and 68 (6.6%) of the responses went to 'no support if something goes wrong with the computer and their headmasters or management not being concern about whether computers are used to teach or not as some of the inhibiting factors. A deduction from the above is that the three (3) major barriers preventing the use of ICTs in our Senior High Schools classrooms are the lack of training in the usage of the ICTs, lack of knowledge about the computers or the ICTs and finally the little or no previous experience in the use of the ICTs. On the other hand two (2) factors that respondents said in their view do not prevent them from using the ICTs in the classrooms are computer equipments is reliable and computer not accessible.

#### **4.3 Second Objective: To examine whether the teachers have gotten adequate training and qualification in the use of ICTs**

In trying to answer the research question above asked the respondents whether they have receive any training in ICT before joining the teaching profession. This is to say that whether

the respondents have received any training in the use of ICTs during their formative days at their various training institutions. Their response is presented in table 4.2.1

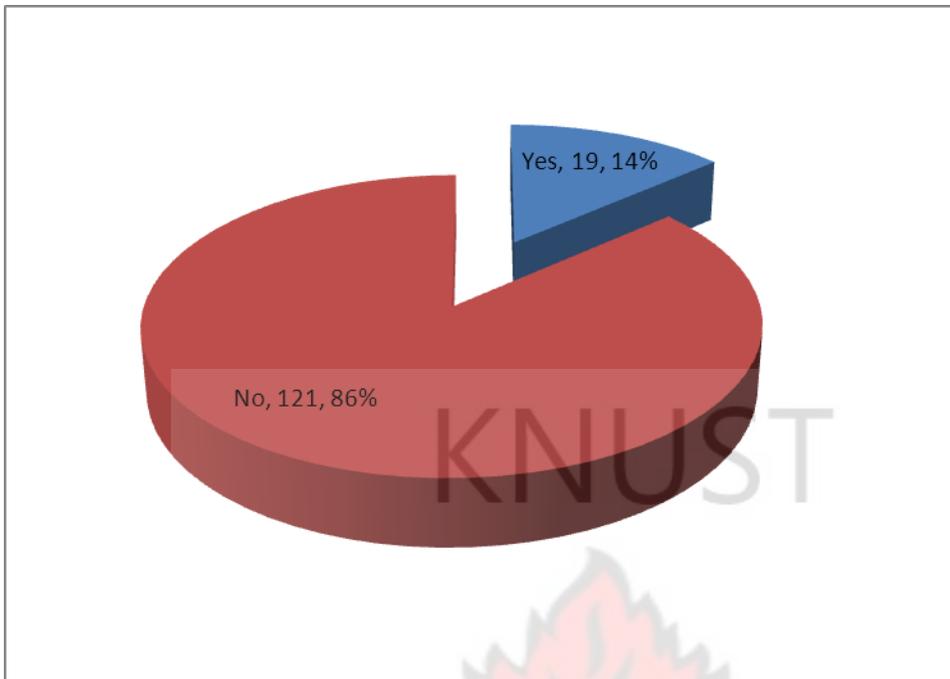
**Table 4.3.1 Have you Received any Training in the Use of ICTs before Joining the Teaching Profession**

Response	Frequency	Percent
Yes	13	9.3
No	127	90.7
Total	140	100.0

Source: Field survey, 2012

It can be seen from table 4.3.1 that as many as 127 (90.7%) of the respondents claimed they did not receive any training in the use of ICTs in teaching back in the days when they were being trained to become professional teachers. The remaining 13 (9.3%) responded in the affirmative. A deduction from the above is that a vast majority of the respondents did not receive any training during their formative days and as a result cannot practise what they have not been taught. This outcome is at complete variance to the study by McCarney and cited in Iddrisu (2009) that staff development is one of the contributing factors to the effective integration of ICT in the classroom.

Respondents were further asked if they have attended any computer training. This question was asked without taking into consideration whether the respondents have had any prior training in the use of ICTs during formative days. Their response is presented in figure 4.3.1



**Figure 4.3.1 Have you attended a computer training before?**

Source: Field survey, 2012

Figure 4.3.1 shows that as many as 121 (86.4%) of the respondents responded in the negative when they were asked whether they have attended a computer training session before. The remaining 19 (13.6%) responded in the affirmative. A deduction from the above is that majority of the respondents have not attended any computer training session before. It therefore means from the above that most of the teachers used in the study did not have any training in basic ICTs use let alone using it in their teaching and learning process.

#### **4.4 Third Objective: To Examine the attitudes of teachers in the use of computers**

The successful integration of computers in educational environments depends, to a great extent, on teachers' and students' attitudes. In trying to answer the objective above the following were looked at. The first thing is to find out from respondents whether they will consent to or go against the statement that I have never used a computer and do not intend to. This was done because according to Ajzen & Fishbein (1980) attitude can be seen as a positive or negative sentiment, or mental state, that is learnt and organized through experience and that exercises a discrete influence on the affective and cognitive responses of an individual toward some other individual, object or event The response to the question have never used a computer and do not intend to is presented in table 4.4.1

**Table 4.4.1 Have Never Used a Computer and do not Intend To**

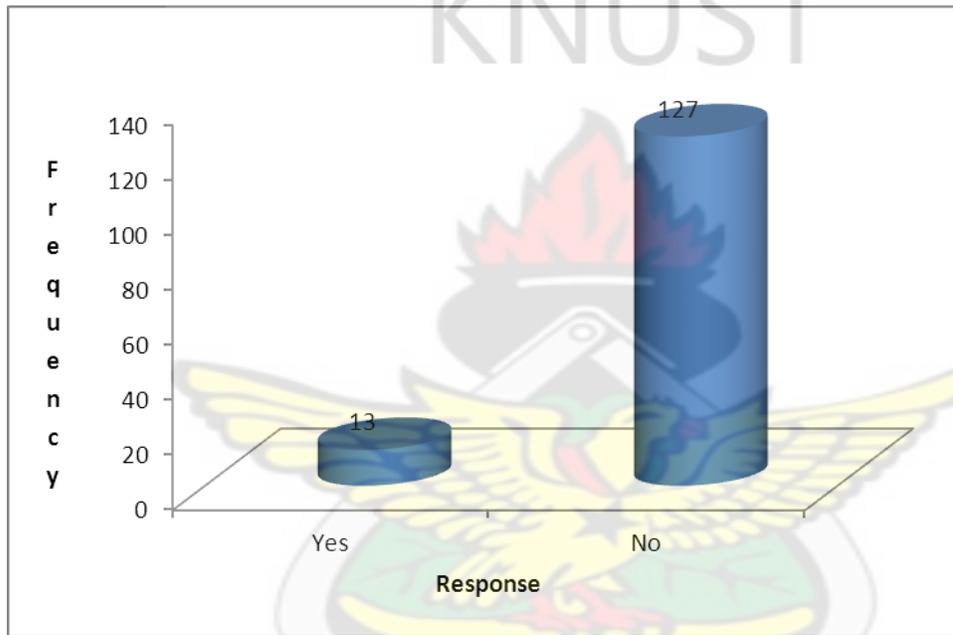
Response	Frequency	Percent
Yes	123	87.9
No	17	12.1
Total	140	100.0

Source: Field survey, 2012

It can be seen from table 4.4.1 that as many as 112 (80.0%) of the respondents responded in the affirmative that, they have never used a computer before and do not intend to use it. The remaining 28 (20.0%) responded in the negative. From the above it can be deduced that majority of the respondents have not used computer before and were not prepared to even learn. This attitude of the respondents is in a bad taste in that it will not motivate them to be abreast of modern or new things and technologies.

When respondents were asked whether they have access to computers in their respective schools they all responded in the affirmative.

According to Smith et al (2000) Computer attitude evaluation usually encompasses statements that examine users' interaction with computer hardware, computer software, other persons relating to computers, and activities that involve computer use. It is against these backdrop that the researcher asked the respondents whether they make good use of the computers at their disposal. Their response is presented in figure 4.4.1



**Figure 4.4.1 Do you use computers in your school?**

Source: Field survey, 2012

It can be seen from figure....that as many as 127 (90.7%) of respondents responded in the negative when they were asked whether they make use of the computers at their disposal. The remaining 13 (9.3%) responded in the affirmative. Once again from the above it can be inferred that majority of the respondents have a negative attitude towards the use of

computers. Respondents were asked where they normally have access to the computers in the school. Their response is presented in table 4.4.2

**Table 4.4.2 where do you use or have access to the computers in the school?**

Response	Frequency	Percent
Computer laboratory	138	98.6
In my office	2	1.4
Total	140	100.0

Source: Field survey, 2012

It can be seen from the table above that as many as 138 (98.6%) of the respondents said the only place where they get access to the computers in their schools is the computer laboratory. It was only two (2) people who mentioned their offices. It can be deduced from the above that the computers in most of the schools used in the study can only be found in their computer laboratories.

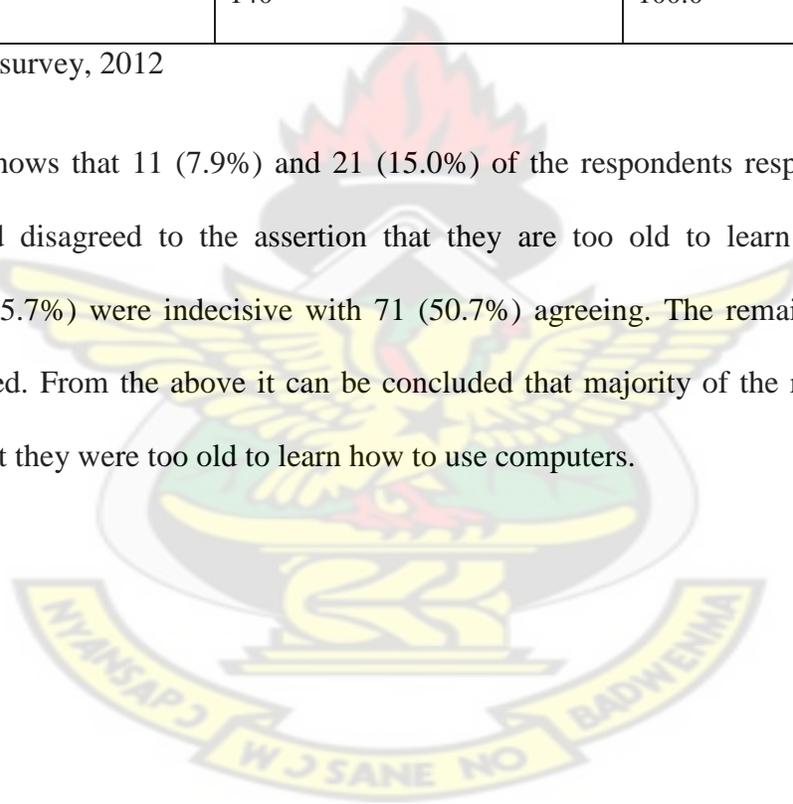
**4.5 Fourth Objective: What are the perceptions of the teachers with regards to the integration of ICT into the learning and teaching process?**

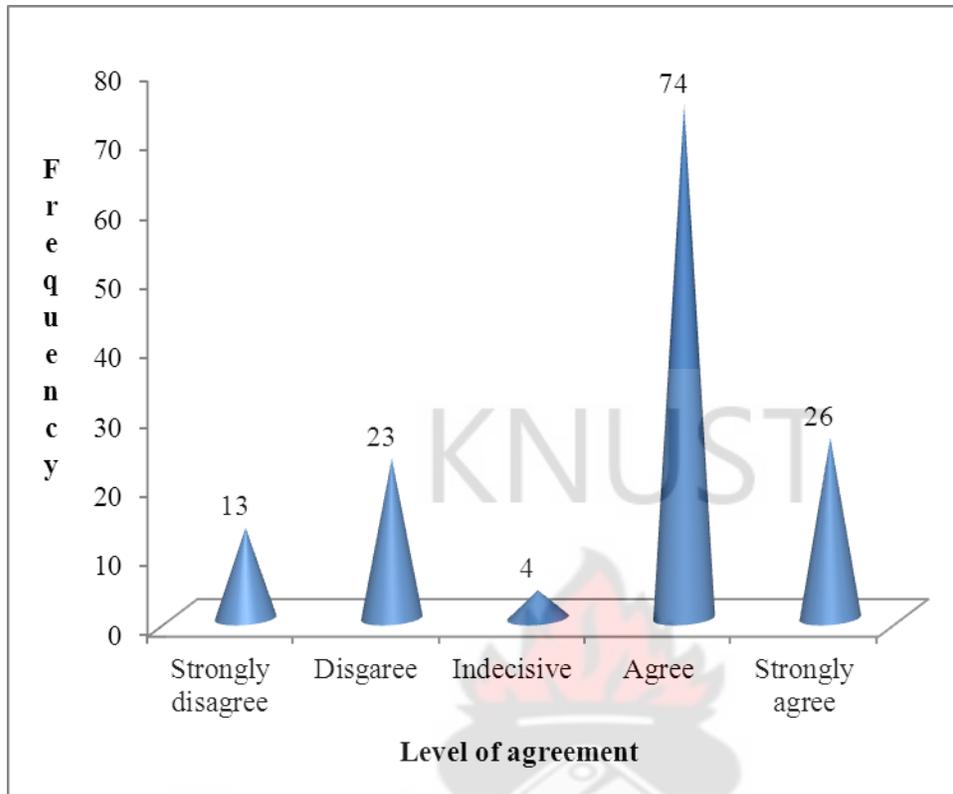
**Table 4.5.1 I am Too Old to Learn How to Use the Computer**

Response	Frequency	Percent
Strongly disagree	11	7.9
Disagree	21	15.0
Indecisive	8	5.7
Agree	71	50.7
Strongly agree	29	20.7
Total	140	100.0

Source: Field survey, 2012

Table 4.5.1 shows that 11 (7.9%) and 21 (15.0%) of the respondents respectively strongly disagreed and disagreed to the assertion that they are too old to learn how to use the computer. 8 (5.7%) were indecisive with 71 (50.7%) agreeing. The remaining 29 (20.7%) strongly agreed. From the above it can be concluded that majority of the respondents were convinced that they were too old to learn how to use computers.





**Figure 4.5.1 Computers are things for the Young People**

Source: Field survey, 2012

Figure 4.5.1 shows that 13 (9.2%) and 23 (16.4%) of the respondents strongly disagreed and disagreed that computers are things for the young people. Four (4) people representing 2.9% were indecisive while 74 (52.9%) agreed. The remaining 26 (18.5%) of them strongly agreed to the assertion that computers are a thing for the younger generation. From the above it can be deduced majority of the respondents were of the view that computers are things or tools meant for the younger generation and not for the older generation.

**Table 4.5.2 I could look stupid if something goes wrong**

Response	Frequency	Percent
Strongly disagree	5	3.6
Disagree	6	4.3
Agree	19	13.6
Strongly agree	110	78.6
Total	140	100.0

Source: Field survey, 2012

It can be seen that 5 (3.6%) and 6 (4.3%) of the respondents respectively strongly disagreed and disagreed that they could look stupid if they are using the ICTs and something goes wrong. 19 (13.6) of them agreed to the statement that they could look stupid if something goes wrong in the course of their usage of the ICTs. As many as 110 (78.6%) of the teachers strongly agreed that they could look stupid in front of their students in the instance where something goes wrong whenever they are using any of the ICT tools. A deduction from the above is that it is because of the fear of being disgraced in front of their students that some of the teachers feel reluctant in the use of the ICTs. Finally respondent were asked to specify whether the statement 'ICT should be a standalone subject and not used in other lessons'. Their response is presented in table 4.5.3.

**Table 4.5.3 ICT Should be a Standalone Subject and Not Used In Other Classes**

Response	Frequency	Percent
True	117	83.6
False	23	16.4
Total	140	100.0

Source: Field survey, 2012

Table 4.5.3 reports that as many as 117 (83.5%) of the respondents responded in the affirmative when they were asked whether ICT should be a standalone subject and not used in other lessons. The remaining 23 (16.4%) held a different view that ICT should not be taught as a course on its own but rather should be used in other subjects as that is the era or age in which we find ourselves today. An inference from the above is that majority of the teachers were of the conviction that ICT should be a subject that should be taught on its own and not integrated into other subjects. This outcome is not surprising in that majority of the respondents are not computer literate and could therefore not use in the teaching. The researcher is of the opinion that may be, the teachers considering the fact that they have no knowledge and competence in the use of the ICTs might be scared that the integration of the use ICTs in the learning and teaching process, they might lose their jobs unless they go for training.

**4.6 Fifth Objective: To assess the extent of availability of ICT tools or equipments in the schools**

In trying to address this objective, the researcher asked the respondents whether they have sufficient computers together with its resources such as printers, software etc in their schools.

Their response is presented in table 4.6.1

**Table 4.6.1 Do you have sufficient Computers and Resources?**

Response	Frequency	Percent
Yes	3	2.1
No	137	97.9
Total	140	100.0

Source: Field survey, 2012

It can be seen from table 4.6.1 above that as many as 137 (97.9) of respondents responded in the negative while the remaining 3 (2.1%) responded in the positive. From the above, it is evidently clear that all the schools used in the study do not have enough computers for studies. In the researcher's interaction with the ICT tutor of the Akro Senior Secondary and Technical School, it came out that with a total students population of 1780, there are only twenty eight (28) computers in their laboratory. The situations at the Akuse Methodist Senior High and Manya Krobo Senior Schools were not so different from that of Akro Senior Secondary and Technical School just that they have computers numbering 35 – 43. The situation was different at the Krobo Girls Senior High School with a little of over fifty (50) computers in all.

The personal observation at all the four (4) schools revealed that most of the computers in the various schools laboratories were really old. It was also observed that some of the computers had also broken down. The researcher was told by the ICT teachers and instructors that the broken down machines have been there for a while because no funds have been allocated to send them for repairs and in some cases buy some parts that have broken down.

Respondents were asked whether they even get the chance or are permit to use the laboratory and for how many hours for those who want to use them. Their response is presented in table 4.6.2

**Table 4.6.2 How Many Hours a Week is it Permissible For You to Use the Computers in your School?**

Response	Frequency	Percent
Less than an hour	129	92.1
1 – 3 hours	11	7.9
Total	140	100.0

Source: Field survey, 2012

Table 4.6.2 reports that as many as 129 (92.1%) of the respondents claimed they can only use or have access to the laboratory in less than an hour in a week. The remaining 11 (7.9%) said they get the opportunity to use the laboratory 1 – 3 hours in a week. This outcome is not surprising considering the fact that there are limited machines in the various school laboratories coupled with the huge numbers ranging from 1500 – 1780. The researcher in his interaction with the various ICT tutors asked them how they are able to manage the student’s population with the computers available. The tutors in their response said their schools timetables were drawn in such as way that the students come to the laboratory according to their classes. The tutors told the researcher that students with larger class numbers are made to pair both the chairs and computers. This the researcher conceded is a recipe for disaster since majority of the students will not get access to the computers and would finished school half baked in the use of computers.

It was also revealed that the use of the internet which can provide a nice platform to enhance learning and teaching process for both teachers and students were non existence in all four schools used for the study.

# KNUST

## CHAPTER FIVE

### SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

#### 5.0 INTRODUCTION

This chapter is made up the summary of findings of the study, the conclusions that were drawn and the recommendation thereof.

#### 5.1 SUMMARY OF FINDINGS

The study came with the following findings:

In relation to the factors that inhibit teachers from using ICTs in their lessons in the classroom, it was found out that there were so many factors. Below are the main factors that were identified:

- Lack of knowledge about the use of computers
- Fear of using the computers
- Lack of confidence in the usage of the computers
- Lack of training in the use of computers and other ICTs

- Little previous experience
- The age
- Lack of time to use the computers

Among the least factors that were identified are:

- Computer equipments being unreliable
- Computers not accessible
- Management not being concern about whether computers are used to teach or not

In examining whether the teachers have gotten the adequate training and qualifications in the use of ICTs the following findings were made:

Majority of the respondents did not have any training in the use of ICTs before they joined the teaching profession

Secondly the study revealed that majority of the respondents have not attended any computer training session before either for upgrading or as a refresher course

With regards to attitudes of the teachers in the use of computers the following findings were made:

Majority of the respondents who claimed they have not used computers before were not prepared to even learn how to use it.

Secondly it came out that although there are computers in the various schools, the teachers cannot use them and become conversant with them, and even almost of them do not use them for a practice let alone used it in their teachings.

The following findings were made on the perceptions of the teachers with regards to the integration of ICT into the learning and teaching process.

Majority of the computers were of the view that they were too old to be introduced to the usage of ICTs in the teachings. They concluded that the use of computers in general are meant for the younger generation and not for them the elderly ones.

Respondents had the perception that their students will laugh at them if they make a mistake as a result of this they are not willing to use the computers.

Again respondents were convinced that the integration of the use of ICT should not be made compulsory for all the subjects being taught and that it should be a standalone course or subject that is taught on its own.

Regards to the assessment of the availability of ICT tools and equipments for effective teaching and learning the following findings were;

Almost all of the schools used in the study do not have enough computers considering the fact that all the schools have student populations well over thousand. The study also revealed that there were so many broken down computers in all the schools visited and that the lack of funds were preventing them from being repaired. Furthermore it was revealed that most of the computer laboratories in almost all the schools were not properly ventilated and were not spacious enough coupled with poor lightening system.

Another findings was that due to the fact that the computers were not enough for the students to use, the teachers who were willing to use the computers for their personal practise could

hardly get the chance as the computers in the laboratories are always under intense pressure for use by the students as it has been designed on the schools timetable.

## 5.2 Conclusions

The followings conclusions were drawn based on the objectives that were set;

Firstly with respect to the factors that were inhibiting the integration of the use of ICTs in the classrooms, it was found out that although there were more factors some three (3) major ones were identified. These factors are the lack of training, lack of knowledge about computers and the lack of previous or no experience in the use of computers. Other factors that also dominated the responses of respondents were the old age of teachers, the fear of using the machines either due to the lack of knowledge of the use of computers or lack of training and finally the lack of confidence.

With regards to whether the teachers have gotten enough training and qualification in the use of ICTs it can be concluded that majority of them do not have the requisite training and knowledge in the use of ICTs.

It can be concluded that most of the respondents do not have positive attitudes towards the use of computers. This conclusion was arrived at because despite the fact that respondents had computers at their disposal they are not prepared to use and do not have the intention of even using it. By extension it can be inferred that even if there were to be internet facilities which will provide a wide database of information respondents will still not use it.

On the perceptions of the teachers with regards to the integration of ICT into the learning and teaching process it can be concluded that older teachers are of the opinion that the use of computers is a preserve for the younger generations and not for them the elderly ones. With this perception they contended that the use of ICTs in education should be designed and taught on its own as it is currently being done so that they can still have a job to do and not be compelled to rush and go and undertake a course in the use of ICT in education.

Finally, on the assessment of the extent of availability of ICTs equipment such as computers in the various schools, it can be concluded that most of the schools do not have enough computers to be used by the students. Secondly it can also be concluded that all the schools do not have laboratories that befits Senior High School in this technological age as most of the schools have Pentium 2 and 3 occupying their laboratories. Some of the school did not even have the physical infrastructure to be used as a modern laboratory.

### **5.3 RECOMMENDATIONS**

It is recommended that ICT infrastructures should be provided to the Senior High Schools for effective teaching and learning process since it is the basic stage of equipping the youth with the necessary skills and knowledge for national development.

Teachers should be given the necessary training in ICT usage so that they become familiar with modern pedagogy of imparting knowledge and skills, and possible become part of curriculum structure for their professional training.

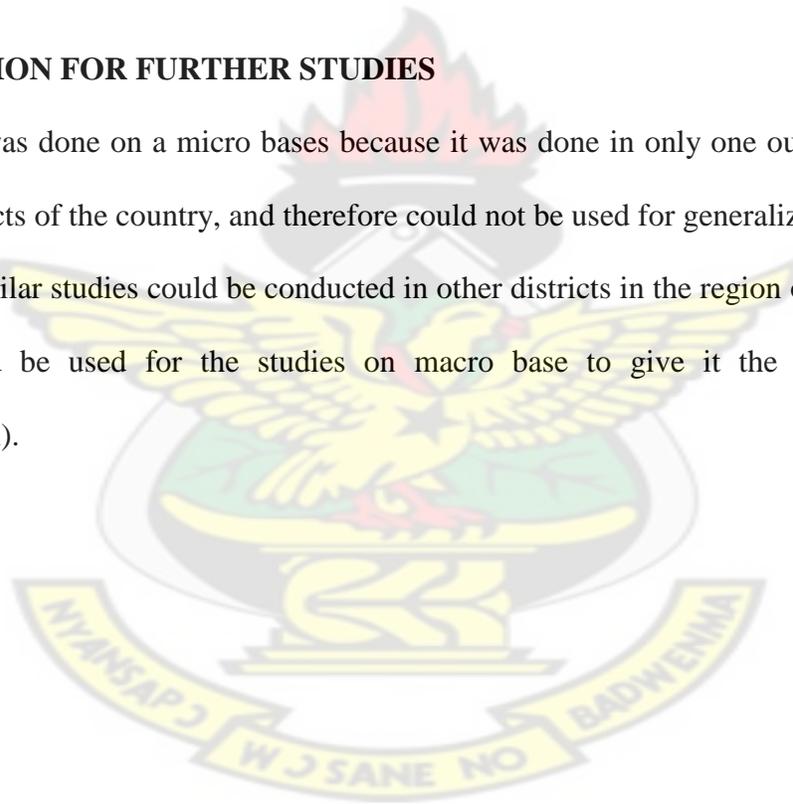
Again modern ICT laboratories should be built for our Senior High Schools to accommodate enough students at time looking at their population size for effective and efficient teaching and learning environment.

Also it is recommended that Policy Formulators should be clear with the ICT policy and its direction of implementation with the necessary guide lines so that the implementation agents like Ghana Education Service, Ministry of Finance and the likes can help to make a reality since competency in ICT is the modern way of acquiring critical skills and knowledge effective and efficient economic development

#### **5.4 DIRECTION FOR FURTHER STUDIES**

The studies was done on a micro bases because it was done in only one out of hundred and seventy districts of the country, and therefore could not be used for generalization.

However, similar studies could be conducted in other districts in the region or a whole region or two could be used for the studies on macro base to give it the ‘bird view’ (for generalization).



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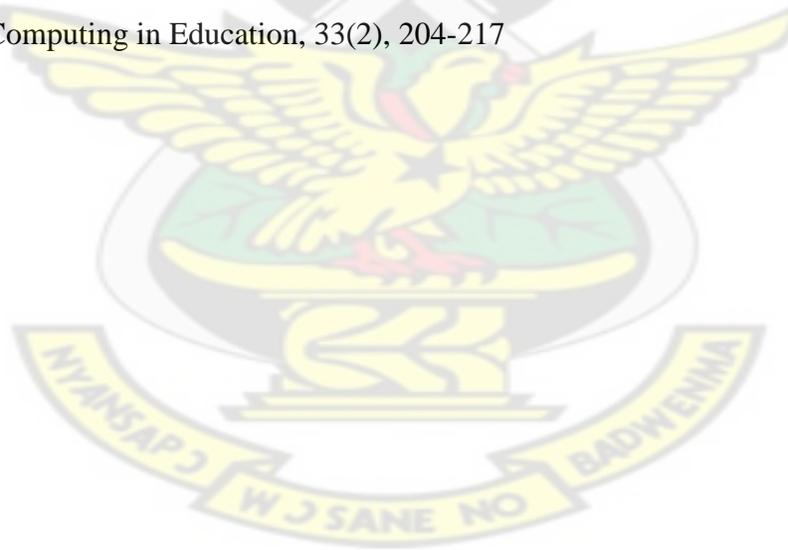
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**APPENDIX**

**INSTITUTE OF DISTANCE LEARNING**

**CEMBA PROGRAMME**

**KNUST, KUMASI**

**A QUESTIONNAIRE ON ASSESSMENT OF ICT SITUATION IN SENIOR HIGH  
SCHOOLS, A CASE STUDY IN LOWER MANYA KROBO DISTRICT**

**AS A RESEARCH TOPIC IN PARTIAL FULFILMENT OF THE ACADEMIC**

I am Adebi-Caesar, a second year student from IDL, Kumasi pursuing Master's Programme in Business Administration and need your response to the questionnaire. I therefore promise that it is for Academic purpose and hence any information provided will be private and strictly confidential.

**PERSONAL DATA**

1. Gender: Male [ ] Female [ ]
2. Age : Under 25 [ ] 26 – 30 [ ] 31 – 35 [ ] 36 – 40 [ ]  
41 – 45 [ ] 46 – 50 [ ] 51 – 55 [ ] 55  
– 60 [ ]
3. Highest educational level attained  
HND [ ] Post Diploma [ ] 1<sup>st</sup> Degree [ ] Masters [ ]
4. Name of school  
Krobo Girls [ ] Makrosec [ ] Akuse Methodist [ ]  
Akro Sec Tech [ ]
5. How long have you been teaching? 0 – 1 yrs [ ] 2 – 5 yrs [ ]  
6 – 10 yrs [ ] 11 – 15 yrs [ ] 15 & above [ ]

6. Main field of study

Science [ ]      Business [ ]      General Arts [ ]      ICT [ ]

Home Economics [ ]      Visual Arts [ ]      Agric Science [ ]

7. What subject do you teach? .....

8. How would you rate your experience with computers ( Tick all that apply)

a) Have never used a computer and do not intend to [ ]

b) I have never used a computer but would like to learn [ ]

c) I use applications such as word processing, spreadsheets, the internet etc[ ]

d) I use computers extensively in my teaching [ ]

9. Have you attended a computer training session before?

Yes [ ]      No [ ]

10. What motivated you the most to undertake the training ( Tick all that apply)

a) To use ICT in class [ ]

b) Personal interest [ ]

c) Required to do so [ ]

d) Increase career prospects [ ]

e) Other (please specify) [ ]

11. Do you have any professional ICT qualification

Yes [ ]      No [ ]

12. Do you have a personal computer

Yes [ ]      No [ ]

13. How many years have you been using computers?

Less than a year [  ]      1 – 3 yrs [  ]      4 – 6 yrs [  ]      7 – 9 yrs [  ]  
]      10 yrs & above [  ]

14. Do you have access to computers in the school?

Yes [  ]      No [  ]

15. Do you use it

Yes [  ]      No [  ]

16. Do you have access to internet in the school?

Yes [  ]      No [  ]

17. Where do you use or have access to the computer in the school?

Computer lab [  ]      Staff common room [  ]      In my office [  ]      Classroom [  ]  
]      Other (please specify)

18. How many hours per week is it permissible for you or get the chance to use the computers in the school?

Less than an hour [  ]      1 – 3 hours [  ]      4 – 6 hours [  ]      7  
– 9 hrs [  ]      Above 10 hrs [  ]

19. Did you receive any training in ICT before you joined the teaching profession?

Yes [  ]      No [  ]

20. Do you use computers in your teaching?

Yes [  ]      No [  ]

21. What factors affect your non – use of computers in the classroom? (Tick all that apply)

a) Lack of time to use computers [  ]

b) Lack of knowledge about computers [  ]

- c) Lack of confidence [ ]
- d) Fear [ ]
- e) Lack of training [ ]
- f) My age [ ]
- g) Little previous experience [ ]
- h) Not sure how useful computers are [ ]
- i) Computers not accessible [ ]
- j) Management don't care if I use computers or not [ ]
- k) Computer equipment is unreliable [ ]
- l) No support if something goes wrong with computer [ ]

22. Please use the likert scale below to indicate your level of agree or disagreement with the following statements

**1 = Strongly disagree                      2 = Disagree                      3 = Indecisive                      4 = Agree**  
**5 = Strongly agree**

- a) I do not have enough time to use computers in class [ ]
- b) I could look stupid if something goes wrong [ ]
- c) I feel that I need more training in computers [ ]
- d) I know how to work with a computer but have no idea how to integrate it into my teaching [ ]
- e) I am too old to learn how to use a computer [ ]
- f) I do not have enough experience in using computers [ ]
- g) Computers are a thing for young people [ ]

- h) I am encouraged to make use of computers in my teaching [ ]
- i) There is never any help if something goes wrong [ ]
- j) The equipment available to me at work is unreliable [ ]

23. Please indicate by writing **T** for **TRUE** or **F** for **FALSE** for the following statements

- a) ICT should be a standalone subject and not used in other classes [ ]
- b) I have the necessary skills to use the computer for teaching my subject [ ]
- c) I avoid using computers in my classroom [ ]
- d) There are sufficient computer resources (printers, software, etc.) [ ]
- e) There are enough professional development/training opportunities in ICT [ ]
- f) There is effective access to the Internet [ ]
- g) There is good quality software available to me [ ]
- h) There is clear support from Headmasters (s)/Clear school based ICT plan
- i) There is support from other teachers for me to use ICT [ ]
- j) There is reliable technical support if something goes wrong [ ]
- k) I have adequate time to plan for technology use in my class [ ]

24. Would you welcome an in – house training to help you develop your ICT skills

Yes [ ]                      No [ ]