

THE ATTITUDE AND COMPETENCE LEVEL OF BASIC SCHOOL  
TEACHERS IN THE TEACHING OF ICT IN CAPE COAST METROPOLIS

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ATTITUDE AND COMPETENCE LEVEL OF BASIC SCHOOL  
TEACHERS IN THE TEACHING OF ICT IN CAPE COAST METROPOLIS

BY

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## DECLARATION

### **Candidate's Declaration**

*I hereby declare that this dissertation is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.*

Candidate's Signature: .....

Date: 24<sup>TH</sup> APRIL, 2015

Name: Kwaku Anhwere Barfi

### **Supervisor's Declaration**

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

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Date: 24<sup>TH</sup> APRIL, 2015

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## **ABSTRACT**

The use of ICT has impacted to some extent on almost every facet of our daily activities. Students 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 basic schools, some teachers do not use them in their teaching.

The general purpose of the study is to examine the attitude and competence level of basic school teachers in teaching ICT in Cape Coast Metropolis. In all 50 schools and 150 teachers were selected for the study. SPSS version 20.0 was the software used for the data analysis. The sampling technique that was used is stratified random sample. Frequency tables, t-test, pie charts, bar charts, mean and standard deviation were also used in presenting the data.

The study revealed that majority of the teachers have poor attitude towards the teaching of ICT. Majority of the teachers has good competency level in MS word and spreadsheets use but not in email use. On the contrary, most of the teachers lack training and knowledge about computers and have no previous experience in the use of computers.

Again, it was recommended that teachers should be given the necessary training in ICT usage so that they become familiar with modern pedagogy of imparting knowledge and skills.

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## **DEDICATION**

To my wife, Mrs. Joyce Darkowaa Barfi and my entire family for their support and prayers in making my dream come true.

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## **LIST OF ACRONYMS**

Information and Communication Technology (ICT)

Junior High School (JHS)

Senior High School (SHS)

Information Communications Technology for Accelerated  
Development (ICT4AD)

Ghana Education Service (GES)

Statistical Product and Service Solution (SPSS)

## **CHAPTER ONE**

### **INTRODUCTION**

#### **Background to the Study**

The ascendancy and expeditious development of Information and Communication Technology (ICT) has transformed society from the information technology age to the innovation-driven age. ICT plays an important role in the development of a country when we take into account the social, cultural and economic role of computers. It is widely acknowledged that ICT can be used to improve the quality of teaching and learning. ICT is becoming a natural part of man's daily life; thus their use in education by teachers is becoming a necessity.

In Ghana, the use of ICT is spreading very fast across all age barriers. It has been noticed that ICT can boost education delivery. Teaching and learning has been made much easier with the use of ICT in schools. ICT have nurtured students who are able to engage themselves actively and committed in their own learning, who again develop new ideas collaboratively with passion for learning.

ICT is defined as the use of technological tools to process, convert, manipulate, store, send and receive data. It encompasses the computer hardware, software, telecommunication and several other devices (audio, video, photography camera, etc.) that convert information (text images, sound, etc.) into digital form (Milken, 1999).

Information and communications technologies are computer based tools used by people to work with information and communication processing needs of an organization. Its purview covers computer hardware and software, and other digital devices like video, audio, camera, and so on.

Sampson and Fytros (2008) defined competence as a personal characteristics (e.g. skills, knowledge) that an individual possesses or needs to acquire, in order to perform an activity in a specific context, whereas performance may range from the basic level of proficiency to the highest levels of excellence.

Government of Ghana has therefore developed a policy on ICT usage in education. However, the success of this project has implications for attitudinal change and display of competence in the use of ICT by teachers and students. Simply having laptops in schools will not guarantee their effective use. Regardless of the quantity and quality of technology placed in classrooms, the key to how those tools are used is the teacher; therefore teachers must have the competence and have the right attitude towards technology. Attitudes refer to one's positive or negative judgment about a concrete subject (Kadel, 2005). There is a common saying that attitude determines altitude.

The country is yet to fully implement all the various facets of the Anamoah-Mensah Educational Reform which was proposed in 2002. Currently, the educational system consists of six years of Primary School, followed by three years of Junior High School (JHS) and three years of Senior High School (SHS). Kindergarten (Pre-School) has been integrated fully into the primary education which would have made it eleven years of basic education.

Ghana has developed a national framework on which the deployment of ICT in the education sector is to be based. This framework is contained in the Information Communications Technology for Accelerated Development (ICT4AD) document (Republic of Ghana, 2003) developed under the able chairmanship of Professor Clement Dzidunu. The ICT4AD policy seeks to provide a framework in which information and communication technologies will be used to transform the education sector, allowing all Ghanaians to pursue quality lifelong learning opportunities regardless of their geographical location.

It is against this background that the study seeks to examine the attitude and competence level with respect to adequate training and qualification of teachers in the use of ICT, and attitude of the teacher towards the teaching of ICT. Word processing skills, spreadsheets and usage of the email are indicators that were used to measure the ICT competence level of the basic school teachers.

### **Statement of the Problem**

In Ghana the educational reforms have not brought the much needed results in terms of national objective of preparing its manpower potential to meet the growing demands of the national economy. Considering the Ghanaian educational work force where generational differences prevail, one cannot overlook the benefits of ICT. The use of ICT tools for enhancing teachers' instruction, and as a catalyst for improving access to quality education in formal and non-formal settings has become a necessity. Recognizing the impact of new technologies on the workplace and everyday

life, teacher education institutions try to restructure their educational programmes and classroom facilities, in order to facilitate the potentials of ICT in improving the content of teacher education.

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. 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.

Also, following the success of Ghana's first ICT week in 2003, the second forum witnessed extensive presentations such as the role of ICT in education as the bedrock for sustainable national development. Teachers must be interested in the usage of ICT, so that they can encourage and help students in its use. In fact, a curriculum for ICT training and examinations at the basic school level has been put in place. Lack of adequate training and experience is one of the main reasons why teachers do not use technology in their teaching. This also results in teachers' negative attitude towards computer and technology usage as an effective learning aid.

Major ICT competencies required by teachers were highlighted by Kirschner and Woperies (2003) to include competency level in making personal use of ICT; mastery of a range of educational paradigms that make use of ICT; adequate training and qualification of teachers in the use of ICT; competency level in using ICT as tool for teaching, competency in mastering a range of assessment paradigms which involves use of ICT; and competency in understanding the policy dimensions of the use of ICT for teaching and



learning. Teacher education should focus on the need for teachers to have ICT skills for their own use in the preparation of materials for teaching and learning activities; the need to facilitate the direct use of ICT in students' learning activities within the classroom situation; and the need for teachers to develop in their students a critical awareness of ICT applications and the social implications (Robbins, 2008).

The government of Ghana has been trying to provide teachers and students with free laptops to improve teaching and learning. When you go round the country, you will see some teachers having access to these better Ghana agenda laptops, but some teachers do not use them in their teaching. Is it because they do not know how to use these laptops or they do not have the needed equipment's to use these laptops in their teaching? Some of the teachers who have these laptops still give the examination questions and class texts to typist to type for them and they are charged, even though they have their school laptops with them.

Gaining an appreciation of teachers' attitude and perceived competence level in the use of ICT may provide useful insight into the future of technology integration, acceptance and usage in teaching and learning in Ghanaian teacher education institutions and other developing countries. The research seeks to measure the attitude and competence level of basic school teachers in teaching ICT in the Cape Coast Metropolis.

## **Purpose of the Study**

The research will measure the attitude and competence level of basic school teachers in teaching ICT. Specifically, the research will investigate into:

- i. The teacher's attitude towards the teaching of ICT.
- ii. The competence level of basic school teachers in teaching ICT.
- iii. To examine whether the teachers have gotten the adequate training and qualification in the use of ICT in teaching.
- iv. The barriers hindering the integration of ICT in education.

## **Research Questions**

In order to address the specific objectives, the following questions were formulated to guide the study:

1. What is the attitude of teachers towards teaching ICT?
2. What is the competency level of the teachers in their personal use of ICT?
3. What is the level of requisite training and qualification of teachers in the use of ICT in teaching?
4. What are the barriers hindering the integration of ICT in education?

## **Research Hypotheses**

The research was guided by the following hypotheses:

- i. The attitude of teachers in basic schools has no statistically significant effect on their competence in ICT usage.

- ii. There is no statistically significant difference between the attitude of male and female teachers towards ICT.

### **Significance of the Study**

A study into attitude and competence level of basic school ICT teachers will make some contribution to the existing knowledge. At the end of the study, it is hoped that teacher's competency level in teaching ICT will be improved and their entire performance gap in teaching ICT will be addressed. The study will seek to provide an assessment of the attitude and competence level among basic school teachers in the Cape Coast Metropolis.

The essence of any research is to address the void in our minds and add new knowledge to the existing ones. It is expected that the results of the study will help policy-makers or curriculum developers in Ghana to determine ICT programmes and strategies to improve the current methods of teaching.

This study may also help to raise awareness among Policymakers, Directors of Education, Head teachers and teachers, about the barriers to ICT integration that exist in basic 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.

### **Delimitation of the Study**

It would have been best to interview all basic schools teachers in Ghana on their competence level, and attitude towards teaching ICT, to arrive at the best result to make the needed recommendations but owing to limited

time to write and present the dissertation, the study was limited to only ICT teachers in Cape Coast Metropolis in the Central Region of Ghana.

Sampson and Fytros (2008) described seven basic skills commonly used in ICT applications and they are internet, email, spreadsheets, word processing, file navigation, presentation packages, and databases. Only the following ICT skills were measured; word processing skills, spreadsheets and email usage whilst the rest of the indicators were the delimitations.

### **Limitations of the Study**

The limitations of this study warrant discussion and suggest the need for caution when interpreting the results. The findings of this study will only be generalized for all sampled basic schools in Cape Coast Metropolis, but could not be generalized for all basic schools in Ghana because of the sampling procedure that was used for selecting the teachers and schools.

Braginsky and Braginsky (1974) argued that, generalization may distort and obscure the findings of any analyst, but quickly added that, statistical procedures do not assure “truth”. Citing the views of those authorities on the contention that, logical errors may occur when generalizing from a small sample to a large universe especially when the studies is about people. Braginsky and Braginsky (1974), again stated that statistical procedures do not guarantee objectivity results and conclude that statistical generalization does not provide wisdom or foolishness; but both are a function of the intelligence and good sense from an investigator who uses this procedures.

## **Definition of Terms**

Attitude: A predisposition or a tendency to respond positively or negatively towards a certain idea, object, person, or situation.

Skills: The abilities needed to handle and create information and knowledge, which means skills such as problem-solving, critical-thinking, analysis, collaboration, communication, understanding others' points of view, and being able to use ICT which is a key tool for handling information.

ICT Competence: the skills, knowledge and understanding needed to do something successfully.

ICT: Information and Communication Technology, which means computers, mobile or cellular phones, digital cameras, satellite navigations systems, electronic instruments and data recorders, radio, television, computer networks, and almost anything which handles and communicates information electronically.

## **Organization of the Rest of the Study**

The study is organized into five different chapters. The first chapter talks about the background to the study, the statement of the problem, the research objectives and questions. The chapter also deals with the significance of the study, the delimitations and limitations encountered in the study. The second chapter deals with the review of the related literature and the theoretical framework. The third chapter talks about the research methodology that was used in the study. The fourth chapter dealt with the presentation and analysis of the data collected. The last chapter, which is chapter five talks

about the summary of findings, the conclusions that were drawn and the recommendations thereof.

## **CHAPTER TWO**

### **REVIEW OF RELATED LITERATURE**

#### **Introduction**

The research seeks to review literature based on the objectives and research questions. There is the need to review literature related to this work to establish the basis for the study. For easy referencing, this literature is reviewed under the following sub-headings:

Education and ICT

Teachers Attitude towards ICT

Teachers Competence level in ICT

Requisite Training and Qualification of Teachers Teaching ICT

Barriers hindering the Integration of ICT in Education

#### **Education and ICT**

Research has it that the use of computers became popular in the 1980's when personal computers became available to consumers (Teye, 2012). Again research has shown that it is this global competition that influenced governmental policies all over the world in ensuring that they keep pace with these technological advancements. These policies motivated the mass production of computers for schools.

According to Pelgrum & Law (2003) history has it that towards the end of the 1980's, the term 'information technology' began to replace the word

'computer'. The term information technology therefore referred to computer's processing ability, indicating a shift from computing technology to the capacity to store and retrieve information. Pelgrum & Law (2003) again posited that the term ICT emerged, signaling the introduction of email and electronic messaging with computer technology. Simply put, ICT is an accepted acronym of the word information communication technology. It is a diverse set of technological tools and resources used to communicate and to create, disseminate, store and manage information (Blurton, 1999). This means that ICT helps in the storage and management of information. Also Ayo (2001) defined ICT as the use of computer systems and telecommunications equipment's in information processing.

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

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

According to Kozma (2008) there are three rationales for the introduction of ICT into education. The first one is the economic rationale which refers to the role it can play in preparing students as future workers,



leaders and in supporting economic development of every nation. The second is the social rationale where ICT investment aims to increase knowledge sharing, encourage cultural creativity, increase civic participation, make government services more accessible and finally enhance social cohesion. The third and final rationale is the educational and pedagogic rationale where ICT can advance educational reform and improve educational management structures or curriculum developers.

Similarly, Hennessy (2005) broadly concurs and identified three reasons for the use of ICT in teaching and learning; the development of new skills and ideas for the information age, increased productivity in any business field and the development of quality and effective learning.

Hawkrige (1990) proposes four rationales for the utilization of computers in schools. He notes these as social, vocational, pedagogical and catalytically. The social and vocational rationales point to the increased use of ICT in all spheres of human activity. The pedagogical and catalytically rationales relate to the effects of technology on students and schools.

According to Bigum (2007), using computers in schools stem from technological and socially determined points of view. His standpoint is that the school systems within which the computer is used, is driven by computers. He argues that a change occurs within the education system using the computer and that change is as a result of the effect of technology.

Bigum (2007) argues that the social context sees computers as neutral technology-technical means of achieving a defined purpose in education. Two contexts emerge and are used in this study; they are the social context and the pedagogical context. The social context runs along the lines of Hawkrige (1990) social and vocational rationales, while the pedagogical context agrees

with Hawkrige's pedagogical and catalytical rationales. The pedagogical context also agrees with the views of Bigum (2007).

Meelissen (2008), identify three objectives for the integration of ICT in education. They are:

1. the use of ICT as a 'discipline or profession',
2. ICT as a 'teaching or learning medium' and
3. the use of ICT as an 'object of study'.

It can be gleaned from these objectives that integration involves aiding the teaching and learning process (apart from the third objective which is a discipline in itself). Successful integration of ICT in education can lead to a number of benefits. The next sub-heading will look at some of the benefits.

There have been concerns by the stakeholders of education in Ghana about the use of ICT by teachers and students since the 1990's in our schools. The acquisition of knowledge in ICT by the students will help them in their research, assignment, and learning. Teachers on the other hand, can even use computers to write lesson notes, prepare materials for teaching and learning. Thus, computers have become a routine tool for helping teachers accomplish their professional work successfully (Becker, Ravitz & Wang, 2009).

### **Benefits of ICT Use in Education**

The use of technology in the learning environment has become an unstoppable force in recent years (Cohen, 2004; Laubsch, 2006). ICT impacts on a large section of education, from record keeping and school websites to the creation of online learning communities (Bishop, 2007). Educational institutions can use specialized websites to make learning resources available

online at any time. Some educational institutions do not even require students to be physically present. Virtual classrooms have flourished in tandem with improved internet accessibility. The significant barriers of time and distance are rendered almost obsolete in such virtual classrooms (Stennes, 2008).

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

Studies have also demonstrated that computer use can result in effective literacy gains. There is empirical evidence that students, who are having difficulties with reading, can, be motivated and engaged through the use of ICT (Segers & Verhoeven, 2002). Condie and Munro (2007) concluded that the use of ICT has had positive effects in a number of subjects, as well as being constructive in assisting students that are marginalized as a result of personal or familial issues.

Research has shown that many students benefit from the use of ICT (Frear & Hirschbuhl, 1999). Wishart and Blease (2009) claim that students get immediate feedback or rewards when using educational games in learning. Papert (2003) asserts that the computer is a tool, allowing for the construction of higher order thinking, facilitating users to take responsibility for their learning when making decisions, while Korte and Housing (2007) refer to its ability to motivate students learning.

Furthermore, Kozma and Anderson (2002) claim that ICT is transforming education by introducing new curricula based on real life

problems, providing different tools to enhance learning, providing students and teachers with more opportunities for feedback and reflection. Social Constructivism places emphasis on this type of student centered learning, viewing the teacher as a guide or facilitator, motivating students to discover things for themselves (Vygotsky, 1978).

Schoepp (2005) asserted that constructivist approaches dominate learning environment for technology to have a significant impact on learning. However, it must be remembered that the use of ICT in classrooms is a relatively new phenomenon when compared to traditional teaching methods in Ghana.

According to Hawkrige (1990), computers as pedagogical tools in Computer Assisted learning or Computer Assisted Instructions offer advantages over other methods of teaching and have revolutionized education in advanced countries. He further stated that computers are useful tools for pupil's drills and practice. The computer serves as a cognitive tool. Its software programs are able to amplify, extend or enhance human cognition (Kozma, 2008). They are designed to aid users in task relevant, cognitive components of performance, leaving the performance open-ended hand controlled by the learner (Fouche, 2005). The impedance of ICT in teaching and learning has prompted Todd (1997) to declare that a real learning revolution has stand in which educators use information technologies to provide learning experiences that are qualitatively different from their predecessors. Despite the advantages that computers offer in education, Bigum (2007) recommends that ICT should not be seen as the only educational tool, but as one of a number of possible tools which could be used to teach content.

Thapisa and Baribwa (2008) stated that evidence shows that to innovate and create stocks of information and knowledge by utilizing ICT, developing nations need telecommunication networks that can support electronic data exchange. Dankwa, (2007) points out that many secondary schools in Ghana can boast of a computer laboratory through which students are gaining basic computer literacy. A number of these schools have internet facilities, enabling students to deepen their connection to the outside world.

Although this is encouraging information, extensive review of documents of NGOs that are spearheading ICT implementation in Ghanaian schools reveals that most secondary schools now are benefiting from ICT and are either located in urban areas or are classified as premier secondary schools (Dankwa, 2007).

In spite of these benefit ICT offers, many teachers are reluctant to facilitate substantial student use of computers for learning activities (Corte, 2010). Although ICT learning is good, it can also have its bad sides. Some students may use it for trivial purposes or use it to engage in immoral activities (Dellit, 2002). However, literature has attested to the power of ICT, if effectively taught in the classroom, can have effect on teaching and learning processes (Fonkua, 2006).

It has even been suggested that using technology well in the classroom can even prepare students to be more effective citizens in increasing open and democratic societies (John & Sutherland, 2004). Research in West and Central Africa shows that ICT for teaching and learning in school environment can contribute to developing child centered approach to pedagogy (Rocare, 2006).

## **Theoretical Framework**

The study is underpinned by Kelmans' (1964) Compliance Theory which states that when an individual accepts influence from another person or group because he hopes to achieve a favourable reaction from the other. The characteristics of compliance is that opinions are only expressed when the person's behaviour is observable by the influencing agent who has the means-control and who is seen as limiting the choice of behaviour. The subject is concerned with the effects of attitudinal change

## **Teachers Attitude towards ICT**

Simply having ICT in schools will not guarantee their effective use. Regardless of the quantity and quality of technology placed in classrooms, the key to how those tools are used is the teacher; therefore teachers must have the right attitude towards technology (Kadel, 2005). Attitudes refer to one's positive or negative judgment about a concrete subject. Attitudes are determined by the analysis of the information regarding the result of an action and by the positive or negative evaluation of these results (Ajzen & Fishbein, 2000).

Studies have established close links and affinities between teacher's attitude and their use of ICT. High teacher's positive attitudes towards the computer were associated with a higher level of computer experience (Dyck & Smither, 2005; Teo, 2008). Students' confidence in ICT can be explained through the attitude and behavior of their teachers. Teachers' behaviour is a critical influence on students' confidence and attitude towards ICT as they provide important role model to their students (Derbyshire, 2003).

Attitude of teachers towards computer and technology skills can be improved by integrating technology into teacher education (Zammit, 1992). Findings have revealed that a significant relationship exist between teachers computer attitude and its use in schools (Khine, 2001). Attitude is a major predictor of teachers future computer use. Lee (1997) study indicated the importance of appropriate responses to teacher's feelings about using ICT as one of the factors critical to teacher's usage of computers in teaching.

Teachers who have positive attitude and are highly enthusiastic about interactive whiteboards as an important feature of teaching and learning, can motivate their students to practice using the technology (Kennewell & Morgan, 2003). Teachers need to be skilled in the use of ICT and also to be able to critically evaluate strategies for the acquisition and the appropriate application of ICT in diverse curriculum area (Robbins, 1998).

Many countries and agencies are developing and guiding professional development so that the majority of teachers can be prepared to use ICT in their teaching. UNESCO has been working to produce guidance for less favoured countries at the request of their governments (UNESCO, 2008). A World Bank report also identifies ICT in teacher education as a key issue, especially in the preparation of aspiring teachers (Hennessy, 2005). Many developed countries are also promoting initiatives for ICT in teacher education (Snyder, 2000) and, in their final report in 2001, they noted that ICT in teacher education is at its first zenith and that 'the heat is on' for those who prepare educators to use information and communication technologies effectively. Davis and Tearle (2008) reviewed frameworks for ICT in teacher education in 1998 to inform European Commission research objective of a 'Core Curriculum' for ICT in teacher education (then known as Telematics for

Teacher Training, or T3). They noted that many countries around the world were taking action to ensure that their educational systems were updated to permit equality of access and to ensure that key ICT skills were developed in schools and other educational institutions. They also noted that it was becoming abundantly clear that the training of teachers in ICT skills and appropriate pedagogical approaches was essential.

### **Teachers Competence Level in Using ICT**

The study of ICT competencies of teachers and learners is the theoretical exploration of the concept of ICT competencies, resulting in some suggestions for the development of an instrument to measure ICT competencies. Depending on the research discipline, the theoretical perspective and the broader context in which ICT competencies are studied. Different meanings are given to ICT competency.

Literature review and review of existing instruments have contributed to the construction of instrument to measure teachers ICT competencies. It provides scientific basis to decide which indicators of ICT competencies should be retained and operationalized. It also points at aspects that should not be ignored, such as the contextually of ICT competences and the importance of integrated and functional use of ICT.

In order to evaluate the exposition of teacher's competence in ICT and preconditions for its development, the structure and content of competence level in ICT must be clearly defined. Some researchers agree that successful use of ICT in educational practice depends on didactical competence, ICT literacy and ICT pedagogical competence (Andersen & Brink, 2002).



The didactic component of competence level in ICT mainly implies the ability to adapt ICT in educational practice. The integrity of ICT literacy and the didactic component are ensured by teachers in their teaching. The flow of ICT technologies to educational practice shows how the teacher's needs may vary from training in using ICT to the need for how to learn ICT integration into educational practice (Troter & Ellison, 2001).

Competence level in ICT is dynamic and dependable on the alterations in educational technologies and the factors of the teacher's work environment (Li, 2006). Four stages of integrating ICT technologies can be marked: introduction, application, inclusion and transformation (Dasiense, 2004). Concerning the four stages of ICT integration, the competence level structure of the teachers' ability to use ICT falls into four levels: behaviouristic, enclosed, integrated and holistic. Apart from the spread of competence level in ICT into four levels, the components including basic and integral educational ICT competence remain stable (Andersen & Brink, 2002).

Attitude predicts the need for learning computing skills which will in turn enhance teachers ICT or computing skills (Zhang & Espinosa, 2010). Liu, Maddux and Johnson (2004) also reports that computer attitude influence teachers learning mediated by time but Hernes (2002) reported that attitude does not bear a strong relationship with teachers competence level.

### **Barriers to the Use of ICT in Education**

A challenge is anything that retards the progress or achievement of any set objective or aim. It therefore means that the removal of one or more of these challenges or barriers such as the ones in ICT integration should assist

perhaps significantly advance the process of integration. Computer integration in the classroom is the application of technology to assist, enhance, and extend student knowledge (Omwenga, 2004). Using ICT in education means more than simply teaching learners how to use computers. Technology is a means for improving education and not an end in itself.

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

In a research report conducted by BECTA (2004), a number of other important barriers were identified as the reasons why teachers do not use ICT to support their teaching. These were: lack of confidence, accessibility, lack of time, fear of change, poor appreciation of the benefits of ICT and age. Ertmer (2009) concurs with Schoepp (2005), asserting that if teachers are aware of and understand such barriers, they can initiate strategies to overcome them within the shortest possible time.

According to Annan (2012) although valuable lessons may be learned from best practices around the world, there is no one formula for determining the optimal level of ICT integration in the educational system. Significant challenges that policymakers and planners, educators, education administrators, and other stakeholders need to consider include:

1. Educational policy and planning,
2. Infrastructure,

3. Language and content,
4. Capacity building, and
5. Financing

Research has classified these barriers in different ways. Several studies have divided the barriers into two categories: extrinsic and intrinsic. However, what was meant by extrinsic and intrinsic differed among studies. In one such study, Ertmer (2009) referred to extrinsic barriers as first order barriers citing as examples: lack of time, support, resources and training. She referred to intrinsic barriers as second order barriers, citing as examples: attitudes, beliefs, practices and resistance to change.

Balanskat (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 lack of physical equipment and non-material barriers as somewhat intangible entities such as lack of knowledge, confidence or time.

### **Technical Support**

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. 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. 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” (p.16). In Ireland, the NCTE census on ICT infrastructure (as cited in ICT strategy group report, 2008-2013) found that about 85.3% of schools reported technical support and maintenance as a ‘high’ or ‘very high’ priority and claimed that it should be an important element of the school ICT environment with proper technical support.

Similarly, Yilmaz (2011), in assessing the technology integration processes in the Turkish education system reported that in providing schools with hardware and internet connections, it is also crucial to provide the schools with technical support with regard to repair and maintenance for the continued use of ICT in schools for effective teaching and learning.

Therefore, if there is no technical support for teachers, they become frustrated resulting in their unwillingness to use ICT in their teaching (Tong & Trinidad, 2005). Even though, lack of technical support discourages teachers from adopting and integrating technology in classrooms, a study by (Korte & Housing, 2007) revealed that schools in Britain and the Netherlands have appreciated the significance of technical support to help teachers to integrate technology into their teaching.

### **Teacher Related Barrier**

Teachers are the principal actors or stakeholders in the learning process that can influence school authorities to purchase ICT materials to support teaching and learning. Gressard and Loyd (2005) 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.

It is clear that the teacher is one key determinant factor among the other factors in the integration of ICT. It therefore implies from the above that the barriers of integration with relation to teachers can have a negative impact on the whole integration process. The following sessions will look at some of the teacher related challenges or barriers to their usage of ICT in supporting teaching and learning in their various schools.

### **Lack of Knowledge or Competence**

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. Tezci (2009) posits that if teachers have a high level of ICT knowledge, then there will be a higher level of ICT use in their teaching.

### **Lack of Confidence**

Numerous studies carried out posits 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 them. This lack of confidence 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 them 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.

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

According to Jegede (2007) as teachers become more appreciative of the use of ICT 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 (2006) said the limitation in the knowledge base of the teacher in ICT 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 ICT. Cox (2009) 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 to master their skills.

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

## **Gender**

Technological progress aims at improving the standard of living of people. Yet not all people will in general benefit equally from that progress. It is obvious that for women the enhancement of their life is not always visible. In many societies, because of traditional role patterns, there frequently are clear obstacles in a society which causes that both sexes do not benefit equally from the advantages of the technological progress in general.

Yu (2002) studied the need for ICT in developing countries and why gender issues play an essential role in this regard. He focused on the relationship between attitudes toward ICT in relation with gender. He concluded that gender-sensitive aspects play a central role. He declared that gender needs special attention in the context of the technology. The challenges are on the issue of creating an environment in which a harmonious and justified cooperation between both sexes is of great importance for a positive development in general and in particularly in the area of ICT.

## **Lack of Training**

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. A study by Pelgrum in 2001 revealed 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 a number of

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 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 effectively to improve their teaching skills.

Schoepp (2005) maintains that if new technology is going to be integrated into education, teachers should receive training on how to use the ICT, while Trotter (2009) concludes that training in ICT integration must be preceded by and supplemented with basic skills training. Research by Gomes (2005) also asserted 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 (2009) again asserts that if teachers are to be convinced of the value in using ICT in their teaching, their training should focus on pedagogical issues. According to him, this is due to the fact that even after teachers had attended professional development courses in ICT, they still did not know how to effectively use ICT in their classrooms teaching. This was because too much emphasis was placed on acquiring technical ICT skills during training, as opposed to skills in how to incorporate ICT into the curriculum.

Some 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 programmes in Ghana.

In fact, there is an urgent need for ICT training to be given to fresh university or college of education students in order to obtain successful learning outcomes from the use of ICT and to satisfy the needs of their head teachers. The most important ICT training needs should include skills development to assist ICT teaching and learning approaches for specific areas of specialization; maintenance training; research oriented training on ICT use for data analysis, numerical data and spread sheets.

In conclusion, enough training on ICT can address some of the barriers in the integration of the use of ICT in teaching and learning. This is because acquiring the necessary skills through training will enhance teacher's knowledge base and competence levels. The result of this is that it would in the long run reduce the fear that some teachers have on ICT teaching.

The above literature is a review of several literatures related to the study. The research under consideration examines the attitude and competence level of basic school teachers in the teaching of ICT in Cape Coast Metropolis.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **Introduction**

This chapter talks about the methodology that was employed in the study. It is made up of the research design, the population, and the sampling procedure that was employed. The chapter also talked about the data collection instrument and data analysis method.

#### **Research Design**

According to Katundu (1998), the purpose of research and its objectives determine the type of research design employed for a study. Considering the nature of the research problem and purpose of this study, the most appropriate research methodology that was used is the descriptive survey design. Descriptive survey design according to Amedahe and Gyimah (2003) makes use of various data collection techniques involving questionnaire.

Fraenkle and Wallen (1993) listed the following as advantages of descriptive research:

1. It provides a good number of responses from numerous people.
2. It provides a meaningful picture of events and seeks to explain people's perception and behavior on the basis of information obtained.
3. It can be used with greater confidence with regard to particular questions which are of special interest and values to a researcher.

They also provide the following demerits:

1. Answers can vary greatly depending on the exact wording of the questions or statements.
2. It can produce untrustworthy results because they may delve into private and emotional matters that respondents may not be completely truthful about it.

One major weakness of descriptive research is that answers to descriptive research do not enable us to understand why people feel, think or behave in a certain manner, why programs pose certain characteristics, why a particular strategy is used at a certain time and so forth.

In spite of these couple of demerits, the rationale for this design chosen was to enable more respondents to be questioned. Also, it allows for greater degree of accuracy, reliability, standardizations of measurement and uniqueness of the study.

### **Population**

Population is defined as all members of a defined category of elements such as people, events or individuals items of interest under consideration (Ary, Jacobs & Razavieh, 1990). For the purpose of the study, the population is made up of basic schools ICT teachers in Cape Coast Metropolis.

### **Sample and Sampling Procedure**

Sampling is a procedure of selecting a part of a population on which a research or study can be conducted. These samples are normally supposed to be selected in such a way that conclusions drawn from the study can be generalized for the entire population. Leady (1993) simply defines sampling

as the process of choosing from a much larger population, so that selected parts represents the total group. Sampling per say is not a technique or procedure for getting information but it ensured that any technique used helped in getting information from a smaller group, which accurately represented the entire group (Teye, 2012).

The sample for the research was chosen from the basic schools in the Cape Coast Metropolis. The sampling technique that was used is stratified random sample. The 6 circuits in Cape Coast Metropolis were grouped into 6 different strata. The circuits are Bakano, Cape Coast, Abum, Pedu/Abura, Ola, and Efutu. In all, twenty-five ICT teachers were selected from each circuit. Five schools were randomly selected from each circuit and primary two to primary six (2 – 6) teachers were also randomly selected.

In all, 150 basic school teachers were selected for the study. Simple random sampling was then used in selecting the respondents from the various schools. This sampling technique was used because it affords all the members under consideration the equal chance of being selected.

### **Instruments**

Questionnaire was used as research instrument to collect data for the study. The questionnaire contained closed ended questions. The use of close-ended ones offered options for the respondents to choose the appropriate one.

The instruments were checked for its validity and reliability before it was used. The basis of the validity of a questionnaire is to ensure that the right questions are asked without ambiguity. A drafted copy of the questionnaire was made available to my supervisor for face to face discussion and content

validity. This ensured that the items in the questionnaire are related to the research questions.

Statistical Product and Service Solutions (SPSS), version 20.0 was used to check the reliability of the questionnaires. According to Stevens (1996), Cronbach alpha coefficient of a scale above .7 is considered reliable, and a scale value below .5 is considered low. The questionnaire yielded a Cronbach's Alpha of .80 using SPSS, which is considered reliable.

### **Data Collection Procedure**

Before the administration of the final questionnaire, a pilot study was conducted to ascertain any challenges likely to hinder the smooth conduct of the study. The instrument was first given to technocrats with adequate expertise on attitude and competency level of teachers in the teaching of ICT and on research to peruse and critique.

The pilot study was carried out at some selected basic schools in the Elmina district of Central Region. Elmina District was chosen because the respondents have similar challenges to those in Cape Coast Metropolis. In all thirty teachers were used for the pilot study which was based on simple random selection.

Before selecting the schools and the teachers, permission was sought from the District Education Office of Ghana Education Service (GES) in Elmina. This placed the study on the right path to determine the suitable time that was needed to administer the final questionnaire. The head of department of the Master of Education (Information Technology) at College of Distance

Education, UCC was contacted for a written letter of permission to conduct the study in the selected basic schools in Cape Coast Metropolis.

To ensure the anonymity of the teachers, no identification was required of them in answering the research instrument in the open-ended and close-ended questions. The instruments were hand delivered to all the participants of the study. The data collection was completed within three weeks in the month of September, 2014.

### **Data Analysis**

Data analysis helps to manipulate the data obtained during the study in order to assess and evaluate the findings and arrive at some valid, reasonable, and relevant conclusions. The entire questionnaire was coded with the help of SPSS.

The choice of choosing SPSS version 20.0 software packages over the other statistical software was because it has large sample size to use when doing manual calculation. All respondents were given serial numbers to facilitate coding and analysis. Microsoft Excel 2013 and SPSS version 20.0 was the software used for the analysis. Frequency tables, t-test, mean, standard deviation, pie charts and bar charts were also used in presenting the data. Conclusions from relevant related literature were captured along to authenticate the findings of the study.

## **CHAPTER FOUR**

### **RESULTS AND DISCUSSION**

#### **Introduction**

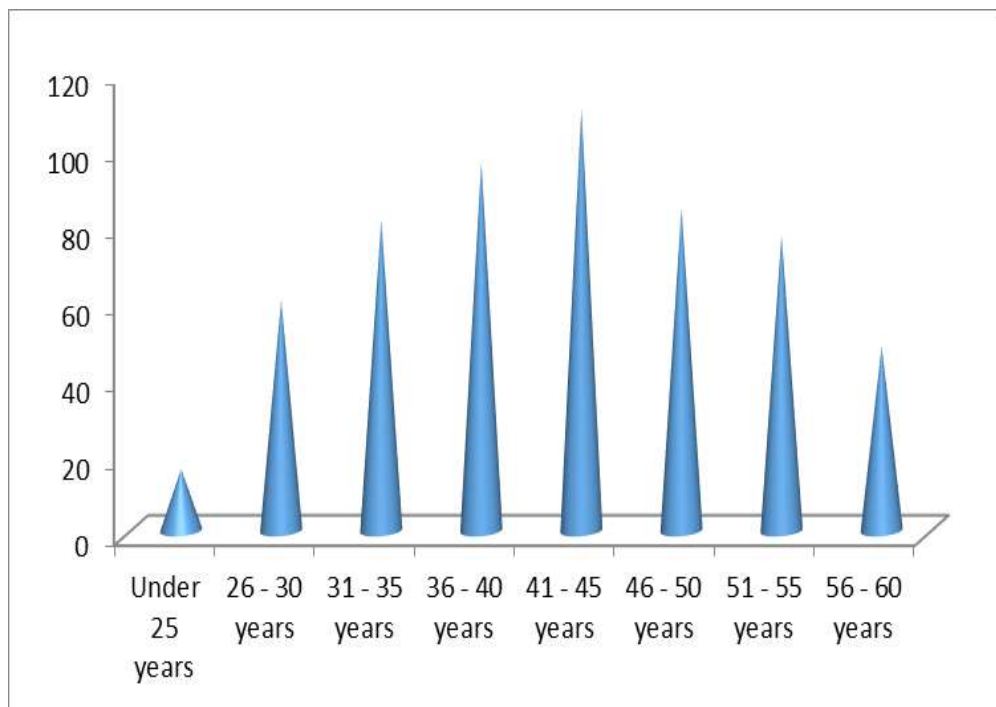
This chapter deals with the data presentation and analysis. In this chapter, all data gathered for the study are organized, analysed and this is followed by discussion of key issues relating to the findings of the study. Frequency tables are provided to give statistical reflections on key issues in terms of the research questions. The main thrust of the study is to examine the attitude and competence level of basic school teachers in teaching ICT in Cape Coast Metropolis.

#### **Demographic Characteristics of the Respondents**

The demographic characteristics considered in the study are age, sex, highest educational level and years of teaching experience. The demographic characteristics of the respondents helped in determining the extent to which the responses they provided could be depended upon. Out of 150 teachers sampled for the study, 100% valid questionnaire was retrieved.

## Age Distribution of the Respondents

It was necessary to determine the ages of the ICT teachers, since this information would help to know how young or mature the respondents are. Figure 1 indicates that 16 (10.7%) of them fell under the 25 age bracket. Thirty (20.0%) and 27 (18.0%) fell in the 26 – 30 and 31 – 35 age brackets. Twenty-four (16.0%) and 22 (14.7%) of them respectively fell in the 36 – 40 and 41 – 45 age brackets. Another 14 (9.3%) of them fell in the 46 – 50 age bracket while 11 (7.3%) of them fell in 51 – 55 age bracket. The remaining 6 (4.0%) fell in the 56 – 60 age bracket. The details are provided in figure 1.



**Figure 1: Ages of Respondents**

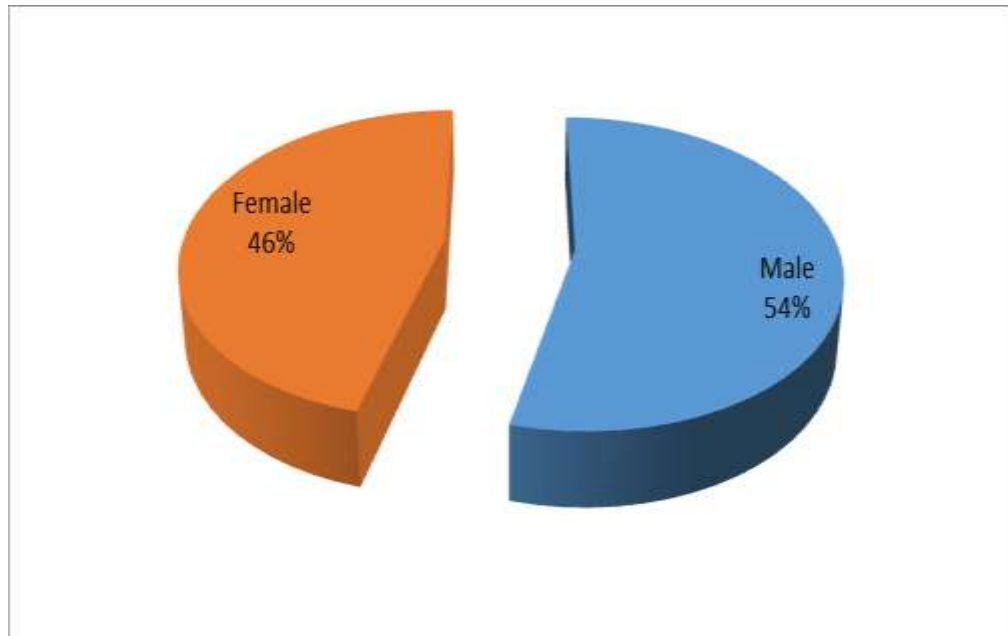
Source: Field survey, 2014.

The results of this analysis shows that ICT teachers used for the study spread across all categories of age group, that is young, middle age and those preparing to retire from active teaching service. They therefore cater for all the age interest needed for this study.



## Gender of Respondents

Out of the total 150 respondents selected, 81 (54.0%) were males and 69 (46.0%) were females. This suggests that most of the teachers used in the study were males. The details are provided in figure 2.



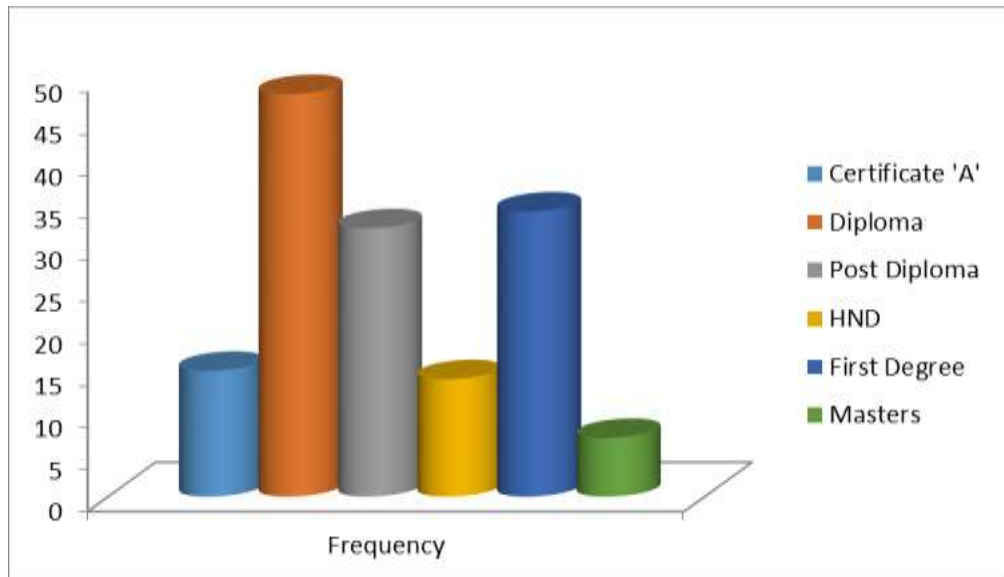
**Figure 2: Gender of Respondents**

Source: Field survey, 2014.

Most studies allege that ICT is a male dominated area while others think otherwise. Some research studies revealed that male teachers used more ICT in teaching and learning than their female counterparts (Kay, 2006). The situation was different in Western US basic schools where Breisser (2006) found that females' teacher's self-perceptions about technology competence improved while males' teacher's self-perceptions about technological dominance were going down. The sample used here tried to bridge the gap.

### Highest Educational level of Respondents

The data reveals that 15 (10.0%) of the respondents possess Certificate “A”, 48 (32.0%) have Diploma and 32 (21.3%) possess Post Diploma certificates. Again, 14 (9.3%) and 34 (22.7%) of the respondents had a Higher National Diploma certificate and a First Degree certificate as their highest level of education respectively. The remaining 7 (4.7%) have a Master’s degree. The educational level of the teachers suggests that one needs to attain a certain level of education before working as an ICT teacher in the basic school. The details of their responses are provided in figure 3.



**Figure 3: Highest Academic Qualification of the Respondents**

Source: Field survey, 2014.

The highest academic qualifications of the teachers do not indicate whether their focus is only on ICT teaching or not. The qualification they provided are general academic qualification they are using in teaching as class teachers. This is unfortunate because ICT teaching requires special expertise to deal with this subject for effective delivering in teaching and learning.

## Teaching Experience of the Respondents

The data indicates that 36 (24.0%) and 45 (30.0%) of the teachers have spent 1 – 5 years and 6 – 10 years respectively in teaching. Thirty-seven (24.7%) of the respondents have spent 11 – 15 years of teaching. The remaining 32 (21.3%) have taught well over 16 years. An inference from the above is that majority of the respondents have spent more than 5 years as teachers and the details are presented in Table 1.

**Table 1: Distribution of Teaching Experience of Respondents**

Years of Teaching	Frequency	Percent
1 – 5 years	36	24.0
6 – 10 years	45	30.0
11 – 15 years	37	24.7
Above 16 years	32	21.3
<b>Total</b>	<b>150</b>	<b>100</b>

Source: Field survey, 2014.

The fact that more than 70% of the teachers have more than 6 years of teaching experience is encouraging. Experience might not necessarily be the best teacher, but it almost always results in the most enduring lessons. However, every basic school teacher does class teaching and therefore it is expected of them to teach ICT as well. Moreover, the years of teaching experience is not limited to their teaching of ICT only but it cut across the other subjects they teaches too.

**Research Question 1: What is the Attitude of Teachers Towards Teaching ICT?**

This question sought to establish the attitude of teachers towards the teaching of ICT. Some indicators of attitudes were used to collect data. The analysis of the data is presented in Table 2.

**Table 2: Frequency Distribution of Attitude Levels of the Teachers**

Statement	SA + A		D + SD		Mean Score	Rank
	Freq.	%	Freq.	%		
Better learning experience	56	37.4	94	62.6	2.91	3 <sup>rd</sup>
Could work harder if I use ICT	43	28.7	107	71.3	3.12	1 <sup>st</sup>
For dissemination information	115	76.6	35	23.4	1.95	8 <sup>th</sup>
Makes teaching more interesting	125	83.3	25	16.7	1.57	10 <sup>th</sup>
ICT enhances students learning	121	80.7	29	19.3	1.70	9 <sup>th</sup>
I do not want to use ICT	134	89.3	16	10.6	2.00	5 <sup>th</sup>
Phobia for ICT equipment	15	10.0	135	90.0	3.00	2 <sup>nd</sup>
ICT cannot address school system	96	64.0	54	36.0	2.13	4 <sup>th</sup>
Facilities discourage me from ICT	108	72.0	42	28.0	2.00	5 <sup>th</sup>
I enjoy lessons on the computer	74	49.3	76	50.7	1.96	7 <sup>th</sup>

The mean scores were integrated as follows:

1 – 2.44 = Low/Poor; 2.45 – 2.9 = Moderate; 3.0 – 4.0 = High/Good

Source: Field survey, 2014.

Mean categorization was used to find teachers attitude towards the teaching of ICT, which had a midpoint mark of 2.5. The data in Table 2 reveals that some of the respondents have good attitude towards the teaching of ICT in the following category; better learning experience, could work harder if I use ICT and phobia for ICT equipment (placed as 3<sup>rd</sup> , 1<sup>st</sup> and 2<sup>nd</sup> respectively) were between 3.0- 4.0 mark. Some of the respondents also had

poor attitude in the following category; for dissemination of information, makes teaching more interesting, ICT enhances students learning, I do not want to use ICT, ICT cannot address school system, facilities discourage me from ICT and I enjoy lessons on the computer (placed as 8<sup>th</sup>, 10<sup>th</sup>, 9<sup>th</sup>, 5<sup>th</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 7<sup>th</sup> respectively) were between 1 – 2.44 mark. None of the respondent were between 2.45 – 2.9 mark. A deduction from the above is that majority of the respondents are having poor attitude towards the teaching of ICT.

Again, the mean of means helped to find out the overall attitude of the respondents towards the teaching of ICT. The details are provided in Table 3.

**Table 3: Mean of Means Attitude of the Respondents**

Variable	Mean	Standard Deviation
Attitude	2.3610	2.3610

The mean scores were integrated as follows:

1 – 2.44 = Low/Poor; 2.45 – 2.9 = Moderate; 3.0 – 4.0 = High/Good

Source: Field survey, 2014.

Overall, the mean of means attitude of the teachers towards the teaching of ICT in Cape Coast Metropolis recorded a value of 2.3. This implies that the respondents have poor attitude towards the teaching of ICT. The finding supports the work of Korte and Husing (2007), who concluded that teachers believe that the benefits of ICT are not clearly seen. The empirical survey of Corte (2010) also revealed that a fifth of European teachers believed that the use of ICT in teaching did not benefit their students. However, this result contradicts the findings of Teo (2008), who concluded that pre-service ICT teachers have good attitude towards the teaching of ICT.

However, other research suggests that a significant minority of teachers do not see considerable learning benefits for students from ICT, regardless of the sophistication of their ICT systems (Teo, 2008). A survey of UK teachers also showed that teachers' positivity about the possible contributions of ICT was moderated as they became 'rather more ambivalent and sometimes doubtful about specific current advantages' of ICT (BECTA, 2008).

**Research Question 2: What is the Competency Level of the Teachers in their Personal Use of ICT?**

In order to address this, teachers were asked to express their opinion on their competency levels on MS word, spreadsheets and on emails. Table 4 represents the perceived competency level in their personal use of ICT.

**Table 4: Respondents Competency levels in their Personal Use of ICT**

Categories of Competency levels	SA + A		D + SD		Mean Score
	Freq.	%	Freq.	%	
MS Word	94	62.6	56	37.4	2.56
Spreadsheet	107	71.3	43	28.7	2.90
Email	35	23.4	115	76.6	2.42

The mean scores were integrated as follows:

1 – 2.44 = Low/Poor; 2.45 – 2.9 = Moderate; 3.0 – 4.0 = High/Good

Source: Field survey, 2014.

The data in Table 4 reveals that when it comes to the usage of MS word, 94 (62.6%) of the respondents personally use MS word were between 2.45 – 2.9. A deduction from the above is that the majority of the respondents have moderate competency level in MS word. This support Deborah (2013) findings that most ICT teachers have moderate competency level when it

comes to the use of MS word. Furthermore, the study supported the work of Derbyshire (2003), who concluded that majority of the teachers have confidence when it comes to the use of MS word. Another study by Moganashwari and Parilah (2013), also confirmed this research as the findings of the study reflects that the respondents were knowledgeable only on certain applications such as word processing and internet browsing.

In the usage of spreadsheets, 107 (71.3%) respondents who personally use the spreadsheets were between 3.0 – 4.0. It can be deduced from the above that the majority of the respondents have good competency level towards spreadsheets use.

Finally, when it comes to teacher’s use of email, 35 (23.4%) respondents personally uses the email was between 1 – 2.44. A deduction from the above is that the majority of the respondents have poor competency level towards the use of email.

The mean of means also helped to find out the overall competency level of the respondents in their personal usage of ICT. The details of their responses are provided in Table 5.

**Table 5: Mean of Means Competency Levels of the Respondents**

Variables	Mean	Standard Deviation
Competency level on Word	2.5651	.07018
Competency level on Spreadsheet	3.8920	.51063
Competency level on Email	2.4233	.82786

The mean scores were integrated as follows:

1 – 2.44 = Low/Poor; 2.45 – 2.9 = Moderate; 3.0 – 4.0 = High/Good

Source: Field survey, 2014.

Overall, the mean of means recorded for the competency level of ICT teachers on their personal use of MS word was 2.5651. This implies that the respondents have moderate competency level with regards to the use of MS word.

The overall mean of means recorded for the competency level of ICT teachers on their personal use of spreadsheets was 3.8920. This implies that the respondents have high competency level with the use of spreadsheets. The findings are consistent with Kadel (2005) who concluded that ICT teachers are good when it comes to the usage of spreadsheets. However, the findings do not agree with the work done by Yusuf (2011). He concluded that the majority of student-teachers (over 50%) at the University of Ilorin are not competent in the use of spreadsheet.

Finally, the mean of means recorded for the competency level of ICT teachers on their personal use of email was 2.4233. This implies that the respondents have low competency level when it comes to the use of email. A deduction from the above is that the respondents are good in the usage of MS word and spreadsheets. This also supports the data in the mean categorization.

### **Research Question 3: Do the Teachers have the Requisite Training and Qualification in the use of ICT in Teaching?**

In trying to answer the research question above, respondents were asked whether they have received any training in ICT before joining the teaching profession. This is to say whether the respondents have received any training in the use of ICT during their formative days at their various training institutions or colleges. The details of their responses are presented in Table 6.



**Table 6: Respondents View on Receiving ICT Training Before Joining the Teaching Profession**

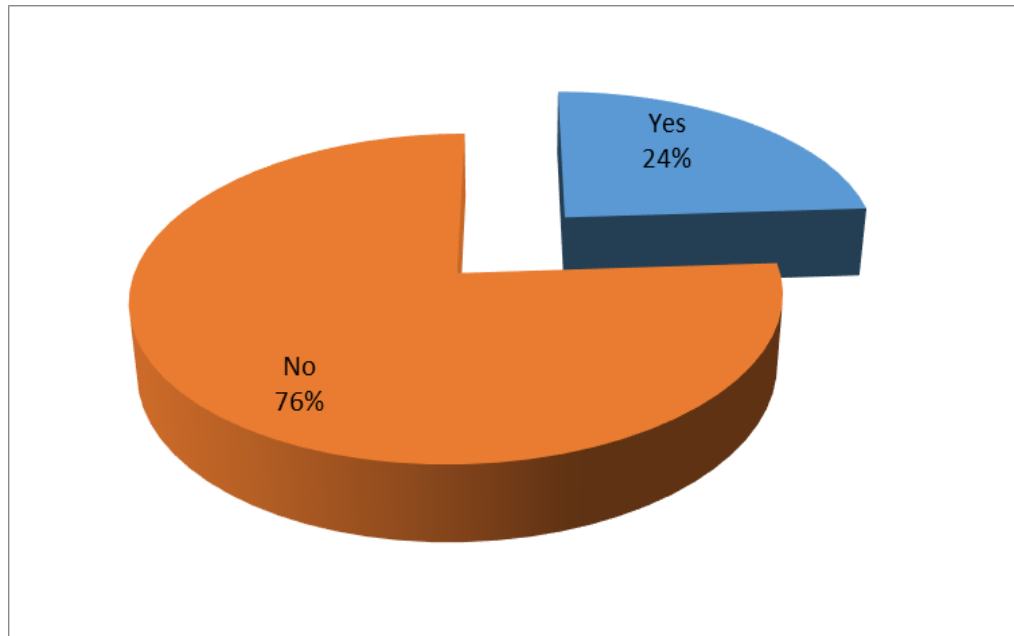
Response	Frequency	Percent
Yes	34	22.7
No	116	77.3
<b>Total</b>	<b>150</b>	<b>100</b>

Source: Field survey, 2014.

The data in Table 6 reveals that as many as 116 (77.3%) of the respondents claimed they did not receive any training in ICT before joining the teaching profession. The remaining 34 (22.7%) responded in the affirmative. A deduction from the above is that the majority of the respondents did not receive any training in ICT before joining the teaching profession. The study supports the findings of Fouche (2005) in Nigeria. He concluded that most of the secondary school teachers did not receive any training in ICT before joining the teaching profession. This outcome is at complete variance to the study by Yu (2002), who concluded that all staff in their college received training in ICT before joining the teaching profession. The outcome of this study agree with the study done by BECTA (2004), who concluded that most teachers did not have the privileges to be trained on ICT skills before joining the teaching profession.

The issue of training is certainly complex because it is important to consider several components of training before it can be accomplished or achieved. Some of the issues worth considering are time for training, pedagogical training, skills training, and an ICT use in initial teacher training.

Respondents were further asked if they have attended any computer training. Their responses are presented in figure 4.



Source: Field survey, 2014.

**Figure 4: Respondents View on Attending ICT Training**

Figure 4 shows that as many as 114 (76.0%) of the respondents responded in the negative that they have not attended a computer training session before. The remaining 36 (24.0%) responded in the affirmative. A deduction from the above is that, majority of the respondents have not attended any computer training session before. It therefore means that most of the teachers used in the study did not have any training in basic ICT use.

**Research Question 4: What are the Barriers Hindering the Integration of ICT in Education?**

In trying to answer this, respondents were asked what was preventing them from using ICT to teach. Their responses are presented in Table 7.

**Table 7: Factors Preventing Teachers from Using ICT/Computers**

Responses	Frequency	Percent
Lack of time to use computers	6	4.0
Fear	5	3.4
Lack of knowledge on computers	27	18.1
Age	3	2.0
Lack of confidence	34	22.8
Lack of training	62	41.6
Computers are not accessible	8	5.4
<b>Total</b>	<b>150</b>	<b>100</b>

Source: Field survey, 2014.

The findings in Table 7 reveals that 6 (4.0%) of the respondents indicated that lack of time to use computers affect their decision not to use ICT, 5 (3.4%) associated theirs to fear, 27 (18.1%) also associated theirs to lack of knowledge about computers, 3 (2.0%) related their reason to age, 34 (22.8%) also related their reason to lack of confidence. Again, 62 (41.6%) indicated that lack of training affect their decision not to use computers/ICT, 8 (5.4%) associated theirs to the reason that computers are not accessible and 4 (2.7%) also associated their reason to the fact that computers are not reliable. A deduction from the above is that the three major factors that affect teachers

in Cape Coast Metropolis non-use of computers or ICT are lack of knowledge about computers, lack of confidence and finally lack of training on ICT use. These barriers were similar to the reasons given by Schoepp (2005) as the major barriers ICT teachers face when it comes to the use of ICT in teaching.

Research by Gomes (2005) also asserted 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. OECD (2009) also gave some reasons why teachers do not use ICT in their teaching. These barriers included an inconsistent number of computers to students, a deficit in maintenance and technical assistance and finally, a lack of computer skills and or knowledge among teachers. These reasons are quite similar to the reasons given by the respondents in this study. Ironically, the reasons given by the respondents are different from what Ertmer (2009) referred to as intrinsic barriers. She referred to intrinsic barriers as attitudes, beliefs, practices and resistance to change as their major barriers.

### **Testing of Hypotheses**

**Hypothesis One: The attitude of teachers in basic schools has no statistically significant effect on their competence in ICT usage.**

The results of the Pearson Correlation analysis for the mean attitude and overall competence levels are reflected in Table 8.

**Table 8: Pearson Correlation (Mean Attitude and Overall Competence)**

Correlations		Overall Competence	Mean Attitude
Overall Competence	Pearson Correlation	1	-.060
	Sig. (2-tailed)		.464
	N	150	150
Mean Attitude	Pearson Correlation	-.060	1
	Sig. (2-tailed)	.464	
	N	150	150

Significant at the  $P = \leq 0.05$  levels

Source: Field survey, 2014.

It is seen from Table 8 that there is no significant correlation between the mean attitude of ICT teachers' and their competence level as can be observed from the results on all the items ( $r = -.060$ ,  $p = .464$ ). It is also not significant because there is a weak negative correlation between the overall competence and the mean attitude of the teachers. Statistically, it did not prove to be significant, therefore the null hypothesis is accepted. This could be attributed to fact that the selected schools did not have the needed physical structures to support the teaching and learning of ICT or computers are not readily available to be used by teachers.

This result supports the findings of Yusuf (2011) in Nigeria who concluded that there is no significant difference between attitude and competence level of teachers in the use of ICT in teaching. The conclusion is also similar to what was obtained in the findings of Todd (1997) regarding teachers in Scotland. There was no statistically significant difference between

the ICT competence level of teachers and their attitude in the regional areas. However, the same study gave significance difference between the competence level and attitude of teachers for those in the remote areas.

**Hypothesis Two: There is no statistically significant difference between the attitude of male and female teachers towards ICT.**

The results of the Independent t-test analysis are presented in Table 9.

**Table 9: Mean and Standard Deviation of Male and Female Respondents**

Variables	Male		Female		t value	P
	M	SD	M	SD		
Better learning experience	2.83	1.04	2.36	1.08	2.74	.656
Could work harder if I use ICT	3.15	1.06	3.08	1.04	.408	.822
Dissemination of information	2.08	.99	2.07	1.00	-.21	.829
Makes teaching more interesting	2.80	.992	2.91	1.01	.67	.501
Enhances students learning	2.60	1.06	2.71	1.01	-.615	.540
I do not want use ICT	2.70	.843	2.84	1.00	-.90	.367
Phobia for ICT equipment	2.96	.927	2.78	.937	1.18	.240
Cannot address school system	2.12	.958	2.13	1.20	-.060	0.44
Facilities discourages me	2.05	1.01	1.94	.977	.655	.963
Enjoy lessons on the computer	2.80	.980	2.85	.911	-.338	.736
Overall Attitude level	2.83	1.04	2.36	1.08	.180	.857

Significant level 0.05

Source: Field survey, 2014.

Table 9 indicates that the difference between the attitude of male and female teachers towards ICT was not statistically significant (t value = .180, P = .857). By the results, the study accepts the null hypothesis that there is no

statistically significant difference between the attitude of male and female teachers towards ICT. This could be attributed to the fact that the challenges in the teaching of ICT cut across all the schools selected for the study not on gender base. This may be the reason why there is no significant difference between them. This results supports the findings of Elsaadani (2012), who concluded that there is no significant difference in the competence of male and that of female student-teachers' in the use of ICT in Egypt. A related study carried out by Teo (2008) in Singapore also indicated no significant difference between male and female pre-service teachers competence level.

### **Summary**

This chapter examined the attitude and competence level of basic school teachers in teaching ICT. Specifically, the study revealed that majority of the teachers have poor attitude towards the teaching of ICT. However, the results shows that majority of the respondents are good in the use of MS word and spreadsheets but not in email use. Unfortunately, most of the respondents did not receive any training in ICT before joining the teaching profession.

Furthermore, the major barriers that prevented teachers from using ICT or computers in their teaching are lack of knowledge about computers, lack of confidence and finally lack of training on ICT use.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **Introduction**

This chapter presents a summary of the findings, conclusion and outlines recommendations including areas for further research.

#### **Summary**

The study examined the attitude and competence level of basic school teachers in the teaching of ICT in Cape Coast Metropolis. Probability sampling technique was used to select the basic schools and the ICT teachers in the Metropolis. In all fifty schools and one hundred and fifty teachers were selected for the study. Self-administered questionnaire was used as an instrument for the study. Microsoft Excel 2013 and SPSS version 20.0 were the software's used for the data analysis. Frequency tables, pie charts and bar charts were also used in presenting the data. Conclusions from relevant related literature were captured along to authenticate the findings of the study. The summary of the findings are presented as follows:

1. ICT teachers used for the study spread across young, middle age and those preparing to retire from active service.
2. The teachers used in this study tried to bridge the gap between male and female dominance in ICT usage.



3. The study revealed that majority of the teachers have poor attitude towards the teaching of ICT.
4. The result of the study showed that majority of the teachers have moderate competency level in MS word and spreadsheets use but not in email use.
5. Majority of the teachers did not have any training in the use of ICT before they joined the teaching profession.
6. The study revealed that majority of the teachers had not attended any computer training session before.
7. The study also indicated lack of knowledge on computers, lack of confidence and lack of training as the major barriers hindering the integration of ICT in education.

### **Conclusions**

The following conclusions were drawn based on the research questions that were set:

It can be concluded that majority of the teachers do not have positive attitudes towards the use of ICT or computers. The results revealed that teacher's competency levels in MS word and use of spreadsheets are good; however, the same teachers lacked required competence in the use of email. Majority of the teachers do not have the requisite training and qualification in the use of ICT. The barriers hindering the integration of the use of ICT are lack of time to use computers, fear, lack of knowledge on

computers, age, lack of confidence, lack of training and computers are not accessible. Gender had no significant influence on the attitude of teachers towards ICT and competence. Similarly, no significant difference was established between male and female teachers in their ICT competence level.

### **Recommendations**

From the summary of the major findings of this study, it is recommended that:

1. All ICT professional development initiatives for teachers should be based on learning strategies that makes a difference in daily practice. Specific ICT skills should be taught within the context of how teachers can use realistic and practical settings at the colleges of education and at the universities. If teachers are shown why the buttons need to be pressed, in what context they should be pressed and how this will enhance learning opportunities, they are more likely to improve their attitudes towards the teaching of ICT.
2. Teachers should be given the necessary training in ICT usage so that they become familiar with modern pedagogy of imparting knowledge and skills, and possibly become part of curriculum structure for their professional training.
3. Also, it is recommended that policy formulators should be clear on ICT policy and its direction of implementation with the necessary guidelines so that the implementation agents like Ghana Education Service (GES), Ministry of Finance and the likes can help to make it a

reality since ICT is the modern way of acquiring critical skills and knowledge effective and efficient for economic development.

4. The Curriculum Research Development Division (CRDD) of the GES in collaboration with the related agencies in the Ministry of Education should carry out research to review critically the ICT curriculum in the basic schools and revise the existing syllabus to explicitly state what ICT tools must be used and how teachers should use them in the teaching and learning process.

### **Suggestions for Further Research**

It may be necessary for further research to be conducted on the impact of computer-based test, Microsoft digital literacy programme etc. on teacher's attitude, and ICT competency level. This study has established the wide gap between the UNESCO ICT competency level standards for teachers and what is obtained in basic schools in Cape Coast Metropolis.

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**APPENDIX A**

**UNIVERSITY OF CAPE COAST**

**CENTRE FOR CONTINUING EDUCATION**

**QUESTIONNAIRE FOR BASIC SCHOOL ICT TEACHERS IN CAPE**

**COAST METROPOLIS**

The researcher is a post-graduate student in University of Cape Coast who is writing his dissertation on the topic; Examining the attitude and competence level of basic school teachers in teaching ICT. Answer the following questions by ticking or writing the appropriate responses. All responses will be treated confidential.

Thank You.

**Section A: Demographic Characteristics**

1. Age : Under 25 [ ]      26 – 30 [ ]      31 – 35 [ ]  
36 – 40 [ ]      41 – 45 [ ]      46 – 50 [ ]  
51 – 55 [ ]      55 – 60 [ ]
2. Sex: Male [ ]      Female [ ]
3. Highest educational level attained:  
Certificate ‘A’ [ ]      Diploma [ ]      Post Diploma [ ]  
HND [ ]      1<sup>st</sup> Degree [ ]      Masters [ ]
4. Name of School: .....
5. How long have you been teaching?  
1 – 5 years [ ]      6 – 10 years [ ]      11 – 15 years [ ]  
Above 16 years [ ]



Please use the likert scale below to indicate the extent to which you agree or disagree with the following statements.

**Section B: Attitude of Teachers towards Teaching ICT.**

SN	ITEM	Strongly Agree	Agree	Strongly Disagree	Disagree
6.	ICT provides better learning experiences.	[ ]	[ ]	[ ]	[ ]
7.	I could work harder if I could use ICT.	[ ]	[ ]	[ ]	[ ]
8.	ICT is useful for the dissemination of information	[ ]	[ ]	[ ]	[ ]
9.	ICT makes teaching more interesting.	[ ]	[ ]	[ ]	[ ]
10.	ICT enhances students learning.	[ ]	[ ]	[ ]	[ ]
11.	I do not want to have anything to do with ICT.	[ ]	[ ]	[ ]	[ ]
12.	I have phobia for ICT equipment.	[ ]	[ ]	[ ]	[ ]
13.	ICT can't address the needs of the school system.	[ ]	[ ]	[ ]	[ ]
14.	The state of facilities discourages me from the use of ICT.	[ ]	[ ]	[ ]	[ ]
15.	I enjoy lessons on the computer.	[ ]	[ ]	[ ]	[ ]
16.	Knowing how to use the computer is a worthwhile skill.	[ ]	[ ]	[ ]	[ ]

**Section C: Competency level of Teachers on MS Word Skills.**

SN	ITEM	Strongly Agree	Agree	Strongly Disagree	Disagree
17.	I can create and save new document	[ ]	[ ]	[ ]	[ ]
18.	I can open and save document	[ ]	[ ]	[ ]	[ ]
19.	I can use editing tools such as spelling and grammar check	[ ]	[ ]	[ ]	[ ]
20.	I can create and modify tables	[ ]	[ ]	[ ]	[ ]
21.	I can change margins, font face and font size	[ ]	[ ]	[ ]	[ ]
22.	I can insert pictures and objects from other files	[ ]	[ ]	[ ]	[ ]
23.	I can change the background color of a document	[ ]	[ ]	[ ]	[ ]

**Section D: Competency level of Teachers on Spreadsheets.**

SN	ITEM	Strongly Agree	Agree	Strongly Disagree	Disagree
24.	I can create basic formulae for addition, subtraction, multiplication and division.	[ ]	[ ]	[ ]	[ ]
25.	I can use functions (sum, average, minimum, maximum)	[ ]	[ ]	[ ]	[ ]
26.	I can use spreadsheet to make predictions.	[ ]	[ ]	[ ]	[ ]
27.	I can create and modify charts	[ ]	[ ]	[ ]	[ ]
28.	I can use fill handle to copy formulae and create series	[ ]	[ ]	[ ]	[ ]

**Section E: Competency level of Teachers on Email.**

SN	ITEM	Strongly Agree	Agree	Strongly Disagree	Disagree
29.	I can open an e-mail account.	[ ]	[ ]	[ ]	[ ]
30.	I can create an e-mail message.	[ ]	[ ]	[ ]	[ ]
31.	I can receive and save e-mail messages.	[ ]	[ ]	[ ]	[ ]
32.	I can attach document or file to an e-mail message	[ ]	[ ]	[ ]	[ ]

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

Yes [  ]

No [  ]

34. Have you attended a computer training session before?

Yes [  ]

No [  ]

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

To use ICT in class [  ]

Personal interest [  ]

Required to do so [  ]

Increase career prospects [  ]

Other (please specify) .....

36. Do you have any professional ICT qualification?

Yes [  ] No [  ]

37. What factors affect your non-use of computers/ICT in the classroom?

(Tick all that apply).

(i) Lack of time to use computers [  ]

(ii) Fear [  ]

(iii) Lack of knowledge about computers [  ]

(iv) My age [  ]

(v) Lack of confidence [  ]

(vi) Lack of training [  ]

(vii) Computers not accessible [  ]

(viii) Little experience [  ]

(ix) Computers are not reliable [  ]