UNIVERSITY OF EDUCATION, WINNEBA

CHALLENGES OF INTEGRATING ICT IN TEACHING AND LEARNING IN THREE SELECTED SENIOR HIGH SCHOOLS IN PRANG DISTRICT, BONO EAST REGION, GHANA.

PATRICIA AWINYAM ATAMBEOGO

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PATRICIA AWINYAM ATAMBEOGO
190014332

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DECLARATION

STUDENT'S DECLARATION

I, Patricia Awinyam Atambeogo declare that this dissertation, with the exclusion of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted in part or whole, for another degree elsewhere.

Signature: ……..

Date: …….

SUPERVISOR'S DECLARATION

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

Dr Paul Kobina Effrim (Supervisor)

Signature: .....

Date:.....

DEDICATION

This project is dedicated to my children Pamela Win-nongma Asinvim,, Gadiel Awinpange Asinvim and my loving husband Gabriel Asinvim.

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To every other person who helped in diverse ways for me to complete this dissertation, my prayer is that the Good Lord we serve should fill your cup to the fullest.

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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 author of this study therefore, unravelled the challenges of ICT integration in selected Senior High Schools in the Prang District, Bono East Region. Positivist paradigm was adopted for the study. Cross-sectional survey design was employed. The study population comprised all SHS teachers in the Prang District of Bono East Region of Ghana. The target population consists all public SHS teachers in the Prang District of Bono East Region of Ghana whilst the accessible population consisted all teachers in Abeaseman Community Day SHS, Prang SHS and Yeji SHS. Multistage sampling techniques were employed to select one hundred and seventeen teachers for the study. Structured questionnaire was the instrument used in gathering data. Cronbach alpha formula was employed to ascertain the reliability of the instrument. Data were analyzed using SPSS by using frequency charts, frequency counts, and simple percentages. It was found that barriers hindering the integration of ICT in the schools were lack of teacher training and inadequate ICT facilities. It was also found that the teachers‟ are capable of performing basic tasks using the computer and also exhibit positive attitudes toward it but the lack of ICT facilities was their major problem. It is suggested that ICT infrastructure should be provided to the Senior High Schools in Prang District 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. In addition, within Senior High Schools in Prang District should be given the necessary training in ICT tools usage so that they become familiar with contemporary pedagogy of imparting knowledge and skills, and possibly become part of curriculum structure for their professional training.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The rapid development of computer and communication technology will have an impact on teachers‟ use of Information and Communication Technology (ICT). ICT refers to the hardware, software, networks and media for the collection, storage, processing, transmission, and presentation of information. It also encompasses the delivering of services (Evoh, 2007). ICT is commonly defined in education as a diverse set of technological tools and resources used to communicate, create, disseminate, store, and manage information (Anderson & Dexter, 2002). These technologies include computers, the internet, broadcasting technologies (Radio and Television), and (Mobile) telephony. Basically, ICT is a tool. It can be hardware (such as Computers, Digital cameras), software (such excel, discussion forum) or both.

Perron and Taylor (2010) explained ICTs in the context of its usage by noting that ICT is used to convey, manipulate, and store data by electronic means. This include but not limited e-mail, SMS text messaging, video chat such as skype and online social media like Facebook. It further includes all the different computing devices such as laptop, desktops and smart phones that carry out a wide range of communication and information functions. All these electronic tools constitute the Information and communication technologies. Digital technology is often presented as the driving force of the transformation of education and carries positive overtones that information and communication technology (ICT) will contribute to this transformation. Along with the rapid development of ICT, this has led to computers becoming part of daily life and has pushed ICT and computers into classrooms at all educational levels during the last three decades. The motives and arguments in favor

of implementing ICT come from many directions; both advocates inside schools and, more often, from the outside on the part of developers of software and hardware, and government (Cuban, 2002; Selwyn & Fitz, 2001).

Education advances with the help of technology, and it becomes very clear that students‟ learning and can support their engagement with collaborative learning (Goyal, Purohit, & Bhaga, 2011). For example, students can now access the internet from their home computers, which have the potential to reduce the barriers of classroom instruction and provide teachers with many new opportunities for instruction. It is likely that these opportunities will require teachers to change their classroom practices. Furthermore, such pressures may act teachers‟ attitudes toward technology and their perceptions of its usefulness in the classroom. Therefore, it is important to examine what factors determine teachers‟ use of ICT in their teaching. (Seng, 2015). Over the past decade a great deal of literature has been produced on the use of Information and Communication Technology (ICT) in schools (Perron, 2010; Summak & Samancioglu, 2011).

Goyal et al. (2011) study investigated the use of Science courseware in the teaching and learning process in a classroom and how the courseware could increase interaction in the classroom and how these interactions could enhance knowledge sharing process between teachers-students and students-students. Their results revealed that success in knowledge sharing depended on the attitude between the students and teachers. Positive attitudes such as willingness to ask questions, sharing opinions and giving explanation helps to the knowledge sharing process and concluded that classroom interactions could be improved if teachers are innovative

and creative enough to combine their experience, their teaching creativity with the teaching courseware to create a more student-centered classroom.

The usage of a varied ICT services and products clearly suggests that ICT infrastructure goes beyond computers and the internet or even telecommunication. In the education sector for instance has witness a significant deployment of ICT in teaching and learning (Perron, 2010). Nevertheless, several developing countries particularly in Sub-Saharan Africa with rural set up still have schools struggling to get even the basic ICT infrastructure. Key among them includes computers (desktops, laptops), photocopy machines, data projectors, interactive whiteboards, Word Processing, Internet, digital cameras, television (TVs), CD/DVD Players, radios, and tape recorders.

Information and communication technologies (ICT) have changed the environment in which students develop and influenced the way they learn in schools. The importance of information and communication technology (ICT) in education is widely recognised in the policy documents of many countries. According John and Sutherland (2004), the benefits of students 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. Potosky and Bobko (2001) pointed that towards the end of 1980"s, the term computers was replaced by IT (Information Communication Technology). This signified as shift of focus from computing technology to the computers enhancement capability to store and retrieve information. Ojera and Yambo (2014) contended that communication in education is of paramount importance to allow the flow of information.

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 Iddrisu (2009), 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 lifelong and for working in today's job market.

In recent years, Ghana has embarked on a computer awareness campaign in senior high schools due to the belief that ICTs are changing our way of life. The rationale for introducing ICT as a core subject in the Junior High school computer awareness syllabus partly reads: Computers are becoming more and more common in all aspects of our life. They are simple tools that help people to be more productive. More and more jobs require applicants to be familiar with computers (John & Sutherland, 2004).

As computers have become more prevalent in everyday life and in the workplace. Ghana, like other countries, has recognized the need to increase the technological background of its people to better compete in world‟s markets. Computer technology, when used in education, encourages the development of problem solving, analytical and research skills. As a result, the government and other institutions have invested huge sums of money in procurements of computers and the establishment of computer

laboratories in most SHSs, but it is still unclear whether these computers are being used effectively for their intended purpose.

The use of Information and Communication Technology (ICT) has penetrated every facet of life today and for this reason, it is widely embraced in the society today. As such, our success as individuals or as a nation depends on our ability to understand the use of ICT tools. No one can afford to ignore the importance of ICT tools in one‟s everyday life today.

The way ICT has revolutionized the way we do things today has led to the investment of millions of Ghanaian Cedis (GH¢) at both government and school levels for the integration of computer technology into the curriculum in pre-tertiary education (Asiedu-Akrofi, 2002). In the early 90‟s most of the moneys were spent on purchasing computers and software through private Information Technology (IT) companies, Parent Teacher Association (PTA), Old Boys/Girls Associations and Non-Governmental Organizations (NGOs). 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. Once again, it became 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 (SHS) students (Asiedu-Akrofi, 2002).

ICT is the emergence of tools that are used in the automatic acquisition, analysis, storage, retrieval, manipulation, management, control, movement, display, transmission, reception, and interchange of quantitative and qualitative data (Boritz, 2000). Now the question is how to harness the power of ICT tools to make education more relevant, responsible, and effective for SHS setting and lifelong learning. To compete successfully in a competitive global economic environment, a highly skilled

and educated workforce with aptitude and skills in the application of ICT tools is very essential. This makes knowledge and the use of ICT central to education in the 21st century (Wolff & Mackinnon, 2002).

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 21st Century (National Policy on ICT in Schools Education) (Dankwa,1997). 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 (Dankwa, 1997).

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 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 (Asiedu-Akrofi, 2002).

Many teachers have acquired the requisite knowledge in ICT but lack the pedagogical way of teaching ICT and integrating ICT in their lesson delivery. Tchombe (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 academically. They asserted that ICT if used appropriately could stimulate the development of higher cognitive skills, deepen learning, and contribute to the acquisition of skills needed for learning lifelong and for working in today's job market.

Emergence of technologies of learning, conversation media and smart interface, Open Educational Resources (or Massively Open Online Courses) and increased awareness of new generation have been demanding traditional education and learning systems to be more open, flexible, and customized to what students want to expect (Wolff & Mackinnon, 2002). Using ICT in education has been widely accepted as an effective way of challenging such changes attributed to technological advances, societal paradigm shift, and internationalization. It is based on the strong belief that the potential of ICT would bring positive impacts to teaching and learning by providing students and teachers with flexibility, accessibility, more opportunities for participation and collaboration, and more outcomes (Wolff & Mackinnon, 2002).

1.2 Statement of the Problem

Educational systems around the world are under increasing pressure to use ICT to teach students the knowledge and skills they need in the 21st century and beyond. There has been an exponential growth in the use of information and communication technology (ICT) in education in developed countries (Allan, Yuen, & Wong, 2003). While it is an established fact that ICTs are pervasive in developed countries their use has been and remains in a state of fluidity and their integration of the practical component into the school curriculum across different educational levels remains significantly underdeveloped in developing countries (Isaacs, 2007).

A report made by the National Institute of Multimedia Education in Ghana proved that an increase in student exposure to educational ICT through curriculum integration has a significant and positive impact on student achievement, especially in terms of „knowledge, comprehension, practical skills, and presentation skills" in subject areas such as Mathematics, Science, and Social Studies (Asare, 2015). Teachers are expected to be more professional by developing their competences in using technology in the teaching practices. However, some research evidence indicates that the integration of ICT in the classrooms is problematic since most ICT reform efforts have failed because teachers" beliefs, skills and attitudes (John & Sutherland, 2004).

Asiedu-Akrofi (2002) posited that since the introduction of formal education in Ghana, educational provisions have been skewed in favor of those in the urban communities as there have been inequitable distribution of educational resources and services. Dankwa (1997) claimed that the provision of ICT to Senior High Schools (SHS) is skewed in favour of the first class or category „A" schools in the urban areas putting SHS who do not belong to this category at a disadvantage.

Osei (2010) supported by lamenting that in Ghana, most 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. Osei (2010) further pointed that more often than not, these schools in the rural areas are faced with many problems such as the lack of qualified teachers, inadequate infrastructure, and poor implementation of government policies etc., putting stakeholders in those rural areas are heavily dependent on teachers of other field of study with a little knowledge to remedy the situation or hire the services of people in their communities with a fair knowledge to assist their students. Since these people are not professional teachers and fully baked professionals in IT, makes it evident that these personnel impart knowledge of the use of the new technology to students but their low competency levels eventually affect students from benefiting from the use of the new technology (Osei, 2010).

Senior High Schools in the Prang District of the Bono East Region are not exempted from these problems because the researcher had observed these incidences in most of the schools. Among the most prevalent factors are inadequate teaching and learning materials, qualified teachers, and ICT labs. Despite the benefits teachers and students gain from the use of ICT, and the aspirations and efforts government has put in place to make ICTs an integral part in the curriculum, there are numerous challenges in most SHS within the country. This study therefore, seeks to examine the challenges of ICT integration in the teaching and learning of selected secondary schools in the Prang District of Bono East Region of Ghana.

1.3 Purpose of the Study

The study seeks to unravel the challenges of ICT integration in selected Senior High Schools in the Prang District, Bono East Region.

1.4 Research Objectives

The objectives of the study were to:

1. find out the barriers hindering the integration of ICT in the selected SHS in Bono East Region.
2. ascertain the training and qualification of ICT teachers in the selected SHS in Bono East Region in the use of ICTs.
3. examine the attitudes of teachers in the selected SHS in Bono East Region in the use of computers

1.5 Research Questions

The study is guided by following research questions

1. What barriers hinder the integration of ICT in the selected SHS in Bono East Region?
2. What are the training and qualifications of ICT teachers in the selected SHS in Bono East Region in the use of ICTs?
3. What are the attitudes of teachers in the selected SHS in Bono East Region in the use of computers?

1.6 Significance of the Study

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. 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 minimized, if not eliminated from the teaching and learning process. Finally, the findings of the study shall add to literature in relation to the obstacles preventing the successful implementation of ICT integration in the educational sector.

1.7 Delimitations of the Study

Creswell (2009) defines delimitation as "how the study will be narrowed in scope" (p. 106). It has to do with the scope of the research. Geographically, the study was confined to selected public selected SHS in Bono East Region. Conceptually the study focused on the challenges of ICT integration in selected Senior High Schools in the Prang District, Bono East Region. Hence, the findings of this study will be limited to public institutions in this District only. It is, however, believed that the views expressed by the teachers will not substantially and significantly differ from that of the larger population of teachers in public basic schools in Ghana because of homogeneity of the population.

1.8 Limitations of the Study

The researcher could have extended the study to all SHS in the metropolis but time and financial constraints compelled the researcher to concentrate on only schools. Absenteeism on part of the study respondents compelled the researcher to postpone certain days during the collection of data.

1.9 Organisation of the Study

This study was organized into five main chapters. Chapter one consist of the introductory part which deal with the background to the study, statement of the

problem, research objectives, research questions, significance of the study, delimitations and limitations of the study, operational definitions, and the structure of the study. Chapter two considers the review of related literature about the problem under investigation. Chapter three presented the methods and or procedures that were employed to gather data for the study. It focused on the research paradigm, its approach and its design, the study population, sample and sampling techniques, research instruments, pilot testing, the validity and reliability of the instruments, data collection procedure, data analysis procedure and ethical issues. Chapter four emphasize on the presentation of results and discussion based on the data obtained. Lastly, chapter five focus on the summary of the study, conclusions, recommendations, and suggestions for further studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter deals with the related literature related to the study. It considers the following strands:

1. Barriers hindering ICT integration in schools
2. Teachers training and qualification and ICT use
3. Attitudes of teachers toward ICT use

2.2 Barriers Hindering ICT Integration in Schools

Akbaba-Altun (2006) on factors preventing the integration of ICT into the teaching process, respondents identified the following factors which were categorized into two: school based (internal) and teachers‟-based factors. Under school-based factors respondents listed factors: lack of commitment for implementation of ICT integration into the teaching and learning process, lack of ICT facilities in school, and unclear government policy on integration of ICT in secondary schools. Under teachers‟ and students‟ factors the following factors were listed: computer experience, teachers‟ attitude/ perception towards the use of ICT, teachers‟ knowledge and skills about ICT, low motivation, and lack of confidence in using new technologies in teaching, and limited access to ICT facilities.

The availability of computer equipment per say does not in itself guarantees ICT integration in education. Granger (2002) posited that successful implementation is a complex process, determined by pedagogical values, attitudes, curricular needs and physical infrastructures. Access to ICT infrastructure and resources in schools is a necessary condition to the integration of ICT in education (Plomp, 2009). Effective

adoption and integration of ICT into teaching in schools depends mainly on the availability and 25 accessibility of ICT resources such as hardware, software, etc. A study by Yildrim (2007) found that access to technological resources is one of the effective ways to teachers‟ pedagogical use of ICT in teaching.

Becta (2004) agreed that if there is a lack of technical support available in a school, then it is likely that technical maintenance will not be carried out regularly, resulting in a higher risk of technical breakdowns. Jones (2004) reported that the breakdown of a computer causes interruptions and if there is lack of technical assistance, then it is likely that the regular repairs of the computer will not be carried out resulting in teachers not using computers in teaching. The effect is that teachers will be discouraged from using computers because of fear of equipment failure since no one would give them technical support in case there is technical problem. 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 several ways, demanding that teachers reflect on new pedagogy and not the traditional methodologies. The educational effectiveness of ICTs depends on how they are used and for what purpose, like any other educational tool or mode of education delivery, ICTs do not work for everyone, everywhere in the same way. In the different part of the world, the use of ICTs is different depending on the affordability, availability, and access to technology (Mbodile, 2013).

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. 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 intangible entities such as lack of knowledge, confidence, or time.

2.2.1 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.

Self-efficacy is defined as a belief in one"s own abilities to perform an action or activity necessary to achieve a goal or task (Wong, Teo, & Russo, 2012). Self-efficacy can be considered as the confidence that an individual has in one"s ability to do things that one strives to do. Prior studies (Brun & Hinostroza, 2014; Liaw, Huang, & Chen, 2007; Player-Koro, 2012; Yuen & Ma, 2008) found that teachers" self-efficacy or confidence relate to their use of ICT in teaching. Moreover, in a study conducted in Turkey, Tezci (2011) found that teachers" self-confidence levels in the use of ICT were moderate. He posited that teachers" confidence levels regarding ICT integration in education should be high for them to be motivated to use ICT, which in turn would result in successful implementation of ICT in classrooms. Finally, Hassan, Rosnaini, and Su (2016) conducted a study on teachers" acceptance and integration of ICT in classroom. A total of four teachers were interviewed. The results showed that teachers" confidence relates to their ICT usage. The researchers concluded that when

a teacher is self-confident, he or she would possess positive attitudes toward ICT, and would be interested to integrate ICT into teaching.

It has been observed that the teachers were lacking in the knowledge and skills; and they were reluctant about the changes and incorporation of extra learning associated with computers into their teaching practices. Hence there is a problem of teachers‟ acceptance and adoption of ICT. Accordingly, teachers who do not use computers in classrooms claim that “lack of skills” is a constraining factor preventing them from using ICT. It was also found that teachers‟ lack of knowledge and skills in teaching was a serious obstacle of using ICT in technical and higher educational institutions. Newhouse found that many teachers lacked the knowledge and skills to use computers and were not eager about the changes and integration of supplementary learning. (Brun & Hinostroza, 2014)

Although there exists a consensus on the existence of various kinds of factors leading to this phenomenon. The teachers‟ attitude towards ICT is the main factor affecting the infusion of ICT into instructional practice since; on the one hand, the teacher is the direct implementer of ICT and must play an important role in combining ICT and education. If teachers‟ attitude towards ICT is negative, or put in other words, if teachers refuse to use ICT in classroom teaching, the integration of ICT in classroom teaching will come to naught, i.e., simple introducing of ICT does not guarantee its integration into the educational setting; on the other hand, teachers‟ attitudes towards ICT will, to a considerable extent, influence students‟ attitudes towards ICT (Wang, 2017)

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 Becta‟s 2004 report, teachers who admitted to a lack of confidence ascribe this lack of confidence primarily to fear. According to several reports 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 realize, 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.

2.2.2 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 Becta‟s 2004 report, teachers who admitted to a lack of confidence ascribe this lack of confidence primarily to fear. According to several reports 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 realize, 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.

2.2.3 Age

My personal observation has it that the age of an individual is a factor in the person‟s 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, Rose. and D‟Silva (2008) posited in their studies with some

teachers that age is a significant factor to the use of ICT tools. I concur with this but believe that the age factor in relation to the use of ICT tools is not only peculiar to teachers in the classroom but also permeates all spheres of life.

Young (2000) 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 need training to allow them to make use of computers in their work.

Cavas, Cavas, Karaoglan and, Kisla (2009) revealed that there is a relationship between teacher‟s age and their computer attitudes. Another study by Korte and Husing (2007) concluded that younger teachers appear to be less skeptical about the benefits of ICT tools in learning. Bradley and Russell (1997) pointed 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 tools 27 by teachers (Al Senaidi, Lin, & Poirot, 2009; Lau & Sim, 2008; Wang & Chan, 1995).

2.2.4 Institution Related Barriers

Additionally, accessibility of ICT in secondary schools also interconnects with other development issues, such as accessibility and connectivity to electricity and telephone grids. The themes that emerged from the policy arena challenges to ICT in rural

schools are lack of telecommunication and resources such as finance, infrastructure, personnel and their training, software, and textbooks. Since 1998, the government of Ghana has extended electricity to many rural communities in the country (Ministry of Education, 1999). However, many rural communities are yet to be connected to the electricity grid. Most rural communities that have secondary schools do not currently have access to electricity and telephone services. In such localities, the idea of promoting computers in classrooms will require more financial backing, and a considerable amount of time, considering the pace of development in Ghana (Dauda, 2016).

Different areas have various levels of general welfare and incomes of local people, which affects the amount of support from local people that can be given to the local school (Albirini, 2006). As schools need support from local government as well as local people, the more funds a school receives, the more computer technologies may teach practice be equipped with. The lack of computer technology in teaching practice will influence the use of computers among teachers and their attitudes towards computer technology.

School support must include a technician with installation, training, and maintenance skills. Any lack of such support will decrease teachers‟ initiative in using computers. School support should also include activities that can help to foster teachers‟ adoption of computer technology. A study by Becker and Riel (2000) suggested that the more frequent teachers were involved in informal substantive communication with other teachers at their school or other schools, the more likely they were to use computer in their teaching practice. It is suggested that schools should organize more professional

activities in the form of seminars, workshops, and conferences to encourage professional interaction among teachers.

Effective ICT integration into the educational system is a complex task that involves not just technology but also curriculum and pedagogy, institutional readiness, teachers‟ competencies and long-term financing, government policies relating to ICT in schools and many more. Making a strong case for and ensuring integration of ICT in the curriculum alone does not guarantee the realization of government‟s vision for embarking on ICT education. The role of the teacher in ensuring integration of technology in the classroom should not be underestimated. Therefore, integration of ICT into pedagogical practices will seriously be compromised if teachers possess little or no knowledge of ICT. However, since the introduction of ICT into the Basic school curriculum much has not been done in terms of research. Mereku, Yidana, Hodzi, Tete-Mensah, and Williams (2009) asserted that for Ghana and Africa to be able to fully integrate ICT into teaching and learning there is the need for frequent collection and analysis of data on ICT usage.

Various research studies indicated several reasons for the lack of access to technologies. In Sicilia‟s (2014) study, teachers complained about how difficult it was to always have access to computers. The author gave reasons like “Computers had to be booked in advance and the teachers would forget to do so, or they could not book them for several periods in a row when they wanted to work on several projects with the students”. In other words, a teacher would have no access to ICT materials because most of these were shared with other teachers. Teachers identified lack of insufficient numbers of computers, insufficient peripherals, and insufficient numbers

of copies of software, and insufficient simultaneous internet access as the main obstacles to the implementation of ICT in educational institutions.

According to Brun and Hinostroza (2014), the accessibility of ICT resources does not guarantee its successful implementation in teaching, and this is not merely because of the lack of ICT infrastructure but also because of other problems such as lack of high-quality hardware, suitable educational software, and access to ICT resources. Newhouse asserts that poor choices of hardware and software and lack of consideration of what is suitable for classroom teaching are problems facing many teachers. They reiterated further that majority of teachers agreed that insufficient ICT resources in the institution and associated with bringing computers into their teaching practices.

Availability of an appropriate environment for ICT facilities is another issue that will determine accessibility of ICT for rural schools (Mfum-Mensah, 2003). Some schools have successfully implemented ICT projects because they possess the infrastructure to accommodate ICT equipment donated by benevolent organizations. Inadequate infrastructure is a problem facing many rural secondary schools. The infrastructure of most rural schools lacks the appropriate environment and the needed security for storing ICT equipment.

2.3 Teachers Training and Qualification and ICT Use

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 (2001) revealed that there were not enough

training opportunities for teachers in the use of ICTs in the classroom. Teachers‟ training is a key factor to successful integration of computers into classroom teaching. Several studies have revealed that whether beginner or experienced, ICT-related training programs develop teachers‟ competencies in computer use (Aydin, Gurol, & Vanderlinde, 2016; Vitanova, Pachemska, & Pachemska, 2014; Wozney, 2006) and influence teachers‟ attitudes towards computers (Hew & Brush, 2007).

In a similar study, Chen (2010) found that training is the strongest determinant of teachers‟ technology use in schools. Furthermore, teachers support the claim that if they involve themselves in quality technology professional training which will improve their ICT competence, it is likely they will apply ICT in their teaching activities (Hutchson, 2012). A common criticism of professional development activities designed for teachers is that they are too short and offer limited follow-up to teachers once they begin to teach. Lawless and Pellegrino (2007) claim that if training program is of high quality, the period for training lasts longer, new technologies for teaching and learning are offered, educators are eagerly involved in important context activities, teamwork among colleagues is improved and has clear vision for students‟ attainment. Wikan and Molster (2011) reported that teachers who had had short-term ICT training, lack confidence and competence in using ICT and do not know how to use ICT to improve and support students‟ learning. Training programs for teachers that embrace educational practices and strategies to address beliefs, skills and knowledge improve teachers‟ awareness and insights in advance, in relation to transformations in classroom activities (Levin & Wadmany, 2008).

Furthermore, Mulhim (2013) found that teachers‟ low level of ICT usage is due to lack of training. The result suggested an urgent need to train teachers in pedagogical

and technical use of ICT in schools. The literature revealed that ICT training programs develop teachers‟ competencies in computer use. It is also evident from the literature that other technological skills acquire by teachers are necessary, but ICT training skills are important conditions for ICT integration into teaching process. Computer training will be used as a variable in this study since a review of the literature found that training is an important factor to determine teachers‟ technology use.

A full and complete integration of the use of ICT tools 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. Pelgrum (2001) study revealed that there were not enough training opportunities for teachers in the use of ICT tools in the classroom. The training of teachers in the integration of ICT in the learning and teaching process is a difficult one. This is so because it involves several complex factors to render the training effective. These complex factors 13 include finding the time for training, training in pedagogy, skills training, and the use of ICT tools in the teacher‟s initial training (Bingimlas, 2009).

Numerous studies showed that training was a crucial way to foster the integration of ICT into education. Warschauer (2002) pointed out in his study that an Egyptian university lecturer told him that “we have the hardware, we have the software, but we lack the human ware.” The study by Samak (2006) indicated that the correlation between training and teachers‟ attitudes towards ICT was positive, i.e., more training would lead to positive attitude towards ICT. Sadik (2005) indicated that trained

teachers expressed statistically more positive attitudes toward ICT than non-trained teachers did. Lewis et al. (1999) pointed that a professional development program focused on training on a specific curriculum and subject area was important to build up teachers‟ ability to teach effectively, including integrating technology into the grade or subject taught. As training is vital to the integration of ICT into education, more training should be given to teachers, especially the older generation, including in-service training and pre-service training via workshops, intensive courses, video-based, face-to-face based, or web-based case studies, etc., after computer software and hardware has been introduced into a school.

Especially, educational authorities should place great emphasis on helping teachers to increase skills on how to integrate ICT into specific curricula or subjects except for how to use computer technology. When teachers are knowledgeable about how to integrate ICT into classroom to bring about better teaching outcomes, their attitude toward ICT in education will change. It is important that all teachers at a school be trained and involved in the training because otherwise only the teachers who are already comfortable with ICT would volunteer for the training, and the teachers who need the training most would usually opt out of the program (Brun & Hinostroza, 2014).

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 several complex factors 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 (1999) asserted 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 because 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.

Integration of ICT into educational practices will seriously be compromised if teachers possess little or no knowledge of ICT. Kadel (2005) noted that regardless of the quantity and quality of technology available in classroom, the key to how ICTs are used is the teacher; therefore, teachers must have the capability and right attitude towards technology. ICT can do wonders in classroom if used wisely by well –trained

teacher. According to Marija and Palmira (2007) ICT abilities can be classified into two: Basic and educational ICT competence. Competence can be said as having the necessary skills or knowledge or the ability to make use of relevant attributes to task. These attributes include high levels of knowledge, values, skills, personal dispositions, sensitivities, capabilities, and the ability to put these attributes into practice in an appropriate way.

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 & 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.

According to Bingimlas (2009), teacher competence refers primarily to one‟s ability to integrate ICT into pedagogical practice. Lack of knowledge or competence is regarded as a significant factor that discourages teachers in integrating ICT in their

teaching. A teacher‟s lack of knowledge serves as a considerable challenge to the use of computers in teaching methods and practices.

Van (2004) defined ICT competence is the ability of handling various applications on ICT for more than one purpose. According to Bordar (2010) one of the major predictors of ICT integration into teaching is competence of the teacher and this helps a lot in successful integration of ICT in teaching. According to Pelgrum (2001), the success of educational innovations depends largely on the skills and knowledge of teachers. Also, he found that teachers‟ lack of knowledge and skills was the second most inhibiting obstacle to the use of ICT in teaching. Knezek and Christensen (2000) postulated that educators with higher levels of skill, knowledge using ICT would exhibit higher levels of using ICT to facilitate teaching in the classroom. Moreover, Berner (2003) concluded that teachers should develop their competence based on the educational goals they want to accomplish with the help of ICT.

Numerous studies carried out suggests that lack of confidence prevents teachers from using ICT. According to Becta (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 they might. This lack of self-assurance is further deepened with the expectation of students on the competence of their teachers in the use of ICT. This is so because students are of the view that their teachers know more than they know and with this at the back of their mind, if he or she the teacher is even having a fair knowledge about ICT, will not be willing to go and disgrace him or herself before the students.

A full and complete integration in the use of 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. Pelgrum (2001) posits that there were not enough training opportunities for teachers in the use of ICT in the classroom. The training of teachers in the integration of ICT in the learning and teaching process is a difficult one. This is so because it involves several complex factors in order to render the training effective. These complex factors include finding time for the training, training in pedagogy, and skills training (Bingimlas, 2009).

A study conducted by Cox (2009) argues that ICT training for teachers needs to incorporate educational 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 effectively to improve their teaching skills.

Some literature suggests that lack of adequate training and experience is one of the main factors why teachers do not use technology in their teaching. This also results in teachers‟ negative attitude towards computer and technology. In addition, lack of confidence leads to reluctance to use computers by teachers (Kumar & Kumar, 2003). Another problem has been the impact of the lack of training on the integration of ICT into teacher preparation programmed in Ghana. 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.

Another problem, which is directly related to teacher confidence is- teachers‟ lack of knowledge in integrating ICT into pedagogical practice. In Syria, for example, teachers‟ lack of technological competence has been cited as the main problem of using ICT in teaching-learning. Likewise, in Saudi Arabia, lack of ICT skills is a serious obstacle to the integration of technologies into classroom teaching and learning. Another worldwide survey conducted by Pelgrum (2001) of nationally representative samples of institutions from 26 countries, found that teachers‟ lack of knowledge and skills is a serious obstacle to using ICT in educational institutions.

Teachers must accept that the widespread use of ICT tools in schools is having an impact on teaching methods and requires a significant re-thinking 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.

2.4 Attitudes of teachers toward ICT use

Achieving a meaningful use of computer technology in the field of education can be influenced by many factors. One of these factors is teachers‟ attitude towards the use of technology in teaching and learning process. Attitude plays a key role in determining people‟s reactions to situations. A review of the psychological literature reveals diverse definitions of attitude. Fishbein (2005) opined attitude as a learned predisposition to respond to an object or class of objects in a consistently favorable or

unfavorable way. Attitudes are key factors in determining whether teachers accept computer as a teaching tool in their teaching practices. Correspondingly, several studies were carried out to determined teacher attitudes toward computer use.

Drent and Meelissen (2007) in their study have established that a positive ICT attitude has a direct positive influence on the innovative use of ICT by the teacher. Positive attitudes often encourage less technologically capable teachers to learn the skills necessary for the implementation of technology-based activities in the classroom. Harrison and Rainer (1992) found that participants with negative attitudes towards ICT were less skilled in ICT use and were therefore less likely to accept and adapt to technology than those with positive attitudes. They concluded that changing individuals‟ negative attitudes is essential for increasing their computer skills. Keengwe and Onchwari, (2008) identify that the positive attitude of the teachers towards the ICT is very much affected by the experience of the teachers with ICT. Therefore, if teachers want to successfully use technology in their classes, they need to hold positive attitude to use technology. Such attitude is developed when teachers are sufficiently comfortable with technology and are knowledgeable on its use.

Roblyer and Edwards (2000) suggested that there are five important reasons for teachers to use technology in education: motivation, distinctive instructional abilities, higher productivity of teachers, essential skills for the Information Age, and support for new teaching techniques. To use technology effectively in the classroom, teachers‟ attitude toward technology should be positive and they should be trained in how to use the modern technologies in the field of education. Ching and Hortin (2004) stated that the teacher must act as the agent of change in the relationship between technology and the student.

Recent studies indicated that teachers‟ attitudes toward computers have significant implications for behaviours of teachers in the use of computers for teaching (Kellenberger & Hendricks, 2003). In the process of combining ICT with education, teachers‟ attitude towards using knowledge besides their talent and desire will be a crucial point affecting the results of application. The basic agent for establishing and making the system work effectively is the teacher. It is argued that successful integration of ICT in education enables teachers to transform instruction from teacher-centered to learner-centered, where learners will interact with their peers and use the computers and Internet facilities for their own learning needs. But many teachers do not regard themselves adequately prepared and comfortable in using ICT in educational settings, they rather feel more confident with their traditional teaching styles (Hawkins, 2002).

Another important area of teachers‟ attitudes towards ICT is their understanding of how it will benefit teachers and pupils in the learning processes. Snoeyink and Ertmer (2001) noted the importance of teachers seeing the purpose in using computers in their teaching and learning; and suggested that this can be achieved through focused training. Specifically, it shows teachers how technology can help them in their own individual situations. Simply watching other teachers using technology will not show them how they can use it to their benefit in their teaching and learning situations.

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 (1999) 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.

2.5 ICT tools and facilities in schools

The Ghanaian tertiary education sector is the most advanced in the deployment and use of ICTs in the country. All the country"s major universities have their own separate ICT policy, which includes an ICT levy for students. This enables students to have access to 24-hour computer labs with broadband connection. However not all tertiary institutions in the country are equally endowed and there are instances where the computer facilities are run purely by the private sector as cyber cafés on campuses (Kofi, 2007).

Availability of an appropriate environment for ICT facilities is another issue that will determine accessibility of ICT for rural schools (Mfum-Mensah, 2003). Some schools have successfully implemented ICT projects because they possess the infrastructure to accommodate ICT equipment donated by benevolent organizations. Inadequate infrastructure is a problem facing many rural secondary schools. The infrastructure of most rural schools lacks the appropriate environment and the needed security for storing ICT equipment.

In the basic and secondary education sector, a project to set up computer laboratories in all science schools in the country has led to a significant number of computers being installed across the country. A computer levy of GH¢30, can be in most secondary schools. There is, however, a great disparity between public and private schools as well as between urban and rural areas in access to ICTs (Kofi Mangesi 2007).

The underdeveloped nature of the physical infrastructure together with poor and limited communications infrastructure in the country negatively affect ICT deployment and development in many schools. ICT tools such as computers, projectors, etc are woeful inadequate. Similarly, many schools lack computer laboratories for performing ICT training and learning. Many heads and directors complained that, they have never laid their hands on the policy document and are therefore not very conversant with its content. Those who have seen and read the policy document described it as too general and difficult to be interpreted and implemented. The policy document lacks specifics in terms of what needs to be done in schools and at the Ghana Education Service as a whole.

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 cantered 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".

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 it increase, the schools must recognize the need to employ more and highly qualified technical staff. However, with pleasure 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. Incorporating ICT across curriculum requires careful timetabling and corporation among department. Sutherland (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 teachers. Hence much more cross-curricular and departmental planning is required than most schools do in the past.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter talks about the methodology employed in the study. It comprised of the research paradigm, research design, population, and the sampling technique(s) that was employed. The chapter also considered the research instrument, piloting, validity and reliability of instrument, the data collection and analysis procedures, and ethical considerations.

3.2 Research Paradigm

A paradigm is a shared belief system that influences the type of knowledge researchers seek to obtain and how they interpret any research evidence they may collect (Morgan, 2007). It deals with the beliefs one holds about the action to take in the quest for reality in a given situation. The study adopted the positivist paradigm.

Positivist paradigm which is under objectivism epistemology is a methodological philosophy in quantitative research where we will apply the methods of natural sciences to discover the study of social science (Crotty, 1998 p. 8-9). In this respect, understanding of phenomena in reality must be measured and supported by evidence (Hammersley, 2013 p. 23). To illustrate, within the process of studying the phenomena, the relationship between an independent variable and one or more dependent variables will be discovered by causal inferences as the results of experimental designs and be fully determined through the way of how researchers maximize the influence of the independent variable on the dependent variable and events through this process (Cohen, Manion, & Marison, 2011). Alternatively, this

paradigm helps positivist researchers clearly understand the objects by empirical tests and methods as sampling, measurement, questionnaire, focus group discussion.

This suggests that insights provided by positivist researchers may have high quality standard of validity and reliability (Cohen, 2007) and be generalised to the large scale of population (Johnson & Onwuegbuzie, 2004). For better decision of using this theoretical approach in research, let discuss its advantages and disadvantages on its application in social research. First, with the methodologies and methods of collecting and analysing data based on evidence and statistic, the result of the same phenomena or event may be allowed to "replicate for different groups or subgroups of population in social contexts. As the result, the researchers can save time and investments for using the findings of specific study for future quantitative predictions (Johnson & Onwuegbuzie, 2004).

Second, as being collected under the view of objectivism epistemology, the findings of research can be reliable and support researchers to make scientific assumptions (Johnson, 2014). Indeed, Dörnyei (2007) finds that reliability can be estimated by statistical analysis via identifying the internal consistency or correlation among the variables, using Cronbach"s alpha reliability coefficient. Additionally, it is worth to conclude the validity of research results is one of key strength of this approach. Virtually, by employing key methodologies as experimental and survey and then applying appropriate methods of sampling, instrumentations and statistical treatments of data, the quantitative findings will help to provide an intensive answer for any research question (Cohen et al., 2011 p. 179).

3.2 Research Design

The cross-sectional survey study design was adopted for this study. According to Cresswell (2009), the cross-sectional survey is a design that describes a problem in the contemporary context by investigating immediate past data and the current characteristics of a segment of the study population. Thus, cross-sectional study design is used to describe problems facing the current population at a point in time. This enabled the researcher to have a quick investigation of the problems and to give recommendations and solutions that could be immediately implemented to address the problem (Bell, 2010). Considering this study which sought to investigate challenges of ICT integration in the teaching and learning in selected SHS in the Prang District of Bono East Region of Ghana, it is imperative to adopt the cross-sectional study design to investigate such a contemporary issue. This also enabled the researcher to obtain an in-depth information about the group. Polit and Beck (2012) points that survey research uses a smaller group of selected people but generalizes the results to the whole group from which the small group was chosen.

3.3 Population

Kusi (2012) defines population as a group of individuals or people with the same characteristics and in whom the researcher is interested. Similarly, McMillan and Schumacher (2001), see population as a group of elements or causes, whether individuals or objects or events, that conform to specific criteria and to which one intends to generalize the results of the research. The study population comprised all SHS teachers in the Prang District of Bono East Region of Ghana. The target population consists all public SHS teachers in the Prang District of Bono East Region of Ghana whilst the accessible population consisted all teachers in Abeaseman Community Day SHS, Prang SHS and Yeji SHS.

3.5 Sample and Sampling Procedure

A sample is defined as a subset or collection of some units of the universe or population (Ary, Jacobs, & Sorensen, 2010). According to Explorable (2012), the worth of any educational research findings depend on the extent to which the sample reflects or represents the target population. Multistage sampling techniques were employed to select the respondents. During the former, quota technique was employed to select 70% of teachers from each school. This enabled the researcher to obtain a fair representation of the respondents from each school (Cresswell, 2008). This consisted 50 teachers from Abeaseman Community Day Senior High School, 65 teachers from Prang Senior High School and 68 teachers from Yeji Senior High School. From the above it can be seen that the total number of teachers ideally to be used in the study is 165. The formula that was developed by Yamane 1973 for calculating sample size was used. The formula is produced below.

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

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:

$$n = \frac{165}{1 + 165(0.05)^2}$$

$$n = \frac{165}{1 + 0.4125}$$

$$n = \frac{165}{1.4125}$$

$$n = 116.81415$$

$n = 117$

From the above the ideal sample size to be taken is one 117 teachers. Because the total population was made up of the sum from three 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 three schools were grouped into three different strata. Proportional allocation was used in 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:

$$nh = \frac{Nh \times n}{N}$$

Where,

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

N = Total size of population

n = Total sample size

Nh = Population size of stratum h (population size of each school)

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

Abeaseman Community Day School = × 117

= 35

Prang Senior High School = × 117

= 39

Yeji Senior High School = × 117

= 43

After this number was obtained simple random sampling (lotto technique) the latter to draw the teachers from each school. According to Cresswell (2008) simple random sampling is a type of probability sampling technique in which certain units within a

population are assigned numbers and the units bearing that numbers are included in the sample. This was done by creating two papers each with the assertion "YES" and "NO" regarding the number of teachers' the researcher intend to include within each school. The papers were put in a bowl and evenly mixed for the teachers' to pick from it within each school. Teachers' that picked the statement "YES" within each school were included in the sample. This technique was useful to the researcher because it provided each of the teachers' equal opportunities to be included in the sample (Cresswell, 2009).

3.7 Research Instrument

The instrument used in data collection is a structured questionnaire. Questionnaires are used when researchers want to obtain information on a large number of issues and from large sample size (Explorable, 2012). The questionnaires were designed based on the research questions or the specific objectives of the study. Section A of the questionnaire investigated the demographic characteristics of where the teacher teaches and their sex. Section B of the questionnaire consisted of items that investigated the objectives thus, the barriers hindering the integration of ICT in the selected SHS in Bono East Region, the training and qualification of ICT teachers in the selected SHS in Bono East Region in the use of ICTs, attitudes of teachers in the selected SHS in Bono East Region in the use of computers, and availability of ICTs tools or facilities in the selected SHS in Bono East Region on a five point Likert scale 1=Strongly Disagree; 2=Disagree; 3=Uncertain; 4=Agree; 5=Strongly Agree).

3.8 Validity of Instrument

Validity is concerned with accuracy of measurement. Validity refers to the extent to which an instrument measures what it purports to measure. The purpose of validity is

to ascertain the degree the measure is accurate for specific purpose (Agyedu, Donkor, & Obeng, 2013). It is also a means of ascertaining the accuracy of instruments by establishing whether the instruments focus on the information they are intended to collect. Kothari (2007) pointed out that validity measures the accuracy of the instruments in obtaining the anticipated data which can meet the objectives of the study.

Face Validity

Face validity is a measure of how representative an instrument is "at face value" and whether it appears to be a good one. Bryman (2012) opine that face validity might be established by asking other people whether the measure seems to be getting at the concept that is the focus of attention. In other words, people, possibly those with experience or expertise in a field, might be asked to act as judges to determine whether on the face of it the measure seems to reflect the concept concerned (Bryman, 2012). In order to ascertain face validity, the researcher presented the instruments constructed to his supervisor and other lecturers in the department for constructive criticisms.

Content Validity

Content validity is the extent that a research instrument covers the content that it is intended to measure. It is also refers to whether an instrument provides adequate coverage of a topic. Expert opinions, literature searches, and pretesting of open-ended questions help to establish content validity (Bryman, 2012). Creswell (2009) stated, "It is the extent to which the questions on the instrument and the scores from these questions represent all possible questions that could be asked about the content or skill. The researcher prepared the instruments in close consultation with my

supervisor and other senior lecturers at the same department to ensure that the items in the questionnaire to cover all areas under investigation.

3.9 Pilot Study

The data collection instrument was piloted on fifty (50) teachers selected at random from the SHS in Prang District. The purpose of the pre-testing of instruments was to enable the researcher to test the reliability and validity of the instruments to investigate the problem (Babbie, 2010; Mcmillan, & Schumacher, 2010). Ambiguous questions and misphrased questions were rephrased before the main data collection is done. This enabled the researcher to identify the items that were unclear and to make the necessary amendments.

3.10 Reliability of Instrument

Reliability refers to the extent to which an instrument measures the same way each time it is used under the same condition with the same subjects (Agyedu et al., 2013). The purpose of reliability is to assess the instrument‟s ability to measure the same way in each administration to the same sample. To ascertain the reliability of the instruments, the results obtained from the pilot test was calculated by employing Cronbach alpha coefficient and was found to be 0.78. The instrument was considered to be reliable enough for data collection because it is within the acceptable range of reliable instruments (Johnson & Christenson, 2012).

3.11 Data Collection Procedures

An introductory letter was obtained from the University of Education, Winneba and submitted to the District Educational Director of Prang District to solicit for permission. The researcher visited the schools where the study were conducted.

Afterwards, the researcher agreed with them on due dates where the instruments will be subjected to them. With the help of other teachers from the selected schools, the researcher administered the questionnaires to the respondents using the drop and pick technique.

3.12 Data Analysis Plans

Data analysis is important for interpreting raw data, in order to obtain the meaning and pattern from data (Bell, 2010). The data was coded into Statistical Package for Social Sciences (SPSS). Tables and charts was generated and interpreted by means of the frequency charts, frequency counts, and simple percentages. Also the researchers elaborated on the data based on the respondents‟ data and supported with related literature.

3.13 Ethical Considerations

Ethical issues are highly relevant and require serious considerations (Henn, Weinstein, & Foard, 2006). Therefore, to create a mutual respect and win-win relationship with the respondents before the commencement of the data collection, a letter was obtained from the University of Education, Winneba indicating the purpose of the study and its significance to the teachers and head teachers in the public basic schools, and the Director of Education in the Prang District. The head teachers introduced the researcher to the teachers. Furthermore, each questionnaire had an opening introductory letter requesting for the respondent‟s cooperation in providing the required information for the study. The respondents were further assured that the information provided shall be used for academic purposes only (confidentiality). Anonymity was ensured by not allowing respondents to indicate their names on the questionnaire.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results and discussion of data obtained from the respondents. It is in two sections A and B. Section A deals with the demographic features of the respondents whereas Section B discusses study objectives; barriers hindering the integration of ICT into education teachers training and qualification in the use of ICTs, attitudes of teachers in the use of computers, perceptions of the teachers with regards to the integration of ICT into the learning and teaching process, and availability of ICT tools or equipment in the schools.

4.2 Demographic Features of Respondents

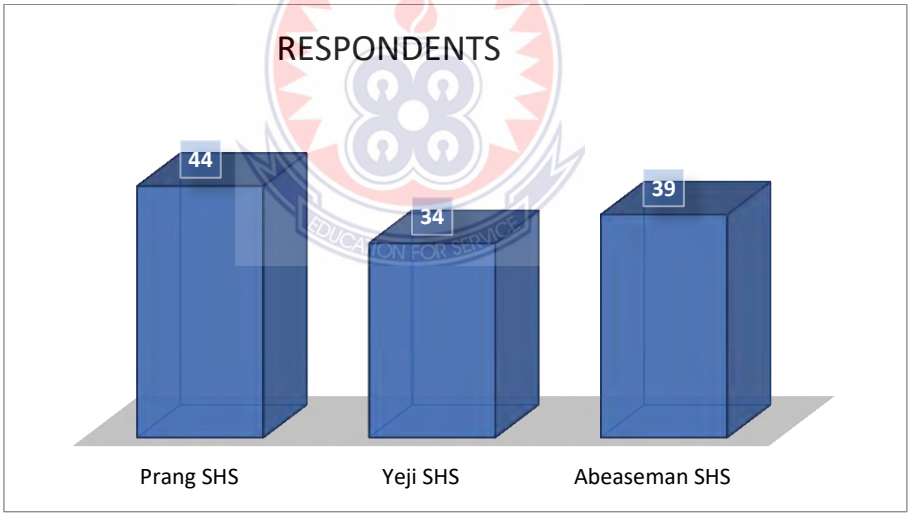

Figure 1; Schools where respondents' teachers

It can be verified from the data in Figure 1 that 44(38%) of the teachers teach at Prang SHS 39(33%) teach at Abeaseman SHS, whereas 34(29%) teach at Yeji SHS. This implies that there are more teachers in Prang SHS than other SHS in Prang District.

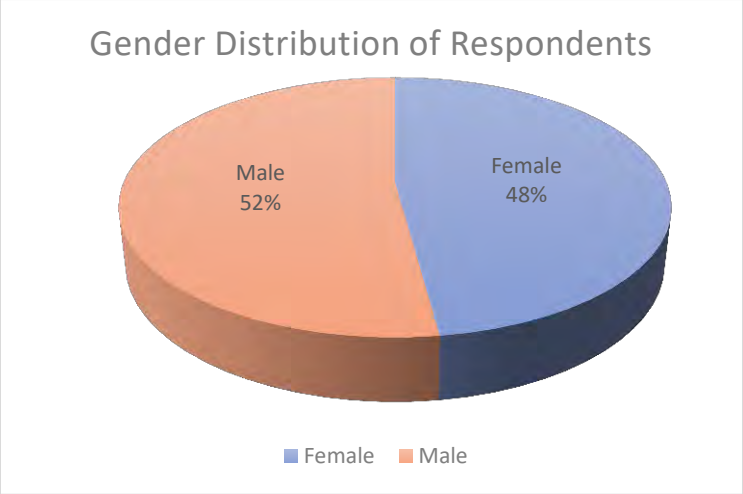

Figure 4.2 Gender of Respondents

Figure 2 shows the distribution of gender of the respondents. 56(48%) are females whereas 61(52%) are males. It can therefore be concluded that majority of teachers in public SHS in Prang District are males.

4.3 Research Questions One: What Barriers Hinder the Integration of ICT in Selected SHS in Bono East Region?

This question sought to find out the barriers hindering the integration of ICT in the selected Senior High Schools in Bono East Region. The result is presented in Table 4.1.

Table 4.1: Barriers Hindering ICT Integration

Statement	Response				
	SA	A	UD	D	SD
Lack of teacher training	50(42.7)	45(38.5)	5(4.3)	12(10.3)	5(4.3)
Irregular power supply	40(34.2)	45(38.5)	-	11(9.4)	21(17.9)
Inadequate ICT facilities	57(48.7)	51(43.6)	-	7(6.0)	2(1.7)
Teachers reluctant to adopt the use of ICT tools in their teaching	46(39.3)	48(41.0)	4(3.4)	10(8.5)	9(7.7)
Lack of confidence on the part of some teachers	43(36.8)	60(51.3)	-	6(5.1)	8(6.8)

Source: Fieldwork data (2020).

It can be inferred from the data in Table 4.1 that majority of the respondents 91(81.2%) either agreed or strongly agreed that lack of teacher training hinders successful integration of ICT within SHS within the District, 17(14.6%) of them either disagreed or strongly disagreed to the statement whereas 5(4.3%) were indecisive. This points that lack of teacher training draws back ICT implementation within SHS in the District. The finding corroborates Becker et al. (1999) who reported that there is a positive relationship between ICT training and teachers‟ attitudes thus, training can significantly influence the ways in which a teacher includes technology tools in the classroom and the lack of computer training could lead to technophobia that is likely to limit the use of ICT in teaching. Similarly, Dogan (2010) reported that lack teacher training in ICT is vital for future conception and uses of computers for teaching process and in its absence, teachers find it challenging to integrate it in their lessons.

In addition, majority of the respondents 85 (72.7%) either agreed or strongly agreed that irregular power supply is a factor that hinders the successful integration of ICT within SHS within the District, 32(27.3%) of them either disagreed or strongly disagreed to the statement whereas none was indecisive. This points that poor erratic supply of electricity draws back ICT implementation within SHS in the District. Similarly, Dauda (2016) reported that most rural communities that have secondary schools do not currently have access to electricity and telephone services and in such localities, the idea of promoting computers in classrooms will require more financial backing, and a considerable amount of time, considering the pace of development in Ghana.

Furthermore, majority of the respondents 108 (92.1%) either agreed or strongly agreed that inadequate ICT facilities is a potent factor that hinders the successful integration of ICT within SHS within the District, 9 (7.7%) of them either disagreed or strongly disagreed to the statement whereas none was indecisive. This points that insufficient ICT amenities pulls back ICT implementation within SHS in the District. Similar result was pointed by Plomp (2009) who asserted that access to ICT infrastructure and resources in schools is a necessary condition to the integration of ICT in education.

Moreover, majority of the respondents 94 (80.3%) either agreed or strongly agreed that teachers reluctant to adopt the use of ICT tools in their teaching is a factor that hinders the successful integration of ICT within SHS within the District, 19(16.1%) of them either disagreed or strongly disagreed to the statement whereas 4 (3.4%) of them were indecisive. This points that instructors cold attitudes toward the adoption of ICT tools pulls back ICT implementation within SHS in the District.

Finally, majority of the respondents 103 (88.1%) either agreed or strongly agreed that lack of confidence on the part of some teachers is a potent threat to successful integration of ICT within SHS within the District, 14 (11.9%) of them either disagreed or strongly disagreed to the statement whereas none was indecisive. This points that absence of confidence on the part of some teachers is a factor that draws back ICT implementation within SHS in the District. The finding agrees with Becta (2004) who reported that teachers who admitted to a lack of confidence ascribe this lack of confidence primarily to fear. According to several reports some teachers have the fear that computers might challenge or compromise their vocation by downgrading their role.

4.4 Research Question Two: What at are the Training and Qualifications of ICT Teachers in the Selected SHS in Bono East Region in the Use of ICTS?

This question sought to ascertain training and qualification of teachers in the use of ICTs. The outcome is presented in Table 4.2.

Table 4.2: Training and Qualifications of ICT Teachers

Statement	Response				
	SA	A	UD	D	SD
I can switch on and start up the computer	67(57.3)	50(42.7)	-	-	-
I can use all the keys on the keyboard	40(34.2)	38(32.4)	10(8.5)	12(10.3)	17(14.5)
I can use the start button to launch programmes	44(37.6)	50(42.7)	-	17(14.5)	6(5.1)
I can close, minimize and restore a window from the task bar	35(29.9)	57(48.7)	8(6.8)	-	17(14.5)
I can name and save work on hard drive	43(36.8)	74(63.2)	-	-	-
I can save work in appropriate named files	60(51.3)	57 (48.7)	-	-	-
I can single click and double click a mouse button	70 (59.8)	47 (40.1)	-	-	-
I can save and load to and from pen drive	87(74.4)	37 (31.6)	-	-	-

Source: Fieldwork data (2020).

Data in Table 4.2 point that all the respondents 117(100.0%) either agreed or strongly agreed that they can switch on and start up the computer whilst none of them either disagreed or strongly disagreed to the statement nor were indecisive. This points that all the teachers within SHS in the District can boot a computer.

In addition, majority of the respondents 78 (66.6%) either agreed or strongly agreed that they can use all the keys on the keyboard, 29 (24.8%) of them either disagreed or strongly disagreed to the statement whereas 10 (8.5%) were indecisive. This points that the teachers are familiar about how to use keys on the keyboard.

Furthermore, majority of the respondents 94 (80.4%) either agreed or strongly agreed that they can use the start button to launch programmes, 23 (19.6%) of them either disagreed or strongly disagreed to the statement whereas none was indecisive. This points that the teachers within SHS in the District have the prerequisite skills on how programmes are displayed using the computer.

Moreover, majority of the respondents 92 (78.6%) either agreed or strongly agreed that they can close, minimize and restore a window from the task bar, 17 (14.5%) of them either disagreed or strongly disagreed to the statement whereas 8 (6.8%) of them were indecisive. This points that instructors within SHS in the District can end, lessen, and bring back a window from the task bar.

In addition, all the respondents 117(100.0%) either agreed or strongly agreed that they can name and save work on hard drive whilst none of them either disagreed or strongly disagreed to the statement nor were indecisive. This points that all the teachers within SHS in the District give names to files and also store files on a computer.

Table 4.2 pointed further that all the respondents 117(100.0%) either agreed or strongly agreed that they can save work in appropriate named files whilst none of them either disagreed or strongly disagreed to the statement nor were indecisive. This points that all the teachers within SHS in the District can save data on a computer by assigning the right name to it.

Moreover, all the respondents 117 (78.6%) either agreed or strongly agreed that they can single click and double click a mouse button whilst none of them either disagreed or strongly disagreed to the statement nor were indecisive. This points that instructors

within SHS in the District have the optimal skills in clicking the mouse either singly or double.

Finally, all the respondents 117 (78.6%) either agreed or strongly agreed that they can save and load to and from pen drive whilst none of them either disagreed or strongly disagreed to the statement nor were indecisive. This points that instructors within SHS in the District are capable of keeping and loading files from pen drives.

The findings agrees with Chen (2010) who reported that training is the strongest determinant of teachers‟ technology use in schools. Furthermore, teachers support the claim that if they involve themselves in quality technology professional training which will improve their ICT competence, it is likely they will apply ICT in their teaching activities (Hutchson, 2012). A common criticism of professional development activities designed for teachers is that they are too short and offer limited follow-up to teachers once they begin to teach. In addition, Lawless and Pellegrino (2007) claim that if training program is of high quality, the period for training lasts longer, new technologies for teaching and learning are offered, educators are eagerly involved in important context activities, teamwork among colleagues is improved and has clear vision for students‟ attainment. Similarly, Wikan and Molster (2011) reported that teachers who had had short-term ICT training, lack confidence and competence in using ICT and do not know how to use ICT to improve and support students‟ learning. Training programs for teachers that embrace educational practices and strategies to address beliefs, skills and knowledge improve teachers‟ awareness and insights in advance, in relation to transformations in classroom activities (Levin & Wadmany, 2008).

Finally, Mulhim (2013) found that teachers‟ low level of ICT usage is due to lack of training. The result suggested an urgent need to train teachers in pedagogical and technical use of ICT in schools. The literature revealed that ICT training programs develop teachers‟ competencies in computer use. It is also evident from the literature that other technological skills acquire by teachers are necessary, but ICT training skills are important conditions for ICT integration into teaching process. Computer training will be used as a variable in this study since a review of the literature found that training is an important factor to determine teachers‟ technology use.

4.5 Research Question Three: What are the Attitudes of Teachers in the Selected SHS in Bono East Region in the use of ICTs?

The primary intent of this research question was to find out the attitudes of teachers in the selected SHS in Bono East Region toward the use of ICT. The result is presented in Table 4.3.

Table 4.3: Attitude of teachers Toward ICT Use

Statement	**Response**				
	SA	**A**	**UD**	**D**	**SD**
I seldom use ICT in teaching and never intends to use	30(25.6)	10(8.5)	-	37(31.6)	40(34.2)
I can never use ICT in teaching and do not intend to learn	22(18.8)	30(25.6)	-	15(12.8)	50(42.7)
I like ICT and intend to use anytime during lessons	30(25.6)	60(51.3)	-	20(17.1)	7(6.0)
I want to use ICT but the inaccessibility of the equipment draws me back	45(38.5)	52(44.4)	-	15(12.8)	5(4.3)
I am satisfied in using ICT during teaching	40(34.2)	25(21.4)	12(10.3)	-	40(34.2)

Source: Fieldwork data (2020).

It can be deduced from the data in Table 4.3 that majority of the respondents 77 (81.2%) either disagreed or strongly disagreed that they seldom use ICT in teaching and never intends to use, 40 (34.1%) of them either agreed or strongly agreed to the statement whereas none was indecisive. This points that though the teachers rarely fuse ICT in their teaching but it is at the back of their minds to use it when the need arises.

In addition, majority of the respondents 67 (55.5%) either disagreed or strongly disagreed that they can never use ICT in teaching and do not intend to learn, 52(44.4%) of them either agreed or strongly agreed to the statement whereas none was indecisive. This points that teachers within SHS in the District exhibit positive attitudes toward ICT use by willing to learn how to fuse it properly in their lessons.

Furthermore, majority of the respondents 90 (76.9%) either agreed or strongly agreed that they like ICT and intend to use anytime during lessons, 27 (23.1%) of them either disagreed or strongly disagreed to the statement whereas none was indecisive. This points that the teachers have positive attitudes toward the fusion of ICT in their lessons.

Moreover, majority of the respondents 97 (82.9%) either agreed or strongly agreed that they want to use ICT but the inaccessibility of the equipment draws them back, 20 (17.1%) of them either disagreed or strongly disagreed to the statement whereas none of them was indecisive. This points that though they have positive attitudes toward it but the unavailability of ICT tools make teachers unable to fuse it in their lessons.

Finally, majority of the respondents 65 (55.6%) either agreed or strongly agreed that they feel satisfied in using ICT during teaching, 40 (11.9%) of them either disagreed or strongly disagreed to the statement whereas12 (10.3%) were indecisive. This points that the tutors feel fulfilled in using ICT during lesson deliveries. The finding agrees with Wang (2017) who reported that if teachers‟ attitude towards ICT is negative, or put in other words, if teachers refuse to use ICT in classroom teaching, the integration of ICT in classroom teaching will come to naught, i.e., simple introducing of ICT does not guarantee its integration into the educational setting; on the other hand, teachers‟ attitudes towards ICT will, to a considerable extent, influence students‟ attitudes towards ICT.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter is made up the summary, key findings, conclusions, recommendations, and suggestions for future studies.

5.2 Summary

The study unravelled the challenges of ICT integration in selected Senior High Schools in the Prang District, Bono East Region.

The objectives of the study were to:

1. find out the barriers hindering the integration of ICT in the selected SHS in Bono East Region.
2. ascertain the training and qualification of ICT teachers in the selected SHS in Bono East Region in the use of ICTs.
3. examine the attitudes of teachers in the selected SHS in Bono East Region in the use of computers

Positivist paradigm was adopted for the study. Cross-sectional survey design was employed. The study population comprised all SHS teachers in the Prang District of Bono East Region of Ghana. The target population consists all public SHS teachers in the Prang District of Bono East Region of Ghana whilst the accessible population consisted all teachers in Abeaseman Community Day SHS, Prang SHS and Yeji SHS. Multistage sampling techniques were employed to select one hundred and seventeen teachers for the study. Structured questionnaire was the instrument used in gathering data. Cronbach alpha formula was employed to ascertain the reliability of the

instrument. Data were analyzed using SPSS by using frequency charts, frequency counts, and simple percentages.

5.3 Key Findings

A number of findings were revealed by the study. Regarding the barriers hindering the integration of ICT in the schools, it was unearthed that lack of teacher training, irregular power supply, and inadequate ICT facilities. It was further unleashed that teachers reluctant to adopt the use of ICT tools and lack of confidence on the part of some teachers also contributes to the problem. On teachers‟ training and use of ICTs, it came into light that they can switch on and start up the computer, use all the keys on the keyboard, use the start button to launch programmes, close, minimize and restore a window from the task bar, and can name and save work on hard drive. It was further established that they can save work in appropriate named files, single click and double click a mouse button, and can save and load to and from pen drive. On the attitudes of teachers toward the use of ICT, it was found that they like ICT and intend to use anytime during lessons, want to use ICT but the inaccessibility of the equipment draws them back, and also feel satisfied in using ICT during teaching, Finally, only disc players were the ICT tools and facilities available in the schools.

5.4 Conclusion

The findings revealed that because most of the teachers were not well-equipped with ICT training at the tertiary level, they lack the confidence in integrating it in their lessons. In addition, the findings established that because students‟ enrollment has increased and the government does not supply the schools with ICT equipment, make most teachers to feel reluctant to fuse it into their lessons. Moreover, as a result of the fact that the power supply within the schools and the ICT lab is poor, make teachers

not willing to use ICT in teaching. Furthermore, the findings revealed that because most teachers were exposed to ICT and some having laptops, they are capable of using computers in running all basic programmes. Finally, on the assessment of the extent of availability of ICT tools such as computers in the various SHS, it can be concluded that most of the schools do not have enough computers to be used by the student and teachers.

In addition, the findings unearthed that because ICT makes lessons more stimulating and exciting through animations and the likes, teachers exhibit positive attitudes towards its use in lessons delivery. Finally, the findings verified that the rise in students‟ enrollment and the failure on part of Ministry of Education to supply ICT equipment to the schools make them unable to have access to them.

5.5 Recommendations

The following recommendations were made:

1. It is suggested that ICT infrastructure should be provided to the Senior High Schools in Prang District 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.
2. Teachers within Senior High Schools in Prang District should be given the necessary training in ICT tools usage so that they become familiar with contemporary pedagogy of imparting knowledge and skills, and possibly become part of curriculum structure for their professional training.
3. Modern ICT laboratories should be built for Senior High Schools in Prang District to accommodate enough students at a time looking at their population size for effective and efficient teaching and learning environment.

4. Also, it is recommended that all frequent power outages must be jointly tackled and resolved by the government, school authorities and Parent Teacher Associations to eliminate the breakdown and inability of using ICT tools within Senior High Schools in Prang District.
5. Electrical equipment should be connected to high voltage stabilizers and uninterruptible power supply equipment to eliminate the frequent breakdown of that equipment.
6. Strategy formulators should be clear with the ICT policy and its direction of implementation with the necessary guidelines so that the execution agents like Ghana Education Service, Ministry of Finance 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. Conscious effort by policy makers especially GES should be made to enforce full compliances of the use of ICT tools in teaching in the SHS in Prang District to enable students develop love for the subject.

5.6 Suggestions for Other Studies

1. The study should have employed mixed-method approach to enable more generalizations of the findings.
2. Finally, a study should be conducted to investigate the challenges teachers in SHS in Prang District face when using ICTs tools in teaching.

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APPENDIX

QUESTIONNAIRE

This questionnaire is about challenges of integrating ICT in the teaching and learning. A case study in the Senior High Schools in Prang District in the Bono East Region of Ghana. Please take a few minutes to complete this questionnaire. Your specific answers will be completely anonymous, but your views, in combination with those of others, are extremely important and there is no right or wrong answer. I therefore promise that it is for Academic purpose and hence any information provided will be private and strictly confidential.

Questionnaire for Teachers

A. Background Information about Teachers

Please tick in the box

1. Gender: Male [ ] Female [ ]

SECTION B STRUCTURED QUESTIONNAIRE

Section B: Barriers Hindering ICT Integration

Respond to each statement by indicating whether you SD = Strongly Disagree; D=Disagree; U =Undecided, A=agree; SA= Strongly Agree.

Statement	SD	D	U	A	SA
Lack of teacher training					
Irregular power supply					
Inadequate ICT facilities					
Teachers reluctant to adopt the use of ICT tools in their teaching					
Lack of confidence on the part of some teachers					

Training and Qualifications of ICT Teachers

Respond to each statement by indicating whether you SD = Strongly Disagree; D=Disagree; U =Undecided, A=agree; SA= Strongly Agree.

Statement	SD	D	U	A	SA
I can switch on and start up the computer					
I can use all the keys on the keyboard					
I can use the start button to launch programmes					
I can close, minimize and restore a window from the task bar					
I can name and save work on hard drive					
I can save work in appropriate named files					
I can single click and double click a mouse					
I can save and load to and from pen drive					

Attitude of teachers Toward ICT Use

Respond to each statement by indicating whether you SD = Strongly Disagree; D=Disagree; U =Undecided, A=agree; SA= Strongly Agree.

Statement	SD	D	U	A	SA
I seldom use ICT in teaching and never intends to use					
I can never use ICT in teaching and do not intend to learn					
I like ICT and intend to use anytime during lessons					
I want to use ICT but the inaccessibility of the equipment draws me back					
I am satisfied in using ICT during teaching					

ICT Tools and Facilities Available in Schools

Respond to each statement by indicating whether you SD = Strongly Disagree; D=Disagree; U =Undecided, A=agree; SA= Strongly Agree.

Statement	SD	D	U	A	SA
Computers					
Projectors					
Radio					
Disc players					
Internet					