

UNIVERSITY OF EDUCATION, WINNEBA

THE CHALLENGES OF INFORMATION AND COMMUNICATION TECHNOLOGY
ON TEACHERS' PERFORMANCE (A CASE STUDY OF SOME SELECTED
SENIOR HIGH SCHOOLS IN KWABRE EAST MUNICIPALITY



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

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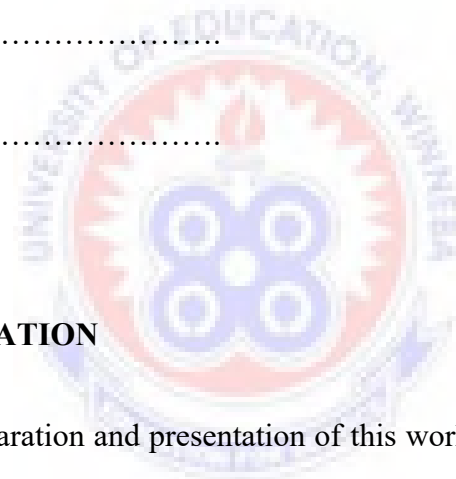
DECLARATION

STUDENT'S DECLARATION

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

SIGNATURE.....

DATE.....



SUPERVISOR'S DECLARATION

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

NAME OF SUPERVISOR: SR. DR. MARY ASSUMPTA AYIKUE

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DATE.....

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DEDICATION

To the Glory of God and to my Mother Rose Agyemang and my wife Naomi Ofori Asante and Children; Obrempong Ofori Agyemang, Ofori Agyemang Kwarko and Marian Nhyira Ofori Asante.



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LIST OF ABBREVIATIONS

APA	American Psychological Association
ICT	Information Communication Technology
NGO	Non-Governmental Organisation
SHS	Senior High School
SPSS	Statistical Package for Social Sciences
UK	United Kingdom
UNDP	United Nations Development Project



ABSTRACT

This study aimed at examining the challenges of ICT on teachers' performance in some selected Senior High Schools in the Ashanti Region. A cross-sectional study design was used with quantitative method of data collection. Questionnaires were used to collect data randomly from the teachers of the various schools. Descriptive statistical data analysis was done and results presented in tables, charts and text. The coefficient of reliability score was 0.803. The findings established that teachers have positive attitude towards ICT usage since majority (45.1%) often used ICT. Again, most of them (66.5%) used ICT for research and (67.4%) felt good using ICT. Challenges facing the use of ICT in the schools included inadequate computers (34.3%), no educational software for teaching (27.5%) and lack of reliable supply of electricity (11.2%).

The study concludes that teachers have positive attitude towards information and communication technology and also improves on teachers' performance. The study recommends that support and funding should be provided by the government to fund ICT projects in Senior High Schools. Also appropriate enlightenment, educative programs and proper channels should be made available to the various departments and not only science labs of the schools to improve ICT. Information Technology Steering Committee should be established by the school to take charge of affairs regarding acquisition of computers and implementation of ICT in the schools.

CHAPTER ONE

INTRODUCTION

This chapter deals with the background of the study, statement of problems, research objectives, research questions, significance of the study, scope, limitation of the study, operational definition of terms and the organization of the work.

1.1 Background to the Study

The practice of Information and Communication Technology (ICT) has infiltrated every facet of life today and for this reason, it is widely incorporated in the society today. Anderson (2012) states that the use of information and communication technology is clearly shaping the ways in which we learn, work and spend our leisure time as such, our success as individuals or as a nation depends on our ability to understand the use of I.C.T. No one can afford to ignore the importance of information technology in one's everyday life today.

The developments and exploitation of Information and Communication Technology (ICT) in schools in Ghana has had a functioning history that is just over a decade or two old. Although at the beginning, there had been several efforts at developing ICT in schools, there had not been any defined policy direction for ICT in education as to what specifically was needed to be achieved and the strategy for it (Dankwa, 2014). In the process, several initiatives on ICT in education were started by different interest groups to meet different needs. Towards the end of 2003, the tempo increased with the development of the national ICT for Accelerated Development Policy (Dankwa, 2014).

As at now, the use of ICT (computer) is becoming more persuasive in Ghana and the number of computers for educational purposes in our institutions is growing. In the process, there

is a proliferation of equipment standards for seemingly different goals. This situation has arisen because even though government has come out with a national policy for ICT, there is the need for a well-defined policy direction in the development and exploitation of ICT in the arena of education (Bishop, 2007). It is on these premises that the government of Ghana is committed to the transformation of the economy through the agro-based economy of Ghana into an information rich and knowledge based economy and society using the tools of information and communication technology (Bigum, 2015).

According to Bishop (2007), the government has acknowledged the need for ICT training and education in the Senior High Schools, Colleges and Universities and the improvement of the education system as a whole. The development of ICT in Senior High Schools will result in the creation of new possibilities for teachers to engage in new ways of information acquisition and analysis. Information and communication technology however will enhance access to education and improve the quality of education delivery on equitable basis. Hence the government commitment to a comprehensive program of rapid development and utilization of ICT within the education sector to transform the education system and hence improve the lives of people.

It is the desire of government that through the development of ICT in our Educational Institutions, the culture and practice of traditional memory – based learning will be transformed to education that stimulates thinking and creativity necessary to meet the challenges of the 21st Century (National Policy on ICT in Schools Education). Hence government collaboration with rlg Company to give each pupil and teachers 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 and High cost of acquisition of hardware and software (Dankwa, 2014).

High school instructors experience difficulties when preparing learners for future careers and studies such as colleges. Technology is intended to improve achievements in various fields and improve the capability of students to make well-versed decisions in the future. In the past, most specialists in technology have reported a shortage in computer access in several schools (Heitink, Voogt, Verplanken, Braak, & Fisser, 2016).

Application of new inventions such as computers in Senior High Schools mostly involves essential functions such as the use of projectors when teaching, sharing maps, and notes (Huizenga, Dam, Voogt, & Admiraal, 2017). Teachers in most instances use computers for word processing and instructions. Therefore, since there is no adequate use of technology, there is a need to research its application in High Schools over the years.

Apart from the research, teachers can apply technology for other functions like improving their skills for future careers and critical thinking. Teachers can create new information, which can lead to increased innovations. Other uses include doing online quizzes, online databases and classes, and other works such as blogging. Videos can be used for class work and homework, which enhances classroom activities enabling interaction between the learners and their teachers. Mobile devices have become more familiar to learners and analyzing the benefits is of great importance (Chang, Wang, Lee, Wu, Liang, 2015).

Several countries are currently supporting online learning, which helps to supplement classroom work. Learners need to know ways of utilizing the modern inventions for classroom together with other activities such as training manuals on co-curricular activities, which can assist in discovering talents (Bingimlas, 2016).

It is however interesting to note that in Ghana, computers are found in some of the well-endowed Senior High Schools and 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. Moreover, these electronic devices are scarcely being used for teaching purposes. This phenomenon is not surprising as the whole technology of using the computer for teaching purposes is at its infant stage in the country and Africa as a whole (Brown, 2015). Cavas, Cavas, Karaoglan, and Kisla (2009) posited that it is not just acquiring the knowledge of ICT that is important but also teachers need to understand how to use ICT pedagogically. They asserted that ICT if used appropriately can stimulate the development of higher cognitive skills, deepen learning and contribute to the acquisition of skills needed for learning all lifelong and for working in today's job market. It was against this background that this study sought to assess the challenges of ICT on Senior High School Teachers' performance using some selected SHS in the Kwabre East Municipality.

1.2 Statement of the Problem

Asiedu–Akrofi (2012) postulated that since the introduction of formal education in Ghana, educational provisions have been skewed in favour of those in the urban communities, and there have been inequitable distribution of educational resources and services. Dankwa, (2014) claimed that the provision of ICT to Senior High Schools is skewed in favour of the first class or category 'A' schools in the urban areas. Kwabre East Senior High Schools in the Ashanti Region of Ghana

can definitely not compare themselves to the category ‘A’ schools. The question of accessibility of proper ICT facilities therefore arises. Accessibility they say is greatly influenced by availability of resources. ICT is therefore accessible if only the infrastructures are available. ICT is available if there are funds to procure them or they are donated by bilateral and multilateral donor organizations.

In Ghana it is very interesting to note that educational reforms, policies and practices that were drawn and made in the postcolonial era have done little in bridging the gap that has been created between teachers in the urban areas and those in the rural communities. Most often than not, these teachers in the rural areas are faced with a lot of problems such as inadequate ICT infrastructure and poor electricity supply and implementation of government policies etc. (Asiedu-Akrofi, 2012). As a result of the lack of the properly qualified ICT professionals or teachers, stakeholders in these rural areas are heavily dependent on teachers of other field of study with a little knowledge to remedy the situation. Some other stakeholders even go to hire the services of people in their communities with a fair ICT knowledge to assist their students bringing the performance of teachers down (Anderson, 2012).

It is clearly evident that these incompetent, low-level ICT users will have to impart knowledge of the use of the new technology to students, then the competency level of their students may also be low and students may not be benefiting from the use of the new technology (Idrisu, 2009).

According to Gregoire, Bracewell and Laferriere (2016), the benefits to students of using new technology is greatly dependent on the technological skills of the teachers and the teachers’ attitude to the presence of the technology in teaching and learning. In short the essence of using technology is to help accomplish a task with least minimum input. If teachers perceive the use of

ICT to be given optimal results in teaching and learning with minimum effort then teachers would use ICT more frequently to improve their performance. It must however be known that ICT can never solve all the problems of education although the appropriate use of it can stimulate the development of higher cognitive skills, deepen learning and contribute to the acquisition of skills needed for learning all lifelong which most studies fail to address. Teachers 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. Hawkins (2012) posits that while many teachers around the world have made the commitment to use computers, few have developed coherent strategies to integrate its use fully as a pedagogical tool in the classroom to improve their performance. It is against this backdrop that the researcher wants to assess the challenges of ICT in the three Senior High Schools in the Kwabre East Municipality.

1.3 Purpose of the Study

The purpose of the study was to assess the challenges of ICT on Senior High Schools teachers' performance in the Kwabre East Municipality of the Ashanti Region.

1.4 Objectives of the Study

Objectives of the study were to:

1. Assess the attitudes of teachers towards the use of ICT in Kwabre East Municipality.
2. Find out the challenges of ICT usage among teachers in Kwabre East Municipality.
3. Determine the strategies to address the challenges of ICT usage on teachers' performance in Kwabre East Municipality.

1.5 Research Questions

1. What are the attitudes of the teachers towards ICT usage in Kwabre East Municipality?
2. What are the challenges of ICT usage among teachers in Kwabre East Municipality?
3. What are the strategies to address the challenges of ICT on teachers' performance in Kwabre East Municipality?

1.6 Significance of the Study

This research study has the potential to contribute to existing research in relation to the obstacles preventing ICT usage in the teaching and learning process. This research is expected to benefit teachers by extending the knowledge base that exists already, as it will present empirical evidence in relation to these barriers. The study may be of significance to other teachers, since most of them may also experience the same difficulties. The findings from this research could be generalized to other schools. This study may help to raise awareness among Policymakers, Directors of Education, Headmasters and teachers, about the barriers to ICT use that hinder teachers' performance in Senior High Schools. A thorough understanding of barriers, will inform educators, in deciding how to address them, with the hope that they can be minimized if not eliminated entirely from the teaching and learning process.

1.7 Limitations of the Study

The study made use of cross-sectional study design which just like other research designs has inherent limitations. Some of the limitations of the research included: difficulty in developing accurate survey instruments, lack of control over timeliness, difficulties in determining whether respondents were responding truthfully and misinterpretations of data results. Majority of the respondent reported only positive aspect of the ICT which did not give a clear picture of ICT challenges in the schools.

1.8 Delimitation of the Study

The study was only concerned with some selected public Senior High Schools within the geographic entity of Kwabre East Municipality. It concentrated on the challenges of ICT usage on teachers on performance in teaching and learning within the given environmental space in all the selected Senior High Schools.

1.9 Operational Definitions

Information and Communication Technology: is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing.

Computer Assisted Instruction: a package for learning in a subject or topic (e.g. mathematics or handling a spread sheet): modern CAI makes extensive use of multimedia tools.

Teacher's attitudes: The unwillingness of the teachers to provide much needed information and obviously has an adverse effect on the study.

1.10 Organisation of the Study

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

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The use of Information and Communication Technology (ICT) in the classroom among teachers has become important, as it provides opportunities for both teachers and students to learn how to operate in an information age. The study of obstacles to the use of ICT in among teachers may assist educators in overcoming barriers and support teachers in becoming successful technology adopters in the future. This literature review analyses some relevant literature and aims to identify the attitude, challenges and strategies to address ICT usage among teachers.

2.2 Concept of Information Communication Technology (ICT)

Information communication technology according to Unagha (2006) encompasses computer and telecommunication. It is concerned with the technology used in handling, acquiring, processing, storing and dissemination of information. Thus information communication technology is any technology used in producing, organizing and passing information through. Similarly, oxford advanced learners Dictionary sees ICT as electronic media used in processing analyzing storing and sending out information.

Evey, Preston and Cox (2010) observed that ICT is innovative device that can carry out such functions as relieving, storing, computing, analyzing, transmitting and retrieving information presented to them and allowing for one to one or group communication among humans. Ogunisola (2007) identify ICT infrastructure to include multimedia, CD ROMS, MP3 players, websites, discussion boards, emails, computer aided assessments, learning management software, blogs etc. In the same vein, Folorunso, Longe and Ijere (2005) identified ICT infrastructure to include internet world wide network (www), Electronic Data Interchange (EDI) Local Area Network

(LAN) Wide Area Network (WAN), and protocols contact management and metal data standard (MDS).

2.3 Attitudes of teachers towards ICT usage

Teachers' attitudes are one among the important values to be adhered to in the usage of ICT. This is because teachers' attitudes play a significant role on whether ICT can be effectively used in schools or not (Frost, 2015). Pearce (2012) recommends that teacher's positive attitudes towards using diverse educational facilities are a crucial factor for becoming a complete teacher. Attitudes are one of the important factors for the successful implementation of ICT use (Pickens, 2005). Hence, in order for the teachers to be effective users of ICT, regular teachers must have positive attitudes towards teaching students with ICT tools (Kitchen, 2007). Their attitudes will influence their classroom behaviours in ICTT which will determine positive students' learning outcomes (Wang, 2008). Studies show that teachers who have positive attitudes towards ICT have positive challenges on learners' learning and vice versa (Kitchen, 2007).

The early researches conducted in America and other parts of the world show that there are contradictory findings (Avramidis, & Norwich, 2010). This means that there are teachers who have positive attitudes and others with negative attitudes towards ICT usage in school. For example the research which was conducted from 1958 to 1995 in United States, Canada and Australia found that two thirds of teachers supported ICT educational system and they are willing to teach students with different education needs in ICT (Scruggs, 2016).

The studies which were carried out by Coates and Zau (2014) in Illinois and California concluded that teachers have positive attitudes towards ICT, and they were not satisfied with exclusion of ICT in schools due to any reason. In the same vain Ali, Mustapha and Jeras (2006) their study conducted in Ghana found that the majority of the teachers supported the ICT.

Although ICT is part of broad human rights agenda (Avramidis & Norwich, 2010; Folorunso, 2011) studies show that, there are some teachers who have negative attitudes towards ICT usage (Mambo, 2011). For example a study which was conducted in New Zealand, where 763 regular teachers' attitudes towards ICT usage were investigated, the result revealed that teachers exposed positive attitudes towards ICT in theory, but in practice, they did not want schools that face barriers or challenges to use ICT (Mitchell, 2012).

Researchers have so commented immensely on the use of ICT- driven instructional aids in any educational processes, that the use cannot be over-emphasized. Abujaber (2013) added that, the importance of instructional materials for both teachers and students cannot be over emphasized. The use of ICT driven instructional; aids is essential to support teaching and learning because other phenomena's cannot be easily expressed without the support of graphics maps, video pictures etc. Generally, the importance and the usefulness of ICT driven instructional aids in teaching and learning are explained under the following headings.

Stimulation of students' interest: in teaching and learning process there is needed to generate, arouse, motivate and maintain student's interest. If the learners' interest is built properly learning can take place most effectively. As ICT driven instructional aids addresses individual differences, students are aroused by the nature and the beautiful appearances of the materials which will make them to settle down and learn what the teacher had prepared to teach. Nnyejmesi (2017) cited by Anyawo (2010) agreed and based on investigations that pictures stimulate and help further study, helps children to take active interest in the topic presented and improves teachers' performance.

Concretize abstract issues or topics in Teaching and learning process: the use of ICT driven instructional aids in teaching and learning process It makes learning real, practical and more

permanent to the learners. It makes conceptual abstract more meaningful Esu (2012) states that, instructional materials are valuable assets in learning situations because they make lessons practical and realistic they are the pivots on which the wheels of the teaching learning process rotate. Since it concretize issues, it then facilitates revision (recall) activities and provider very unique opportunities for self and group evaluation for the teacher and the students alike. It captures the student intellect and eliminates boredoms, makes the work easier, neater, and boosting for clarity and more appeal.

Creating effective communication: ICT driven instructional aids if properly used allow for a flow and transmission of ideal from the teacher to the students and likewise from the students to the teacher or from one group to another. The learners will be able to see, touch, spell what is been talk about by the teacher and be curious to ask questions that would be very helpful for effective evaluation (formative) of the teachers and instructions in subject matter (Esu, 2012).

It is used to improve teaching methods: With the use of instructional materials, the teacher is able to edit and try, and retry, alter and delete his activities to fit the standards of the students and also to effectively address the curriculum objectives, instructional materials if properly utilized helps in giving direct contact with the realities of the leaner both social and physical environment (Anyawo, 2010).

It saves time and reduces verbalism or repletion of words: Ajayi & Emma (2014) that “figurative speaking instructional materials enable the teacher to be in more than one place at a time and to address several issues at a time. For an example a video material could be on, while the teacher moves around to explain to individual students the subject contents in response to request based on the individual differences on problems.

It helps in developing a continually of reasoning and coherence of thought: Disciplines that are integrated course of study which incorporate ideas from different disciplines, the use of ICT-driven instructional aids help the learners on providing integrated experiences, which may vary from, disciplines which make the end product of education more productive. Since students are exposed to the real nature of those concept or body of knowledge they tend to analyses and synthesis those bodies of knowledge for the proper application in their daily lives (Ajayi & Emma, 2014).

Provides meaningful and useful source of information to teachers and learners: Teachers are up to date and are able to provide for reliable and useful information for the learners with the use of ICT-driven instructional aids help the learners on providing integrated experiences, which may vary from, disciplines which makes the end product of the education more productive. Since students are expose to the real nature of those concept or body of knowledge for the proper application in their daily lives (Ajayi & Emma, 2014).

To promote close relations between the community and school: the purpose of using ICT-driven instructional aids is for the students to internalize the situational issues happening around his totality, the students should be able to identify crucial issues and address this issues if properly inculcated with the use of instructional materials. (Walsh, 2014) posited three importance of teaching aids in class, as; Easing off teachers teaching task. Satisfying different children's learning patterns and in building of special child's or learners appeal by teaching and manufactures, which help to motivate or captivate interests of the learner.

Ikwumelu (2010) outlined the following points as the reason why teachers must apply teaching aids in classrooms: teaching aids helps to concretize abstract issues and topics: they motivate pupils interest in topics being discusses, they developed continuity of reasoning and coherence of

thought which augurs well with the inter-interdisciplinary nature of other subjects, teaching aids saves time and as things presented are almost self-explanatory, energy saved in too much talking and writing and they help to appeal to pupil interest and this is because, they tend to appeal to children's difficulties as well as take care of children's differences.

2.4 Challenges associated with the use of ICT by teachers

Teacher's professional knowledge and technical knowhow: Since ICT is a fairly new area of importance in education especially in developing communities like Ghana. It is a highly technical field and to understand how it can affect the teaching and learning situation, one first has to understand the operational functionality of the materials. As much as materials differ in terms of technical components, design and setup, they also differ in terms of functionality. Some are multi-dimensional; capable of various functions such as giving logical outcomes, manipulating information etc. without the teacher who is knowledgeable enough. ICT-driven instructional aids cannot create change and progress.

Teachers' knowledge has great impact on the effective application of ICT driven instructional aids. This is because the teacher uses to understand the sequential presentation of the instructional gadgets so as to suit the interests of the learners and its appropriateness with the instructional tasks, for instance, a teacher who is not computer literate would find it difficult to apply its operation even when and where found necessary, or even if the teacher has a partial knowledge of the operational function of the materials. The materials might be wrongly used there by creating a wrong impression for the audience or the students (Ansah, Blankson & Kontoh, 2012).

Lack of computers: Computers are still very expensive and despite spirited efforts by the government agencies, NGO, corporate organizations and individual to donate computers to as

many schools as possible. There are still a big percentage of the schools unable to purchase computers for use by their pupils (Ansah, Blankson & Kontoh, 2012).

Lack of electricity: Many schools are still not yet connected to electricity; Ghana being a developing country, the government has not been able to connect all parts of the country to the national electricity grid. Consequently those schools that fall under such areas are left handicapped and many not been able to offer computers studies (Ansah, Blankson & Kontoh, 2012).

Broken down computers: While a good number of schools have benefited from donated used computers, they have not been adequately equipped with the same on maintenance and repairs hence it is very common to see schools computer lab full of broken down computers. Some are repairable and some not, this has actually not been a major problem and the government has now put strict measures on any person, NGO or corporate bodies willing to donate 2nd hand computers (it is seen as a dumping ground) waste management (Ansah, Blankson & Kontoh, 2012).

Burglary: The fact that computers are still very expensive in Ghana; this makes them a target for thieves who usually have ready markets to another party at a much less figure. This has made many schools shy away from purchasing computers for their students (Bittner, 2015).

Lack of internet or slow connectivity: Most schools are not able to connect to the World Wide Web due to high cost involved in the connectivity. On average, it may cost approximately GHC 2,250 per month to connect to about 15 computers on a band width of 128/64 kbps. This is considered as very expensive for a very low speed (Walsh, 2014).

Time constraints: Time also is a serious problem or factor that impede the effective use of ICT driven instruction because sometimes the time that is allotted for a subject on the time table

might not be enough for the teacher to present his content alongside with effective use of the materials which will affect the wholesome delivery of the content (Walsh, 2014).

Poor maintenance culture: Materials available for the teaching are poorly by man handled by both teachers and school authority. Non available of recourse room for the proper keep of both the locally manufactured and commercially purchased ones, thereby limiting its use as the time needed, very many teachers use material occasionally without the proper up keep of the materials after use for the future reference (Walsh, 2014).

2.5 Strategies to address challenges of ICT on teachers performance

Wenglinsky studied the relationship between different applications of education and its outcomes on teachers. The information sought was related to the frequency of computer use in teaching mathematics in school set up, the availability of computers at school, the use of computers by teachers as well as technology to give instructions. According to the findings, there are inequities in the manner in which computer are used. Schools in poor urban and rural areas may lack opportunities to develop computers effectively (Wenglinsky, 2013). Therefore, teachers from regions that have not embraced the utilization of information technology have less technical skills compared to those in developed urban centers. The study concluded that computers are not the solution to all problems schools might be experiencing, although they present a comprehensive tool for proficiency in mathematics.

In the study by Clotfelter, Ladd & Vigdor (2010), they employed statewide end-of-course tests that were carried out in Carolina to establish the connection among tutors qualifications and learners achievement in high schools. According to the findings, there was compelling proof that tutors qualifications, especially the license and credited ones, have significant impacts on learner success of high magnitude. The results mean that the uneven division of tutor testimonial brought

about by racial profiling and economic condition of school learners influenced student achievement (Clotfelter et al., 2010). Teachers with certified computer education performed better in ensuring learners utilize modern technology in attaining their goals of being successful in learning (Van den Beemt & Diepstraten, 2016).

The existence of technologies in the class set up learning has been effective particularly in ensuring the improvement of teaching and preparation for instructors to make sure successful alignment of educational technology in the learning activities. Recently teacher-learning establishment is making an effort to prepare for pre-service tutors to make sure there is an integration of technology into the future teaching practices mainly in high school (Anderson, 2016).

Some strategies include the introduction of technology to pre-service teaching professionals, delivering of technology courses, giving mini-workshops, integration of technology in all learning units, and modeling on the usage of technology among others. Incorporation of computer systems into the learning system has become a primary objective of many countries since it improves performance after the student attends post-secondary levels (Borokhovski, Bernard, Tamim & Schmid, 2016).

However, unless there is interlink between tutors and computers is implemented, it might be challenging to attain the principal targets. By understanding the method of achieving incorporation, there is a need to study more on teacher training for high school institutions. Instructors that obtain proper learning in the field of ICT may vary in coming days mainly in the utilization of computers for tutoring from tutors that might not have got a better education.

Goldin and Katz (2018) researched on three factors that increase teachers' motivation in the technologically enhanced setting. The factors included communication, connecting with others

and teachers believed that computer enables them to have control over their teaching by promoting effective teaching and learning (Goldin & Katz, 2018). Previous research has also shown that attitudes towards ICT do not significantly depend on gender. Teachers' attitudes toward ICT are multifaceted although with continued training positive results can be achieved (Ibieta, Hinostrroza, Labbe & Claro, 2017).

Anxiety decreases very quickly due to constant exposure to technology. However, the evolution of ICT is quite slow regarding productivity and can be prolonged. Usefulness of applying ICT in high schools is of great importance in different countries. Various nations have different connectivity and access to ICT resources and the current state of technological advancement. Complete integration of technology in the classrooms helps in improving the cognitive functions and meeting the needs of high school learners. Introduction of modern technology in high schools has also had a significant impact on teaching by a generalization of teachers' schedules (Ibieta et al., 2017). For instance, lesson preparation has been supported by emerging inventions, especially computers.

Teachers can plan interactive and creative lessons as well as set assignments using various technologies in a class setting. Instructors can use technology for assessing learners in various forms although overall technology is capable of enhancing tests through the provision of flexible designs. Learners' skills and competencies can be established, and teachers can utilize real-time feedback. Therefore, technology enhances student-teacher interactions improving understanding of the critical content. The tutor can explain concepts severally for students to comprehend what is being taught. The adoption of technology in this area leads to overall improvement in reporting and student grades (Abboud & Rogalski, 2017).

The use of technology in high school can help break down boundaries, as it does not limit the lesson period. Therefore, there is the creation of an authentic learning continuum between home and school due to empowerment in the latter. Students and their instructors can take more control in the learning process and harness the capabilities of gaining new experiences thus encouraging quality studies outside libraries and classroom (Kennewell, Tanner, Jones & Beauchamp, 2008).

Teachers can utilize technology to facilitate the teaching, collaborating and creating content virtually without physical presence of the teacher. Collaboration is also possible through technology due to the flexibility that helps students to work in an environment considered as more collaborative. Technology is vital for mutual learning enabling interaction between teachers and learners. Students can always contribute to lesson content and engage with their colleagues in solving problems during lesson time. Use of mobile devices and laptops is the best for remote and online learning in schools.

Teachers are frequently generating new approaches to problem-solving as well as learning ways of working alongside their peers in other institutions to meet the standard education at all levels. Future careers development of high school teachers are enhanced when technology is used to support teaching. Teachers use laptops and tablet while others use Smartphones for classroom-related activities. Sharma and colleagues did research analyzing the web-based learning and its effect on the motivation of teachers by the internet. Use of documentaries together with movies helps teachers to understand classroom content and teach better (Sharma, Joshi & Sharma, 2009).

Recently, the evolution of portable gadgets, wireless devices, and network inventions has been highly developed. The incorporation is expected to use technologies in a high school environment for teachers together with learners in using modern innovations (Singh, 2018).

Mobile devices facilitate the connection between tutors and learners to use computing capabilities anywhere. The internet and wireless technology promote interlink amidst mobile gadgets with other computing devices such as computers, tablets, and other items (Hinostrroza, Ibieta, Claro & Labbe, 2016).

Lately empirical research has revealed the benefits of using wireless technology and portable gadgets in high school learning surrounding to enhance accessibility and convenience of information interconnection (Shernoff, Ruzek & Sinha, 2017). Helping students to participate in learning-related activities regardless of where they are, offering support to groups working on a plan, and improving communication and joint education in the classroom is essential.

Smith, Mahdavi, Carvalho, Fisher, Russel and Tippett study found that technology in high school could have an adverse effect on teachers such as cyberbullying. The findings indicate that such crimes are less frequent compared to the traditional bullying (Smith et al., 2008). However, many cases have been reported within the schools compared to other places. Misuse of school technological gadgets is linked to the existence of cases of cyber-bullying of colleagues. Bingimlas in his work claimed that teachers were willing to integrate technology in teaching but faced many obstacles (Bingimlas, 2009).

Information Communication Technology resources include hardware, software, technical support and professional development, which need to be availed to teachers. Incorporating all the components can make it easier for high school teachers to integrate technology in schools and achieve active learning in the school environment (Zheng & Warschauer, 2015).

Good confidence increases the utilization of modern technology in the teaching process, and the leading cause of confidence is unfear of failure and anxiety concerning usage of new methods during classes. Instructors fear attending classrooms with inadequate resources since

some learners have more computer skills compared to them. Lack of competence by tutors also hinders the incorporation of ICT during class time in pedagogical practice (Brown, 2015).

However, these strategies differ from one country to the other since in other nations especially the developing ones; the level of incompetence in technology is quite high. Resistance to change is one of the significant problems that are to be solved to make sure that a comprehensive combination of the computer technology in secondary schools. Teachers' attitudes affect the extent of technology used since most tutors are not willing to change their old ways (Darling-Aduana & Heinrich, 2017).

Some issues are caused by school levels such as the lack of adequate time allocation for incorporating new technologies. The limitation is quite common, as it requires the use of extra time for students to work with technological gadgets. Also, inadequate training of teachers has become a significant barrier. The recent study in Turkey pointed out that the primary issue with the adoption of information technology in science in schools is the lack of adequate in-service training for teachers. Without knowledge on ways of using contemporary inventions, it is unfeasible to apply them in high schools and other educational institutions.

2.6 Conceptual frame work

According to Cox preston and Cox (2015), there are a number of factors which have been identified to influence and support teachers in using ICT in the classroom. In order to investigate these factors further in relation to teachers ICT use, the study make use of the technology acceptance model (TAM) developed by Davis Bangozzi and Warshaw (2016) which was on adaptation of theory of reason action by Ajzen and Fisben (2016) to investigate the reasons why teachers use ICTs. Their model shown in figure1 links the perceived usefulness and ease of use

with altitude towards using of ICT and actual use - (system use). They tested this model with 1007 Adult users, who had been using a managerial system for 14 weeks.

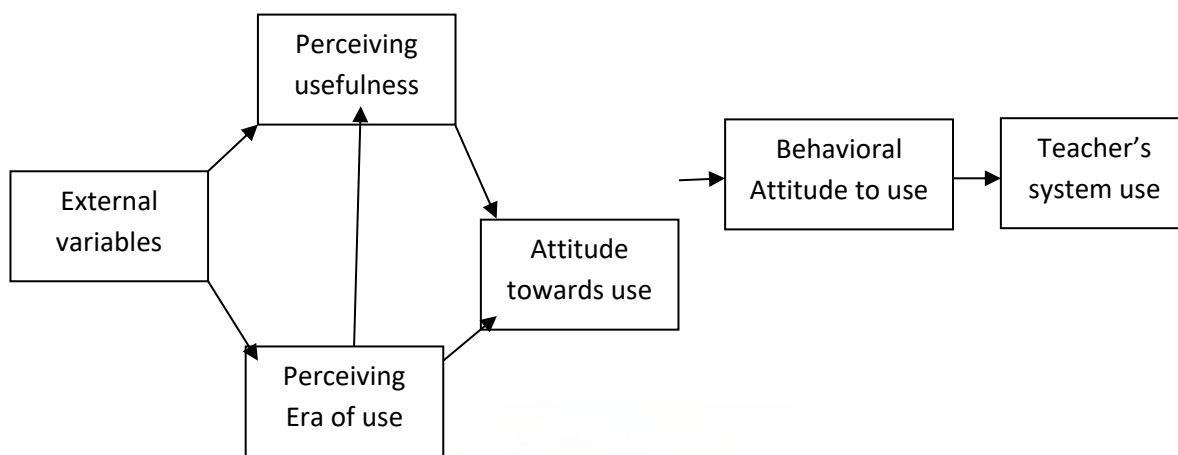


Figure 2.1: Conceptual framework

Adapted from Technology acceptance model (TAM) (Davis; Bagozzi & warshaw, 2000)

External variables

In TAM the external variables represent the many influences on the teachers which come from outside their sphere of control these will include; The requirement of a national curriculum or natural guidelines the changes in society with the rapid growth in the uses of the internet and ICT in general; opinion of the colleagues, responsibilities of the teachers; pressure from the parents and students, the influences of the local education authority (LEA). Although these have been identified as very important by a number of research studies in leading teachers to understand the need for change and to question their professional practice, discussed earlier. Only a few could be investigated within the scope of this project. The main focus on this research is how teachers perceive ICTs contribution to teaching and learning. These factors come within Davis et al perceived usefulness and perceived ease of use components.

2.7 Summary

It is clear that through ICT teachers are able to have accessibility to information shared resources, technology and various ways of exchanging information. In the past two decades' data collection and distribution has been greatly technology supported and not using could lead to a competitive disadvantage for education. Information and communication technology (ICT) will continue to play a crucial role in increasing the standards of education. Teachers will like increase continually to achieve higher efficiencies with the use of ICT. Effective ICT implementation will enhance the teaching process. Effective implementation of ICT in education research would provide a competitive edge to institutions by offering enhanced teaching and learning.

Teachers would thereby derive greater efficiencies in terms of cost and quality while delivering an enriched learning experience for the students. It would not be farfetched to say that schools would utilize the research facilities in higher education if excellence is achieved in ICT implementation in higher educational institutions. It would be doubly beneficial; firstly it would make the teachers in educational institutes more practically usable and also self-sustaining through funding by the government. Thus, ameliorating the existing learning experience will lead to a more knowledge driven education that has industry application.

As students and teachers gain access to technology, more direct forms of communication, and access to sharable resources, the capability to support this quality learning standard will continue to grow. ICT applications provide institutions with a competitive edge by offering enhanced services to students and faculty, driving greater efficiencies and creating enriched learning experiences to increase teachers' performance.



CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter dealt with the methodology that presented various procedures that were used in conducting the research. The procedures included the research design, the population and the sampling techniques, data collection procedures, research instruments used and the data analysis procedures.

3.2 Research design

Basically the design was a cross-sectional survey type that described the state of ICT application within the framework of Senior High School teachers. According to Brady (2008) surveys require asking respondents, for information, using either verbal or written questions. This encompasses the use of questionnaire as an instrument to help achieve the objectives of the study. The main purpose of this study was to look at the challenges of ICT on teachers' performance. Thus, the outlook of the design concentrated on the extent ICT challenges on performance of teachers in Senior High Schools in Kwabre East Municipality. Consequently, the study used a quantitative approach in addressing the objectives of the research.

3.3 The population of the study

The population of this research study was made up of 233 teachers from the four selected secondary schools within Kwabre East Municipality. Population refers to any group of people or object which are similar in one or more ways and which form the subject of the study in a particular research according to Neuman (2000).

3.4 Sample and Sampling Technique

3.4.1 Sample

Krejcie and Morgan (1970) table for the determination of sample size was used to calculate the sample size. From a population of 480 at an expected frequency or response distribution of 50%, a confidence limit or margin of error of 5% at a confidence level of 95%, the sample size of the study will be calculated as 214. Using non-response rate of 10%, the total sample size used for

the study was 235. However, 233 was used for the actual analysis due to the fact that all respondents could not submit their questionnaires duly filled.

3.4.2 Sampling technique

Respondents were selected from four (4) Senior High Schools in the Municipality. All teachers were given the equal chance of been selected irrespective of their sex and class of teaching. The study used proportionate stratified and simple random sampling methods for the selection of the participants. Based on the number of teachers who were in each of the schools, was used to determine the respondents for each stratum. Formula $A/B * C$ was used where 'A' = population in each stratum, 'B' = the total population of the teachers and 'C' = the determined sample size as shown in table 3.1 below.

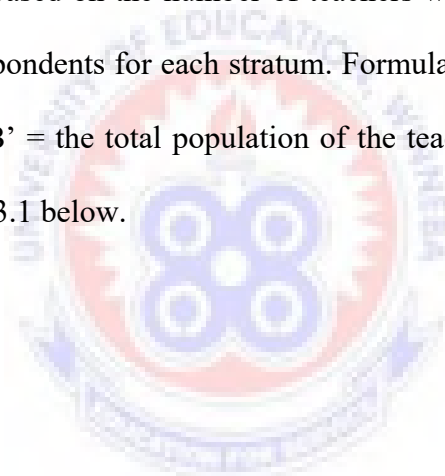


Table 3.1: Summary of proportions sampled from each facility

Name of school	Population of teachers at each school	Proportion of teachers to be selected
Kofi Agyei SHS	118	58
Adanwomase SHS	87	443
Simms SHS	171	84
Antoa SHS	104	50
TOTAL	480	235

Source: Author's field work, 2020

After determining the number of respondents to be selected from each stratum, the respondents were giving numbers which were written on slips of paper. The papers were put into a bowl and selected randomly until the required sample size was achieved.

3.5 Data Collection Instruments

Quantitative data collection method was employed for this study. In this case a structured questionnaire containing close and open ended questions was used to gather information from the study participants. The essence of the study was explained to participants before data collection. Consent was sought from individual teachers who agree to be part of the study with their privacy and confidentiality fully assured.

The entire questionnaire was developed in four sections. The first section was made of up of questions relating to the socio-demographic characteristics of the respondents, the second section comprised questions relating to the attitude of teachers towards ICT, the third part contained the barriers of ICT usage among teachers and the fourth section covered the challenges of ICT on teachers performance. Data collection was school-based and the data collected by the researcher himself.

3.6 Pretesting

The questionnaire was pre-tested on a sample of 20 respondents at Agona SDA Senior High School in Agona Asamang Municipality which was outside the study area. It was chosen because of the similarities in characteristics of the respondents. The outcome of the pretest was used to modify the questionnaire where necessary. The reliability test yielded Crowbach alpha of 0.879 which is highly reliable.

3.7 Validity and Reliability

3.7.1 Validity

The validity of an instrument is the degree to which it measures what it is intended to measure (Polit & Hungler, 1993). Content validity refers to the extent to which an instrument represents the factors under study. The relevance of the questionnaire items was established by giving the instrument to the supervisor of this work and other experts in research to scrutinize the items for proper construction.

3.7.2 Reliability

Reliability is the degree of consistency with which an instrument measures the attribute it is designed to measure (Polit & Hungler, 1993). To determine the reliability of the instrument, the questionnaire were administered on the same group of respondents twice in the pretest study and given two weeks grace period between the first and second test and the coefficient of reliability from the two tests correlated as shown in table 3.3.

Table 3.2: Reliability score of pretest

Subscales	No. of items	Cronbach Alpha
Attitude of teachers towards ICT	10	.846
Challenges of ICT usage	8	.832
Strategies to address ICT usage	4	.812
Overall	22	.803

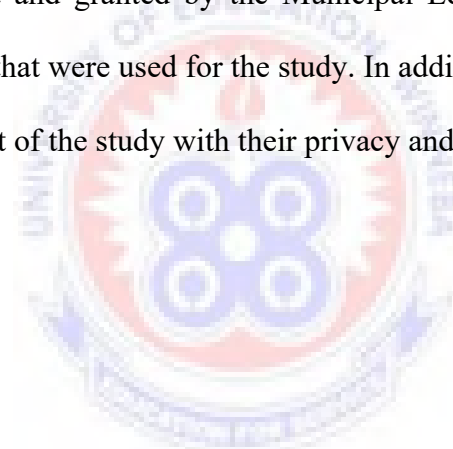
Source: Author's field work, 2020

3.8 Data Analysis

Data collected with questionnaire were screened for completeness and errors. The data were entered using SPSS version 20.0. The principal investigator was responsible for the data cleaning and management. Descriptive statistical analysis was carried out to obtain summary tables and graphs containing the demographic characteristics and other research questions from the study participants. Results were expressed as frequencies and percentages and in graphs.

3.9 Ethical Consideration

Ethical permission for this study was obtained from the University of Education Winneba. Also, permission was sought and granted by the Municipal Education Director and heads of various Senior High Schools that were used for the study. In addition, consent was obtained from teachers who agreed to be part of the study with their privacy and confidentiality fully assured.



CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the data analysis using SPSS version 20.0 and discussions. The analysis for the study has been categorized according to the sociodemographic characteristics of the respondents and the objectives of the study. Out of 235 sample size, 233 questionnaires were retrieved and used for the data analysis making 99.1% response rate.

4.2 Sociodemographic characteristics

More than one third of the participants (38.6%) were within 31-36 years while 9.4% were within 25-30years. The higher number of respondents within the age group 31-36 years might suggest why an overwhelming majority of the participants (82.4%) had 1st degree certificates with few master's degree since increasing in age increases ones educational background. Also, 72.1% of the respondents were males. This is in line with Ansah et al (2012) who state that males in the educational sector are more than females. The higher number of male participants might be due to the fact that males outnumber their female counterparts in the educational sector in Ghana. The results is consistent with a similar study on information technology among selected teachers in Greater Accra in which the 604 participants involved in the study had 422 (69.9%) males and 182 (30.1%) females (Bittner, 2015). The majority of the participants within the age range of 31-36 may also suggest why most of the teachers had taught for 6-20 years since most of them were in their youthful period as detailed in table 4.1.

From table 4.1.1, more than one third of the participants (38.6%) were within 31-36 years while 9.4% were within 25-30years.

Table 4.1: Sociodemographic characteristics

Table 4.1.1 Age of respondents

Variables	Frequency	Percent (%)
Age of respondents		
25-30	22	9.4
31-36	90	38.6
37-42	74	31.8
Above 43	47	20.2
Total	233	100.0

Source: Author's field work, 2020

Table 4.1.2 depicts the sex of respondents. An overwhelming majority of the respondents 168 (72.1%) were males while 65 (27.9%).

4.1.2 Sex of respondents

Variables	Frequency	Percent (%)
Sex of respondents		
Male	168	72.1
Female	65	27.9
Total	233	100.0

Source: Author's field work, 2020

Most of the respondents 192 (82.4%) had 1st Degree as their highest educational certificate as against 41 (17.6%) who had Master's degree as shown in table 4.1.3.

4.1.3 Highest educational certificate

Variables	Frequency	Percent (%)
Highest educational certificate		
1 st Degree	192	82.4
Master	41	17.6
Total	233	100.0

Source: Author's field work, 2020

Table 4.1.4 presents the period the respondent had worked as a teacher. Majority of them 142 (60.9%) had worked between 6-20 years followed by those who had worked for 3-5 years while 6 (2.6%) had worked for less than 2 years.

4.1.4 Period of work as a teacher

Variables	Frequency	Percent (%)
Period of work as a teacher		
Less than 2yrs	6	2.6
3-5yrs	54	23.2
6-20	142	60.9
Above 20yrs	31	13.3

Total	233	100.0
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Sources: Author's field work, 2020

Comparatively most of the respondents 68 (29.2%) taught mathematics while 36 (15.5%) taught social studies as seen in table 4.1.5.

Table 4.1.5 Subject taught

Variables	Frequency	Percent (%)
Subject taught		
ICT	42	18.0
English	48	20.6
Mathematics	68	29.2
Social studies	36	15.5
Science	39	16.7
Total	233	100.0

Sources: Author's field work, 2020

4.3 What are the attitudes of teachers towards ICT use?

Almost half of the participants 105(45.1%) used ICT often while 62(26.6%) used it less often. Majority (66.5%) used ICT for research and also felt good to use ICT for their activities. This implies that the teachers' attitude towards the use of ICT was fairly good. This might suggest why most of the participants rated their experience in ICT as high (table 4.2). The positive attitude of the participants in this study supports the report by Kitchen (2007) who described the attitudes of his respondents towards the use of ICT as positive. The similarities these studies could be due to globalization, wildy use of ICT across the world and advancement in the teaching methods which demands the use of ICT. In related study in the United States, Canada and Australia found that two thirds of teachers supported ICT educational system and are willing to teach students with different education needs in ICT (Scruggs, 2016). In the same vain, Ali, Mustapha and Jeras (2006) their study conducted in Ghana found that the majority of the teachers supported the use of ICT.

Although ICT is part of broad human rights studies show that, there are some teachers who have negative attitudes towards ICT usage as stated by Mambo (2011). Another study which was conducted in New Zealand, where 763 regular teachers' attitudes towards ICT usage were investigated, the result revealed that teachers exposed positive attitudes towards ICT in theory, but in practice, they did not want schools that face barriers or challenges to use ICT (Mitchell, 2012). This implies the nature and facilities present in the schools would influence the attitude of teachers to be positive or negative.

Researchers have commented immensely in the use of ICT- driven instructional aids in any educational processes, that the use cannot be over-emphasized. The importance of instructional materials for both teachers and students cannot be over emphasized. The use of ICT driven instructional aids is essential to support teaching and learning because other phenomena cannot be easily expressed without the support of graphics maps, video pictures etc. Generally, the importance and the usefulness of ICT driven instructional aids in teaching and learning are vital.

It was revealed in this study that most of the participants (68.2%) undertook ICT training based on their personal interest. This may suggest the flexibility in the use of ICT in the teaching and learning activities in the selected SHS. Teachers were not forced to use power point or interactive boards for teaching so teachers used ICT as and when they deemed fit and appropriate. This is no surprise that majority of the participants (77.7%) had basic computer as their professional certificate in ICT. This means that their various institutions did not mandate the teachers to undertake ICT training, probably only the ICT teachers.

In teaching and learning process there is needed to motivate and maintain teachers' interest. If the teachers' interest is built properly teaching and learning can take place most effectively. As ICT driven instructional aids addresses individual differences, students are arouse by the nature

and the beautiful appearances of the materials which will make them to settle down and learn what the teacher had prepared to teach. Nnyejmesi (2017) cited by Anyawo (2010) agreed and based on investigations that pictures stimulates and help further study, helps children to take active interest in the topic presented and improves teachers motivation to teach. With increased motivation, the teacher is able to edit and try, and retry, alter and delete his activities to fit the standards of the students and also to effectively address the curriculum objectives, instructional materials if properly utilized helps in giving direct contact with the realities of the learner both social and physical environment according to Anyawo (2010).

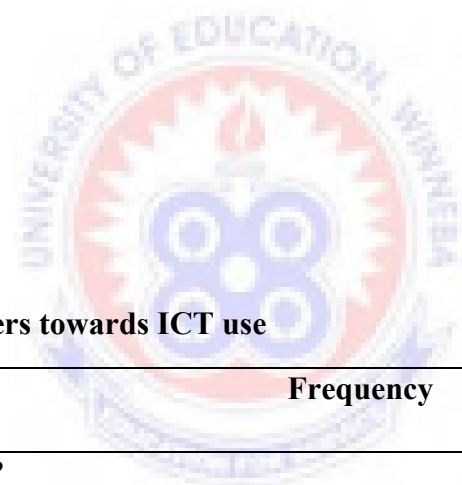


Table 4.2: Attitude of teachers towards ICT use

Variables	Frequency	Percent (%)
How often do you use ICT?		
Very often	66	28.3
Often	105	45.1
Less often	62	26.6
Total	233	100.0
What do you use ICT for?		
Teaching	32	13.7
Communication	11	4.7
Research	155	66.5
Entertainment	35	15.0
Total	233	100.0
How do you feel using ICT?		
Feel good using ICT for my activities	157	67.4
Do not feel comfortable with ICT usage	60	25.8
ICT gives me a lot problems	16	6.9

Total	233	100.0
What do you use Microsoft office for?		
Power point for teaching	15	6.4
Word to type questions and other documents	167	71.7
To keep records	51	21.9
Total	233	100.0
How would you rate your experience with ICT		
Low	101	43.3
High	94	40.3
Very high	233	100.0
Total		
What motivates you to undertake ICT training		
To use it in class	159	68.2
Personal interest	10	4.3
Required to do so	37	15.9
Increase career prospects	233	100.0
Total		
Professional certificate in ICT		
Basic computer	181	77.7
Intermediate computer	36	15.5
Advanced computer	16	6.9
Total	233	100.0
Where do you access ICT in the school		
Computer lab	186	79.8
Staff common room	6	2.6
Personal computer	36	15.5
Classroom	5	2.1
Total	233	100.0
Permissible hours to use computers in the sch.		
Less than 1 hour	81	34.8
1-3 hours	26	11.2
4-6 hours	5	2.1
7-9 hours	26	11.2
Above 10 hours	233	100.0
Total		

Source: Author's field work, 2020

4.4 What are the challenges of ICT use on teachers' performance?

On ICT barriers 34.3% of the participants stated that they had inadequate computers in their schools followed by no educational software for teaching, lack of reliable electricity, only science teachers used computers and no projectors for teaching. Lack of adequate computers in the institutions would put pressure on the few available thereby restricting non-ICT teachers from accessing the computers. Computers are still very expensive and despite spirited efforts by the government agencies, NGO, corporate organizations and individual to donate computers to as many schools as possible. The finding is in line with a study conducted in Ghana that states that there are still a big percentage of the schools unable to purchase computers for use by their teachers (Ansah, Blankson & Kontoh, 2012). Even though the majority of the teachers had positive attitude towards the use of ICT, inadequate computers made it difficult for them to use ICT especially for teaching and research.

Many schools are still not yet connected to electricity even if they have; some schools are cut off electricity supply due to inability to pay electricity bills and regular power outages. Ghana being a developing country, the government has not been able to connect all parts of the country to the national electricity grid. Consequently those schools that fall under such areas are left handicapped and many not been able to use computers as seen in the study of Ansah, Blankson and Kontoh (2012). While a good number of schools have benefited from donated used computers, they have not been adequately equipped with power banks and necessary maintenance and repairs hence it is very common to see schools computer lab full of broken down computers. Some are repairable and some not, no wonder the government has now put strict measures on any person, NGO or corporate bodies willing to donate second hand computers to schools (Ansah, Blankson & Kontoh, 2012).

Again, it was revealed that, in some schools only the ICT or the science teachers were allowed to use computers at the detriment of the other teachers. This might be due to the fact that the lack of adequate computers forced the management to resort to rule with primary notion of protecting the few once available. The fact that computers are still very expensive in Ghana; this makes them a target for thieves who usually have ready markets to another party at a much less figure. This has made many schools to allow only the ICT and science teachers to get access to the computers for security reason which was noted in the study of Bittner (2015).

Quiet apart from these restrictions, lack of projectors for presentations of slides also posed a serious problem or challenge that impeded the effective use of ICT driven instruction because sometimes the teacher would have to show pictures for further illustrations alongside talking with effective use of the materials which will affect the wholesome delivery of the content which was also reported by Walsh (2014). For an institution to address these barriers more computers should be acquired and these computers should be brand new ones to prevent the frequent breakdowns. Also, reliable electricity supply and ICT expert to handle these computers would go a long way to improve ICT usage in the schools as shown in figure 4.2.

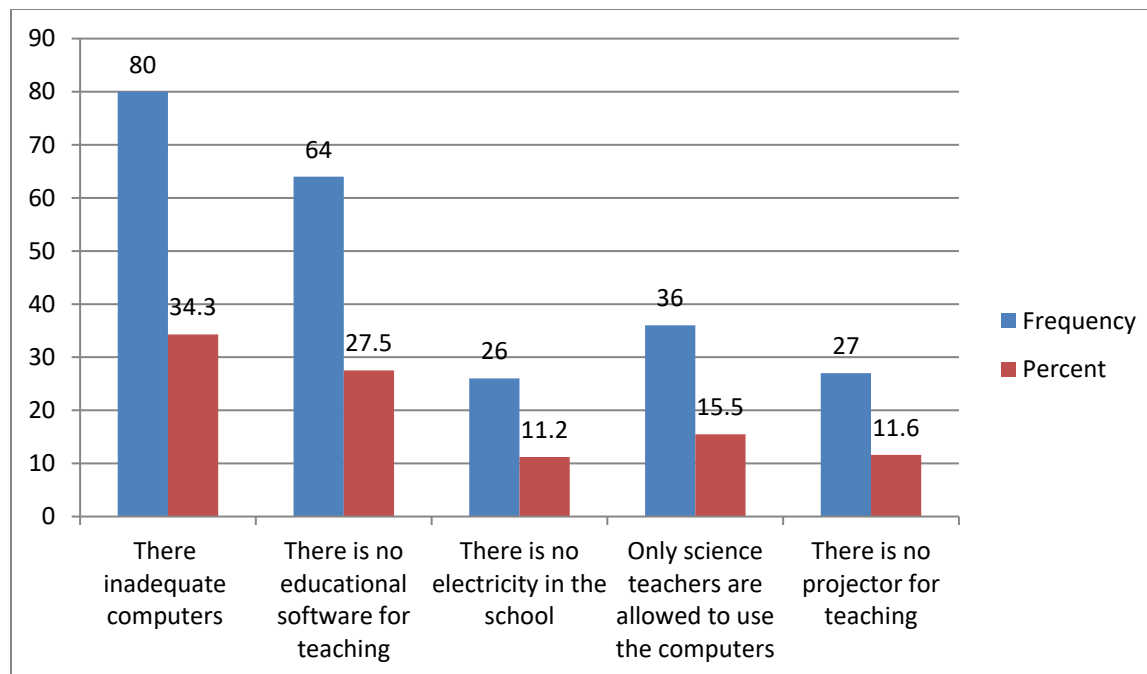


Figure 4.2: Challenges of ICT usage in the schools

Source: Author’s field work, 2020

4.5 What are the strategies to address the challenges of ICT

It could be deduced that 95(40.8%) of the participants mentioned improvement on their research as a strategy to address ICT challenge on their performances while 57(24.5%) stated it should improve on their teaching. Almost half of the participants 102(43.8%) said ICT should provide very effective communication while 59(25.3%) said it should make communication simple and easier as seen in figure 4.5.

The improvement on their research programmes could be due to the fact that it was easy for them to search for information online than going to the libraries. With ICT they could have access to a lot of studies online that helped them to improve upon their researches. This finding corroborate with Wenglinsky (2013) who studied the relationship between different applications of education and its outcomes on teachers. The information sought was related to the frequency of

computer use in teaching mathematics in school set up, the availability of computers at school, the use of computers by teachers as well as technology to give instructions. According to the findings, there are improvements in the manner in which teachers teach when exposed to ICT.

Also, in a related study by Clotfelter, Ladd and Vigdor (2010), they employed statewide end-of-course tests that were carried out in Carolina to establish the connection among tutors' qualifications and learners achievement in high schools. According to the findings, there was compelling proof that tutors ICT qualifications, especially the license and credited ones, have significant impacts on teachers' performance of high magnitude. The results mean that the uneven division of tutor testimonial brought about by racial profiling and economic condition of school influenced teachers' performance (Clotfelter et al., 2010).

This implies that teachers with certified computer education performed better in ensuring learners utilize modern technology in attaining their goals of being successful in learning. The likeness in the findings could be as a result of standardization of ICT enhanced teaching and learning. Feedback produced by ICT in the village would be the same information in the urban communities however; the expertise level of the teacher may count. The existence of technologies in the class set up learning has been effective particularly in ensuring the improvement of in-service teacher education and preparation for pre-service instructors to make sure there is successful alignment of educational technology in the learning activities. Recently teacher-learning establishment is making an effort to prepare for pre-service tutors to make sure there is an integration of technology into the future teaching practices mainly in high school since modern teachers cannot stick to the old methods of teaching. Some strategies to improve this include the introduction of technology to pre-service teaching professionals, delivering of technology courses,

giving mini-workshops, integration of technology in all learning units, and modeling on the usage of technology among others.

However, unless there is interlink between teachers and computers implementation, it might be challenging to attain the principal targets. By understanding the method of achieving incorporation, there is a need to study more on teacher training for high school institutions. Instructors that obtain proper learning in the field of ICT may vary in coming days mainly in the utilization of computers for tutoring from tutors that might not have got a better education in ICT.

Improvement in communication was also revealed in this study. Teachers appreciated how they interact with others in real time by using technologies such as computers. Connecting with others is made possible by the internet enabling real-time communication. Teachers believed that computer enables them to have control over their teaching by promoting independence. Usefulness of applying ICT in high schools is of great importance in different countries. Various nations have different connectivity and access to ICT resources and the current state of technological advancement. Complete integration of technology in the classrooms helps in improving the cognitive functions and meeting the needs of high school learners. Introduction of modern technology in high schools has also had a significant impact on teaching by a generalization of teachers' schedules and performance as shown in the figures below.

4.5.1 Strategies to address ICT challenges on teaching

Figure 4.3 depicts the strategies to address ICT on teaching; majority of the participants 123(53%) stated that ICT should make research easy while 110(47%) said it should increase students interest in their subjects.

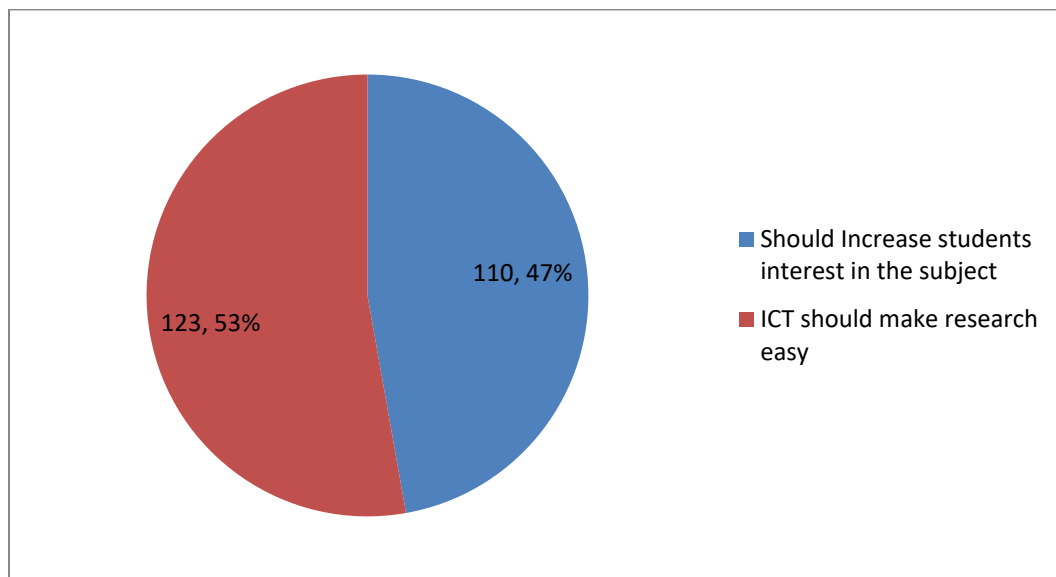


Figure 4.3: Strategies to address ICT on teaching

Source: Author's field work, 2020

4.5.2 Strategies to address ICT challenges on teachers' performance

From figure 4.4, it could be deduced that 95(40.8%) of the participants mentioned should improve on my research as a way to improve ICT on their performances while 57(24.5%) stated should improve on their teaching.

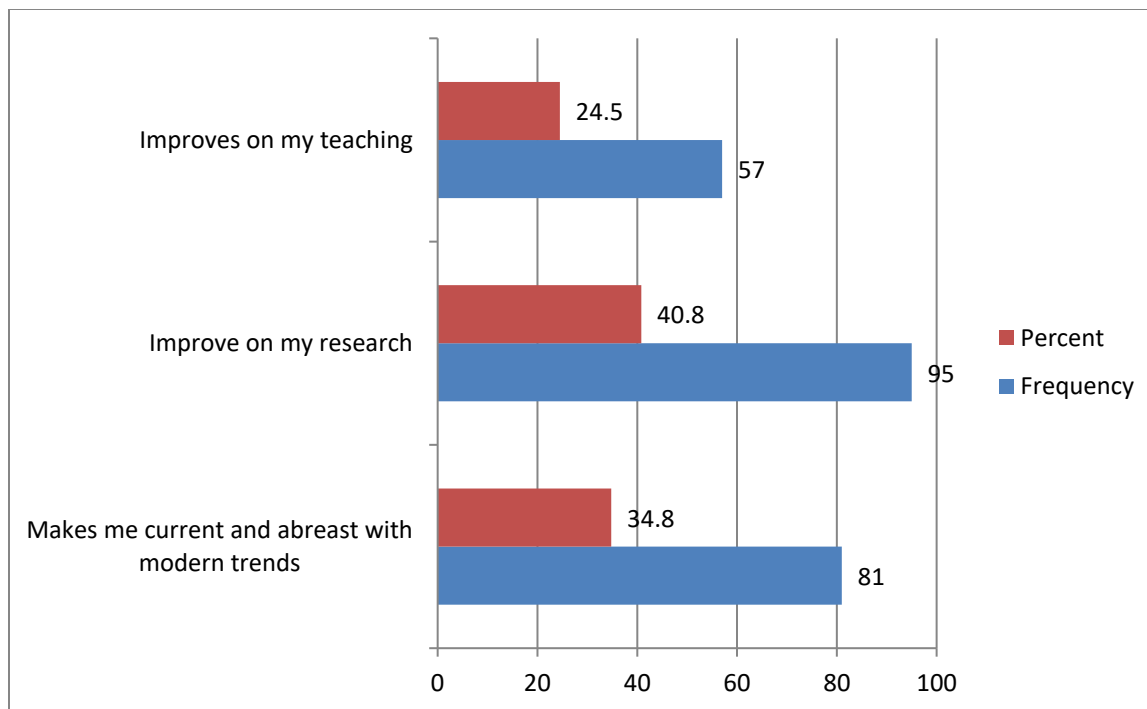


Figure 4.4: Strategies to address challenges of ICT on professional development

Source: Author's field work, 2020

4.5.3 Addressing ICT challenges on communication

Almost half of the participants 102(43.8%) said ICT should provide very effective communication while 59(25.3%) said it should make communication simple and easier as seen in figure 4.5

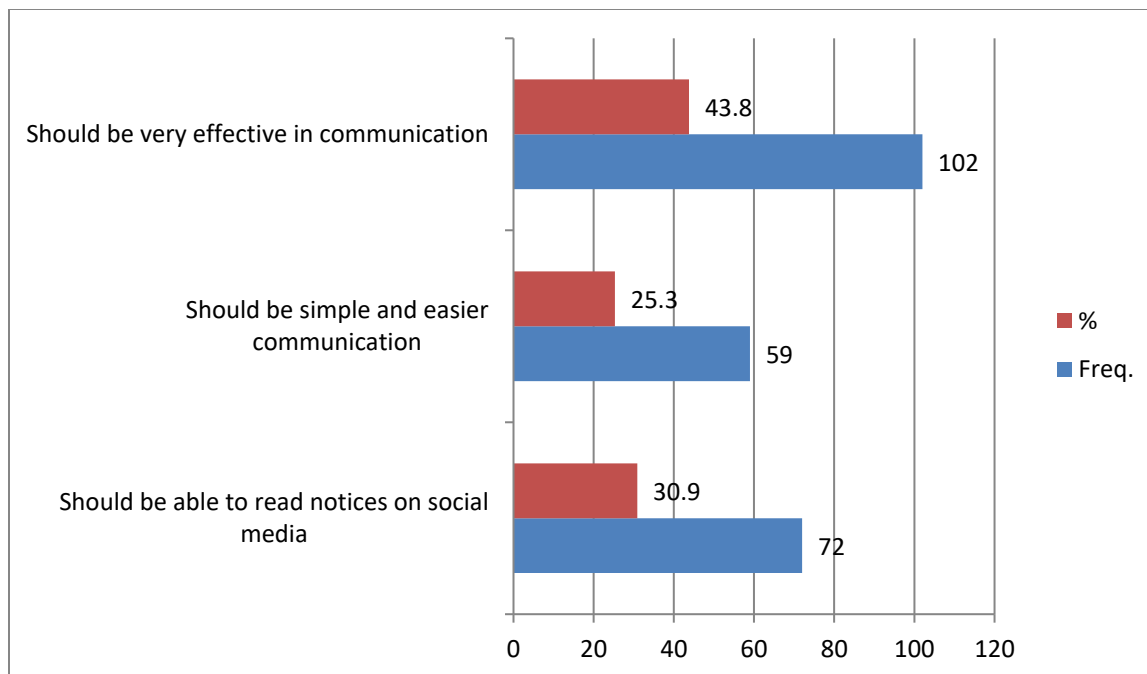


Figure 4.5: Addressing challenges of ICT on communication

Source: Author’s field work, 2020

4.5.4: Strategies to address challenges on socio-economic status

Figure 4.6 shows the economic challenges on ICT use and how to address it, 114(48.9%) of the participants stated that it should be very affordable while 51(21.9%) said it should increase their friendship.

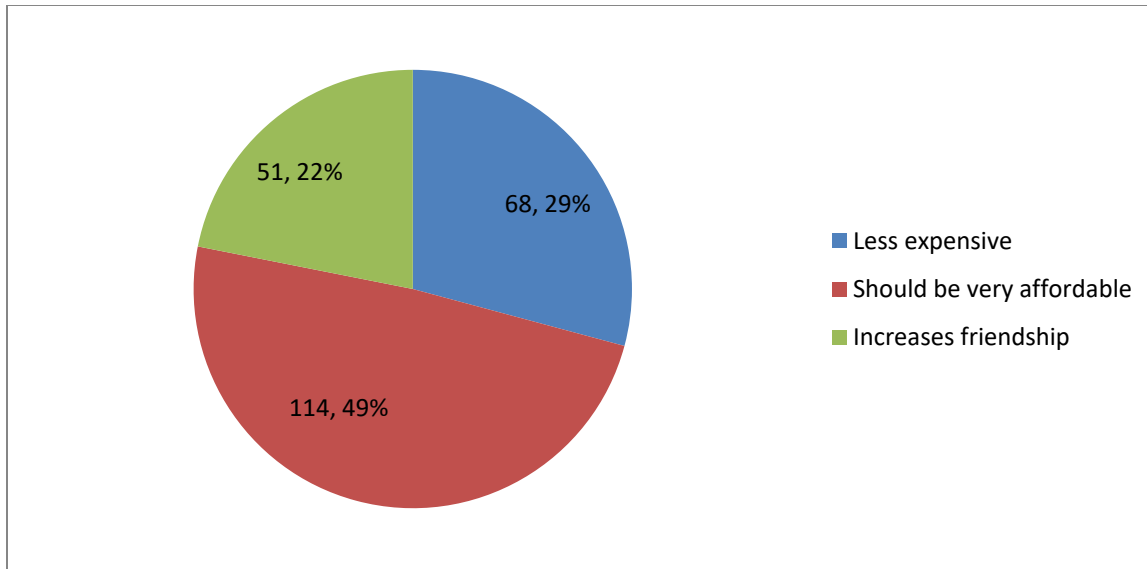


Figure 4.6: Addressing challenges of ICT on economic activities

Source: Author's field work, 2020



CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusion and recommendations of the key findings that were found on the challenges of ICT on teachers' performance in some selected Senior High Schools in Kwabre East Municipality, Ashanti Region. The study was conducted on sample size of 235 teachers, both males and females with 233 respondents able to complete and return their questionnaires duly filled making a response rate of 99.1%.

5.2 Summary

It is true that through ICT teachers are able to improve upon their performances in the area of teaching, research, technology and various ways of exchanging information between the teachers and their students. In the past two decades' data collection and dissemination has been greatly technology supported and not using could lead to a competitive disadvantage for schools since most parents would like their children attend standard schools especially SHS. Information technology would continue to play a crucial role in increasing the standards of teacher research and performances. Almost every teacher would like to increase his or her performance continually to achieve higher efficiencies with the use of ICT. An effective ICT implementation in schools would enhance the communication, research and standard of teaching. Effective application of ICT in schools activities would provide a competitive edge to institutions by offering enhanced services to the institutions.

Higher educational institutional would thereby derive greater efficiencies in terms of cost and quality products while delivering an enriched learning experience to their students. It would not be farfetched to say that schools would utilize the research facilities in education if excellence

is achieved in ICT implementation in educational institutions. It would be doubly beneficial; firstly it would make learning in higher educational institutes more practical and also self-sustaining through funding by the government and other NGOs. Thus, ameliorating the existing learning experience would lead to a more knowledge driven teaching and learning. As students and teachers gain access to technology, more direct forms of communication and access to sharable resources, the capability to support this quality learning standard would continue to grow. ICT applications provide institutions with a competitive edge by offering enhanced services to students and faculty, driving greater efficiencies and creating enriched learning experiences.

5.3 Conclusion

The study concludes that teachers have positive attitude towards information communication technology which in turn has a positive strategies on addressing challenges of ICT on both teachers' and students' performance. Academic satisfaction is of a paramount importance to the achievement of organizational goals. It has really increased the rate of patronage in ICT use among the teachers as a result of the supply of some ICT facilities in the various institutions to meet the needs and demand of teachers to some extent.

Some of the challenges militating against the use of ICT in the institutions included inadequate computers, poor electricity supply, lack of educational software for teaching, lack of projectors and only science and ICT teachers allowed to use computers which did not help improve the positive attitude of teachers in the area of ICT. Present day educational activities are mostly computerized and not manual, making it difficult to make any alterations and poor performances can easily be traced and corrective measures taken.

Information technology has also provided better and well-grounded infrastructure to speed up operation, increase consistency and enhance school activities. The ICT challenges can be addressed by improving on teachers' communication, research, teaching however, ICT made very affordable to acquire. Apart from the these strategies, ICT on the institutions should be made in such a way that it will not drained them financially; acquisition of powerful internet services, maintenance of power supply, computers and other communication devices for the company.

5.4 Recommendations

1. Absolute Support and funding should be provided by the government to fund Information Technology Projects in Senior High Schools to increase the positive attitude of teachers towards ICT usage.
2. Appropriate enlightenment, educative programs and proper channels should be made available to the various departments and not only science labs of the schools to improve ICT challenges.
3. Information Technology Steering Committee should be established by the school to take charge of affairs regarding acquisition of computers and implementation of ICT in the schools. The ICT plans of the schools should be reviewed periodically by GES to suit the organization's objectives to address all ICT challenges.

5.5. Suggestions for Further Studies

Further study should be conducted on the influence of ICT on students' academic performance so that the real importance of ICT in SHS would be unraveled.

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APPENDIX A

INTRODUCTORY LETTER

I am conducting a study on the challenges of Information and Communication Technology on teachers' performance (a case study of some selected Senior High Schools in Kwabre East Municipality in Ashanti Region in partial fulfilment for the award of Master Degree in Educational Leadership at the University of Education, Winneba. The study is being conducted by Kwabena Ofori, a student being supervised by Sr. Dr. Mary Asumpta Ayikue of University of Education, Winneba.

Please be informed that the information you would give would be used for academic purposes only and would be treated with utmost confidentiality. You are therefore guaranteed complete anonymity and no identification of information is requested or will be transmitted with your completed questionnaire. Participation is optional.

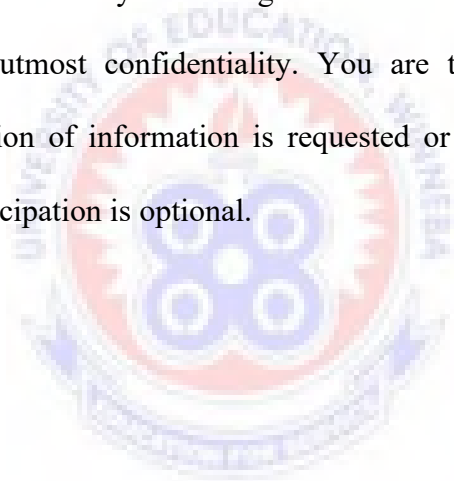
Thank you

Yours sincerely

.....

KWABENA OFORI

(POST GRADUATE STUDENT)



QUESTIONNAIRE

Section A: Demographic characteristics

Please tick (✓) and fill the information required in the places below.

1. What is your age? 25-30 [] 31-36 [] 37-42 [] 43 and above []
2. What is your sex? Male [] Female []
3. What is your highest educational certificate?
Diploma [] 1st Degree [] Master's degree [] PhD []
4. How long have you worked as a teacher?
Less than 2yrs [] 3 – 5yrs [] 6 – 20yrs [] 21yrs and above []

Section B Attitude of teachers towards the use of ICT

5. What subject do you teach.....
6. How often do you use ICT?
 - a. Very often []
 - b. Often []
 - c. Less often []
 - d. Not at all []
7. What do you use ICT for?
 - a. To teach []
 - b. For communication []
 - c. For research []
 - d. For entertainment []

Others specify.....

8. How do you feel when using ICT?
 - a. I always feel good using ICT for my activities []
 - b. Don't feel comfortable with ICT usage []
 - c. ICT gives me a lot of problems []
9. What do you use Microsoft office for?
 - a. Use power point for presenting my lessons []
 - b. I use Microsoft word to type questions and other documents []
 - c. I use it to keep records []
10. How would you rate your experience with computers
 - a. Have never used a computer and do not intend to []
 - b. I have never used a computer but would like to learn []
 - c. I use applications such as word processing, spreadsheets, the internet etc []
 - d. I use computers extensively in my teaching []
11. What motivated you the most to undertake the ICT training
 - a. To use ICT in class []
 - b. Personal interest []
 - c. Required to do so []
 - d. Increase career prospects []
 - e. Other, specify.....
12. What professional ICT qualification do you have?
 - a. Basic computer []
 - b. Intermediate computer []

- c. Advanced computer []

13. Where do you have access to computer in the school?

- a. Computer lab []
- b. Staff common room []
- c. In my office []
- d. Classroom []

Others, specify.....

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

- a. Less than an hour []
- b. 1-3 hours []
- c. 4-6 hours []
- d. 7-9 hours []
- e. Above 10 hours []



Section C: Challenges of ICT usage

15. What are some of the barriers of ICT usage in your school? (tick all applied)

- a. There are enough computers in my schools []
- b. My school does not have educational software for teaching []
- c. There are no interactive boards in the []
- d. There are no closed circuit television set we use for teaching []
- e. My school does not have multimedia projectors for teaching []
- f. There is no stand by generator set in the school []
- g. There is no electricity supply in my school []

- h. Only science teachers are allowed to use computers in my school []

Others, specify.....

Section D: Strategies to address ICT usage on teachers' performance

State some of the strategies to ICT on the following activities you perform in the school

16. How do you address challenges of ICT on your teachings?

- a.
- b.
- c.
- d.

17. How do you address challenges of ICT on your professional development

- a.
- b.
- c.
- d.

18. How do you address challenges of ICT on your communication

- a.
- b.

19. How do you address challenges of ICT on your socio-economic activities

- a.
- b.

Thank you for your time