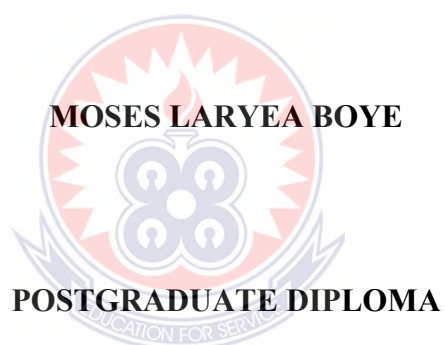


**UNIVERSITY OF EDUCATION, WINNEBA**

**INCORPORATING INFORMATION COMMUNICATION AND  
TECHNOLOGY INTO TEACHING AND LEARNING, THE BENEFITS AND  
CHALLENGES**



**2023**

**UNIVERSITY OF EDUCATION, WINNEBA**

**INCORPORATING ICT INTO TEACHING AND LEARNING IN  
EDUCATION, THE BENEFITS AND CHALLENGES**



**A dissertation in the Department of Educational Foundations,  
Faculty of Educational Studies submitted to the School of  
Graduate Studies in partial fulfillment  
of the requirements for the award of the degree of  
Post Graduate Diploma  
(Education)  
in the University of Education, Winneba**

**MARCH, 2023**

## DECLARATION

### Student's Declaration

I, Moses Laryea Boye, 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 thesis/dissertation/project as laid down by the University of Education, Winneba.

**Dr. Abigail M. Opong Tetteh (Supervisor)**

Signature: .....

Date: .....

## **DEDICATION**

To my cherished wife, Eva Maku Boye and my children, Maribel Boye, Tracy Boye and Rhodaline Boye.



## ACKNOWLEDGEMENTS

My appreciation goes to Dr. Abigail M. Opong Tetteh (Ph.D), my supervisor, who carefully guided me with her experience and knowledge, made corrections and gave suggestions to enable me to bring this project to its final stage.

My Appreciation also goes to Mr. Paul Nii Anang Boye whose words of inspiration and support during my studies helps me a lot to achieve my goal, am grateful

I am thankful to my dear wife Eva Maku Boye, and my daughters for their word of encouragement, indeed they have been there for me when I needed them most, I pray to God to bless them abundantly.

Finally, my sincere thanks go to all the authors whose books provided me with the relevant information for the project work.



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## ABSTRACT

The study investigated the benefits and challenges incorporating ICT into teaching and learning in selected schools in Korle Klottey District. The study was anchored on the positivist research philosophy and influenced by the quantitative research approach. The study employed the descriptive survey research design with a targeted population of 383. Out this number, a sample of 105 ICT teachers which were selected using purposive sampling technique. Data were collected using questionnaire was used as the main instrument for data collection. The instrument attracted a reliability coefficient of 0.78. The data were analyzed using percentages and frequency distributions. Among other findings were that, ICT resources available for use in the district are mainly computers, with very few schools having television sets. Also, inadequate and unavailable ICT resources, lack and unstable sources of electricity and lack of integration skills were mentioned as the inhibiting factors of ICT integration into the curriculum. The researcher recommended that, the government and other stake holders of education in Ghana should consider providing a variety of Information and Communication Technologies or resources proportionally to all public basic schools to encourage more effective teaching and learning.



## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the Study

Information and Communication Technology (ICT) use has improved human capacities all around the world and transformed how businesses conduct themselves. Apart from in academia, this was initially recognized in other facets of human civilization, primarily in business and the American military. ICT impact is also generally acknowledged in both the business and at home (Dawes, 2001; Preston, Cox & Cox. 2000). These are but a few modest hints that ICT is evolving into a crucial component and supporting tool that cannot be disregarded in the teaching and learning processes in schools.

In the 1960s, certain African schools in North Africa saw the introduction of computers, which were mostly used for administrative convenience (Clark & Mayer, 2003). They were employed in educational settings in North America and Europe later in the 1970s. Through the end of the 1970s, the first computers were installed in schools in Africa. Per Clark and Mayer (2003), African governments at the time were particularly motivated by two objectives: introducing particular software products and introducing pupils to computers.

Early in the 1980s, only a few elite institutions and universities in Africa still provided computer classes. Computer processing was prioritized over information and communication technologies and was seen as a necessary profession. This immediacy was felt most acutely in Africa, and in 1982 Time Magazine recognized the computer's significance by awarding it "Man of the Year." This was the first instance of a machine being given such an accolade (Time Magazine, 1982). The creation of

computer-programmed teaching was greatly impacted by the behaviorists' significance to educational theory (CPT). These encouraged teachers to show a greater interest in utilizing technology to teach particular courses. The system of Computer-Assisted Teaching (CAT), which was widely embraced in North America and Europe, was adopted by instructors from the teaching of computer programming and computer-programmed instruction. Tutorials and educational software were created to assist students in gaining knowledge and advancing their abilities (Clark & Mayer, 2003).

Opined by Clark and Mayer (2003), computer-assisted learning (CAL) began to take off in the early 1980s, and by the mid-1990s, ICT was being used in a wide range of academic fields. ICT integration in school administration looks to be on the rise in educational circles since the late 1990s. Global trends have had an impact on Zimbabwe's ICT growth. This explains why technology has advanced so much in the nation. The quantity of fixed and mobile phone service providers, internet connections access, Internet service providers (ISPs), Internet users, and broadcast television are all examples of this.

Information and communication technology use in elementary school classrooms has beneficial benefits. These could include raising the bar for academic performance, electronic record, and assessment preparation at the institution. Airwaves, broadcast tv, cellular phones, computer systems, network equipment, communications satellites, and other telecommunication technologies or implementations are all included under the umbrella term of information and communication technologies (ICT), as are the various services and applications that are connected to them, such as teleconferencing and digital education. ICT can be viewed as a branch of digital learning when such

technologies are employed for teaching and learning purposes, namely to assist and enhance exam achievement (Kumar, 2008).

Education includes transmitting information, developing insight, and teaching and learning expertise, as well as something less concrete but more profound (Alexis, 2003). The transmission of culture from one generation to the next is one of education's key components. Numerous programs have been developed since ICT was introduced in the nation to help teachers manage classroom activities with less effort. By clicking a button, ICT programs enable teachers to keep an eye on their students' daily activities in the classroom. Although there are various uses for ICT in primary school settings, it is unknown how they are applied in many Ghanaian districts' primary schools. Thus, this study sought to find out the application of ICT in a primary school classroom in the Korle Klottey District.

Ghana, a third world nation, is aware of how important information and communication technology is to its socioeconomic progress. The Ghana ICT for Accelerated Development (ICT4AD) policy was created with the overarching goal of "engineering an ICT-led cultural evolution with the ability to revolutionize Ghana into an average class, relevant data, expertise, and innovation influenced economic system. The ICT4AD includes "support an enhanced school system within which ICTs are broadly utilized to enable the provision of academic services at all levels as one of its particular goals (Republic of Ghana, 2003, p. 9). It is anticipated that the integration of ICT into the educational system will enhance teachers' intellectual motivation and morale them to advance their technological proficiency. It is believed that teachers' use of technology in the classroom will enhance student learning and advance their technological proficiency.

The implementation of ICT into Education will lead to the formation of new opportunities for students and teachers to interact in innovative ways of knowledge acquisition and processing, the then-minister of education Mr. Alex Tettey-Enyo asserted in the forward of a memorandum on ICT in Education Policy (2008), in Ministry of Education [MOE] (2009). ICT will increase education opportunities and raise the standard of instruction on an equal playing field. Therefore, in order to reform the educational system and subsequently enhance the lives of our citizens, the Government is dedicated to a detailed plan of swift ICT deployment and usage within the Field Of education. According to the minister, a fair distribution and efficient application of ICT may improve student accomplishment by increasing the availability and the caliber of teaching methods.

According to Amanortsu, Dzandu and Asabere (2013), most of the government initiatives to ensure quality and accessible ICT education for all in Ghana has failed to achieve its goals. For example, Agyemang & Dadzie (2010) found in their study that a policy statement for supplying ICT based-support for Distance Education (DE) learners were available but were yet to be implemented. The integration of ICT in teaching and learning is still at the early stage in the education systems of most developing countries. Over a decade ago, Ghana introduced DE as a means to provide learners with access to quality education and promote human resource development. One of the major challenges in the Ghanaian education system is the inequality of educational resources which includes usage of computers and other ICT materials (Alexix, 2003). Antwi et al., (2018) mentioned that the provision of ICT in secondary schools for learning is skewed towards schools categorized as premier (“A”) schools and located in urban areas. Also, at the primary level, provision of ICT is also skewed towards private schools (Ayebi-Arthur, Aidoo, & Wilson, 2009). Governments should



fund ICT projects that emphasizes on the needs, capacities, perspectives, and aspirations of the greater number of people living in rural areas (David, 2009). The main objective of the study is to provide possible solutions for successful transitioning, implementation and sustenance of e-learning programs after Covid-19.

According to perceptions of the potential of ICT in education, the NDC Government, led by His Excellency Mr. John Dramani Mahama, began providing laptops to various Basic and Senior High Schools in the nation in 2013 and also coordinated one-week trainings for teachers on using computers in education on a district basis. Teachers have just received TM 1 laptops from the government led by Akuffo Addo in order to successfully integrate ICT into their classroom.

The conversations that have just taken place highlight the value that the Ghanaian government and various stakeholders have on ICT integration in the classroom. In attempt to face them and promote effective ICT reform agenda especially, in this covid era, it is important to assess the current situation in this regard and identify any potential obstacles impeding efforts to integrate technology in education and teaching contexts.

## **1.2 Statement of the Problem**

ICT is anticipated to raise the school's standards from a lower level to a higher level in this regard. With all of this in mind, some schools that adopted ICT failed to improve economically or intellectually, as seen by poor resource management and low academic pass rates, according to some experts (Karsenti 2004).

While the benefits of incorporating ICT into teaching and learning are well-documented, understanding the nuances of its implementation, challenges

encountered, and the extent of its impact within specific educational districts remains a crucial research endeavor. In the context of the Korle Klottey district, there is a need to investigate how educators are integrating ICT tools into their instructional practices, as well as to explore the benefits and challenges associated with this integration.

As educational institutions in the Korle Klottey district strive to keep pace with technological advancements, questions arise about the effectiveness of ICT integration. The district's unique characteristics, including socio-economic factors, infrastructure limitations, and variations in digital readiness, can influence the adoption and outcomes of ICT integration. Therefore, a comprehensive understanding of the benefits and challenges faced by educators and students within the context of the Korle Klottey district is vital.

### **1.3 Objectives**

The purpose of the study was to determine how ICT can be incorporated into teaching and learning in basic education, the benefits and challenges in the Korle Klottey District. The specific research objectives were to:

1. To identify ICT resources Basic Schools in Korle Klottey District use.
2. To ascertain ICT tools teachers normally use in teaching their subjects in Korle Klottey District.
3. To ascertain techniques and knowledge in ICT that teachers in Korle Klottey District have, and identify possible solutions to the challenges of integrating ICTs in the teaching and learning in Korle Klottey District.

#### **1.4 Research Questions**

The following research questions were used to assist in the achievement of the purpose of the study.

1. What are the ICT resources Basic Schools in Korle Klottey District use?
2. What are the ICT tools teachers normally use in teaching their subjects in Korle Klottey District?
3. What are the techniques and knowledge in ICT that teachers in Korle Klottey District have?
4. What are the possible solutions to the challenges of integrating ICT in the teaching and learning in Korle Klottey District?

#### **1.5 Significance of the Study**

ICT is still a critical component of every institution's teaching and learning processes. Schools are organizations that need this specific component. The results of this study should help school administration by shedding more light on the numerous areas of education where ICT can be used. ICT can be used primarily in the following areas: delivering instruction, managing classroom amenities, keeping records, managing teaching and learning materials, and as a research tool. The study's conclusions will have a significant impact on policymakers. The steps taken to improve ICT application are anticipated to lay the groundwork for lawmakers to create rules governing ICT use in elementary school settings. In addition, if the findings of this study are taken and put into practice, teachers and students will also gain. The use of ICT can rekindle the passion for improving teaching and learning. The results of this study will also pique the interest of academics and researchers, who may then conduct additional studies on the usage of ICT in primary school classrooms, a topic that has not yet been explored in Ghana.

## **1.6 Delimitations**

This study focuses specifically on the context of the Korle Klottey district, exploring the incorporation of Information Communication and Technology (ICT) into teaching and learning practices within this geographic area. The study aims to provide insights into the experiences, challenges, and benefits of ICT integration as perceived by educators and students in this district. The research does not extend beyond this specific district, and variations in ICT integration practices in other districts or regions are not within the scope of this study.

## **1.7 Limitations**

While every effort was made to ensure the rigor and validity of this study, certain limitations should be acknowledged:

1. The study's sample size might limit the generalizability of findings beyond the selected participants within the Korle Klottey district. A larger sample could provide more comprehensive insights into the topic.
2. The perceptions and experiences of participants may be influenced by their personal backgrounds, attitudes, and beliefs, potentially introducing subjectivity to the findings.

## **1.8 Definition of Terms**

*Information Communication and Technology (ICT):* ICT refers to the use of various digital tools, devices, and resources for communication, information sharing, and learning. This includes computers, the internet, software applications, digital media, and other technological resources used to facilitate teaching and learning processes.

*Teaching and Learning:* Teaching encompasses the methods, strategies, and practices employed by educators to facilitate the transfer of knowledge and skills to students. Learning involves the acquisition and assimilation of knowledge, skills, and competencies by students through educational processes.

*Benefits:* In the context of this study, benefits refer to the positive outcomes and advantages that arise from the integration of ICT tools into teaching and learning practices. These benefits could include enhanced engagement, improved learning outcomes, and the development of digital literacy skills.

*Challenges:* Challenges refer to the obstacles, barriers, and difficulties faced by educators and students when incorporating ICT tools into teaching and learning processes. These challenges might include technical issues, lack of resources, and changes in instructional practices.

### **1.9 Organization of the Study**

This study is organized in five chapters with references and appendices. The introduction is presented in Chapter 1 and comprises of the study's background, its statement of the problem, its aim, its objectives, its research questions, and lastly the significance of the study. Both theoretical and empirical literature are presented in Chapter 2. Additionally, the chapter two presents basic concepts in using ICT in instructions in schools. The relationship between the variables, as clarified by the literature research, is also presented in chapter two. The methodology is presented in Chapter 3 of the study. The research design, study population, sample design and methodologies, data collection techniques, validity and reliability, data analysis methods, and ethical considerations are all included. The discussion and conclusions was found in chapters four and five, respectively.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

The discussion in this chapter will center on what other academics and researchers have to say regarding the usage and implementation of ICT resources in elementary schools. In order for the researcher to come up with the most effective solutions to the issue at hand, a wide range of texts was studied to determine the literature gap between various experts. ICT tools was defined at the beginning of the chapter, along with their functions in primary schools. There will also be suggestions for additional ICT resources that can be used in primary classrooms. The final section of the chapter will look into the difficulties that schools are having using and implementing ICT tools, as well as the solutions that can be put in place to make things easier.

#### **2.2 Theoretical Framework**

The Theory of Planned Behavior (Ajzen and Holmes, 1976) and the Diffusion of Innovation Theory serve as the study's guiding principles (Rogers, 1995).

##### **2.2.1 The Theory of Planned Behavior (Ajzen and Holmes, 1976)**

In this study, the Theory of Planned Behavior (Ajzen and Holmes, 1976) serves as a guiding principle to understand the factors influencing the intention to use new technology in teaching and learning. This theory posits that the acceptance and adoption of an innovation, such as ICT in education, are contingent upon an individual's willingness to use it. According to this theory, three distinct factors play a pivotal role in determining whether an innovation is embraced:

Attitude: This factor pertains to an individual's personal disposition towards the behavior, specifically, their level of support or opposition to incorporating ICT into teaching and learning.

Perceived Social Pressure: Also known as subjective norm, this factor reflects the perceived social pressure an individual feels regarding the adoption of ICT. It considers the influence of colleagues, administrators, and peers in shaping one's decision.

Perceived Behavioral Control: This dimension gauges the perceived benefits and difficulties associated with engaging in the behavior, indicating whether individuals believe they have the necessary skills and resources to integrate ICT effectively.

### **2.2.2 The Diffusion of Innovation Theory (Rogers, 1995)**

The study further incorporates the Diffusion of Innovation Theory (Rogers, 1995) as a theoretical framework. This theory elucidates how innovations, including the integration of ICT, disseminate across time and within a specific social context. It posits that individuals exhibit varying levels of readiness to adopt innovations, categorizing them into five segments: innovators, early adopters, early majority, late majority, and laggards. This theory underscores the interplay of factors like personal attributes, internal organizational structures, and external organizational influences in determining one's propensity to embrace innovation.

In addition to the core theoretical frameworks, this study accounts for moderating factors such as ICT policy requirements, methodology, and topic curriculum. These factors are crucial in understanding how the readiness of schools, school administrators, and instructors for ICT integration is influenced. Specifically: The

availability of facilities and technical support within schools is examined to assess their readiness for ICT integration in teaching and learning. This study also considers the personal characteristics and attributes of instructors who are eager to employ ICT in their educational practices.

By examining these factors in conjunction with the Theory of Planned Behavior and the Diffusion of Innovation Theory, the study aims to provide a comprehensive understanding of the benefits and challenges associated with the incorporation of ICT into teaching and learning in the context of basic education. This holistic approach enables a nuanced exploration of how various factors interact to shape the readiness of schools and educators for ICT integration, ultimately contributing to informed policy recommendations and educational practices.

### **2.3 Definition of ICT Tools**

ICT stands for information and communication technology, which is a network used to find information. Information resources, as well as computer gear and software that can be utilized for teaching and learning, are included (Goay and Wong, 2003). In this review, the term "information communication technologies" (ICTs) corresponds to the laptops, projectors, cell phones, and other digital instruments used to manage and share information for educational purposes. However, according to the definition offered by Goay and Wong (2013), any technology that uses a computer to deliver anticipated results for educational purposes qualifies as an ICT tool.

ICT is described as the spectrum of skills and equipment pertaining to computer-based hardware and software; to communication systems, including both directed and broadcast; to information sources, such as Removable disk and the World wide web; and to associated technologies, such as androids, teleconferencing, and digital Cable.



This indicates that ICT is an addition to information technology (IT), which also comprises hardware, software, and web access. IT communication is made possible via connectivity, which grants connection to the web, locally data centers, and teleconference (Shelly, Cashman, Gunter & Gunter, 2002).

#### **2.4 ICT in Teaching Methodology Context**

Understanding what is intended by pedagogy is crucial for determining where ICT fits into the former's framework. Pedagogy is defined in a variety of ways, but most generally speaking, it is understood to be the science of teaching (Webb & Cox, 2004). Throughout time, pedagogy does not remain static. According to Webb and Cox, the notion of pedagogy has changed as a result of "increasing knowledge that has grown more differentiated and more integrated" and "advancements in our knowledge of cognition and metacognitive strategies"

The first ingredient mentioned, the teacher, is in charge of organizing all the other elements so that learning can occur. According to Maholwana-Sotashe (2007), pedagogy is concerned with the conduct of teachers in the classroom. Mumtaz (2000) emphasizes that the instructors' pedagogical topic understanding influences their behavior in the classroom. Understanding the objectives of the lesson (the outcomes of the lesson), the learners' level of knowledge, the subject content, organizing the subject to fit the learners' knowledge, and organizing the pertinent teaching and learning resources that can be made available in the learning environment are all examples of pedagogical content knowledge (Mumtaz, 2000).

Another tool that can be arranged to be available in a learning setting is ICT. ICTs are thus classified as affordances in the teaching context (Shulman as cited in Webb & Cox, 2004). Any instrument offers affordance, according to Gibson (2005), as seen by

the user. A tool's affordance is therefore the level of support it offers a user in terms of their perception and beliefs. Nonetheless, they advise that teachers "need to be able to recognize affordances in any relevant software for investigating and strengthening the talents and concepts that are to be taught" since Webb and Cox see ICT as a tool that raises the degree of affordance.

## **2.5 ICT in a Basic School**

ICT applications are significantly altering how students learn as well as how teaching and learning methods are used. According to a number of studies, students who use ICT resources and tools generally make more academic progress than those who do not. For instance, Kulik (1994) found that students who use computer tutorials in mathematics, physics, and social science perform much better on tests in these disciplines. This finding was based on 75 studies in the United States. The methodologies to teaching and learning alter as a result of the usage of ICTs in education. According to Volman (2005), there is a widespread perception that the use of ICTs in education promotes a more flexible learning environment, as well as more student involvement and responsibility. This changes the teacher's duty from primarily imparting knowledge to one of assisting, counseling, and coaching students. Learning to use computers progresses gradually, moving from learning about computers to actually utilizing them to study (Volman, 2005). With the role of the teacher shifting to that of the ICT tools, learners now have more responsibility for their education. The roles that the researcher advanced for various ICT technologies are outlined below.

### **2.5.1 ICT as a Method of Delivery**

Studies on teaching methods has shown that children learn better from materials that successfully blend words and pictures than from those that only contain words (Mayer, 2008). Learning material is made more understandable for primary school students by employing multimedia technology in teaching and learning. Cognitive processing development is aided by students' focus and involvement with these resources. When students engage with the multimedia content in a meaningful way, they store it in their long-term memory. The learning activities within the digital resource itself or a lesson designed by the teacher could be a part of this meaningful engagement.

Nevertheless, not all of the material offered in a multimedia format is educational. The materials themselves must be created with strong educational ideas in mind and carefully included into the learning process for teaching and learning to take place. ICT's key contribution is that it gives instructors access to a wealth of data and information that they may use to enhance classroom instruction and learning.

ICT tools serve as a consort for learning activities when theories describing learning processes change. Voogt (2003) characterized ICTs as a study object, a component of a discipline or profession, and a medium of instruction in his assessment of the key roles. ICTs are suited to actualize and use the growing constructivism pedagogy as a medium of instruction (Davis, 1997). This implies that it is now common knowledge and understanding in the majority of schools that the school curriculum cannot be completed without the use of Technological tools. ICT is typically employed as a tool for teaching and learning itself, the channel through which teachers may educate and students can learn, when it is used as a medium of instruction for teaching and

learning. It can be found in a variety of settings, such as drill and practice sessions, simulations, and instructional forums.

### **2.5.2 ICT Assets for Record Keeping**

The daily storage and management of students' academic and social records using ICTs is crucial because it enables teachers to maintain learner profiles. In addition, Edem (2002) argued that accurate record keeping on students' academic achievement is essential for academic judgments. The learner's profile gives the teacher the ability to plan for each specific learner and develop options and techniques that will allow for the learner's personalized learning. Olaboye (2004) stated that information gleaned from school records on enrollment of students or learners and access to amenities might be used for long term planning. Therefore, it is necessary to refer back to previously produced profiles in order to analyze if there have been any positive improvements or not for each and every kid as part of continuous assessment. Information must be saved so that it can be accessed when needed in order for this process to be completed effectively, which highlights the significance of ICT in the contemporary education system.

### **2.5.3 ICT as a Communication Tool**

Give students more resources to aid in resource-based learning. ICTs also include all tools for storing and exchanging data as well as those employed expressly in the field of education. Additionally, ICTs increase opportunities for collaboration and communication between teachers and students. Communication among people from all over the world has greatly increased as a result of the emergency of mobile phones. Teachers are now thought to be the people that use various communication platforms the most to try to solve issues that come up during the teaching and learning process.

Additionally, students have created their own forums to aid one another in issues pertaining to their academics. Many organizations have joined in on the effort to connect students and facilitate the sharing of learning-related information by establishing applications and websites Olaboye (2004).

#### **2.5.4 ICT for Researching**

Moore (2005) provided a summary of the benefits of ICT on students' learning, including how it increases students' incentive to stay on task, encourages better behavior, and motivates them to produce high-quality work. Additionally, pupils study more independently and complete more work quickly because to ICT. Because it may be done at any time or location, gathering information and data analysis in the process of learning can be done quickly and easily. Given that one may quickly conduct research on any issue, the rate at which information can be obtained is also high. Lim (2002) discovered that the use of ICT in teaching and learning gave students the opportunity to actively seek out information and build their understanding from that data by having the opportunity to make connections between their expertises without being constrained by timeframe. ICT tools give teachers access to fresh knowledge and information sources. The teachers have options for where to choose information because numerous organizations and individuals collect information daily and make it available on webpages and other channels if other sources are unable to do so.

The accessibility of ICT technologies also makes it easier to increase learners' access to high-quality educational services at all levels of the educational system. The qualification of the data acquired is a necessary step in the research or data gathering process. The need for ICT tools has widened the study field and made it possible for

enormous amounts of data to be available, which has led to the acquisition of quality information in the end. If the information gathered is not as needed, the integrity becomes an issue (Chan, 2005).

### **2.5.5 ICT Fastens School Management System**

ICTs are resources and methods to enhance teaching pedagogy, create a more efficient organizational structure in schools, and strengthen ties between institutions of learning and the community, and give students greater agency (Chan, 2005). Throughout every level, from the classroom to the school library to the entire institution, ICT technologies increase the effectiveness of educational administration and management strategies. ICT tools must be used in order to create a more efficient organizational structure that allows for the efficient flow of information and makes management of that information easier. In order to manage educational institutions, in this example elementary schools, ICT tools can be used to assign jobs and delegate authority during meetings when participants are geographically far from one another. Computer systems are needed for planning, organizing, and even class management from the teacher's perspective so that time can be used effectively and boost instructional efficiency (Chan, 2005).

### **2.6 ICT Tools that can be used in Basic Schools**

Today's teachers can improve teaching and learning in their classrooms by utilizing ICT tools like hardware and software. Osin (1998) suggests that in order to aid in the processing of information, teachers and students can use computer-based tools such textual or graphical designers, spreadsheets, workbooks, or PowerPoint slides. The usage of text-based computer tools can assist students in producing well-written assignments utilizing word processors that can also improve their grammar and syntax

skills. As a result, the teacher won't have to carry heavy stacks of books to mark because they may mark the work that has been given back to the student. By using such computer-based tools, students are also given a head start in the actual world.

Some subjects can only be taught by experience or diagrammatic illustration due to their intricacy. Thankfully, a computer model has been created for many real systems, which means the computer output defines the behavior of the system and changes in this behavior caused by the input of various activities (Osin, 1998). Instead of utilizing non-projected media, like a chart, a grade seven lesson on the operation of the heart, for instance, can simply be explained by a movie that demonstrates how the heart works precisely. Because they was using many senses, i.e., sensory experience, to experience how the heart works, the learners will have a greater understanding of how it works.

## **2.7 Challenges in the Integration of ICT Tools in Basic Schools**

### **2.7.1 Lack of ICT Competency**

Brosnan (2001) opined that, ICT, a contemporary technology that improves and streamlines human operations, has many benefits but also some drawbacks. The opinions of teachers, teacher and administrator incapacity, a lack of policies, and a lack of physical assets are the main obstacles to the implementation and use of ICT tools in a primary school classroom. According to Brosnan (2001), characteristics influencing teachers' use of computers in their lessons include attitude, motivation, computer phobia, and computer self-efficacy. In order for teachers to effectively use ICT tools in the classroom on a daily basis in the African context, they must be equipped. According to Tinio (2002), the skill gap of those implementing it is the main obstacle to integration of education in educational systems, thus in order to build

capacity, we must enhance the abilities of teachers and school administrators. In other words, teacher and administrator integration of ICT technologies into the educational system must go hand in hand. A hard endeavor can result from a lack of assistance from school leaders.

### **2.7.2 Lack of Contextual Asset**

The lack of material to teach the students is the other difficulty, thus it is necessary to generate content that meets the goals of the nation's aspirations through a carefully designed curriculum. The use of ICT technologies in education is further hampered by the difficulty of language and subject learning. Education professionals frequently neglect the need of content development. Regarding the learning content for the specific groups, considerable care must be given while incorporating ICT technologies in education. English predominates in a lot of educational software in terms of language, but English competence is low in most developing nations, which is one of the challenges to the incorporation of ICT tools in education (Olson 2000).

### **2.7.3 Lack of Finances**

Obtaining financial resources is one of the main challenges. ICTs in educational programs demand significant capital expenditures and developing nations must foresee the benefits of ICT use to balance the cost vs other alternatives. Grants, public subsidies, finance activities, in-kind support from individuals, local support, earnings obtained from core business, and revenues earned from supplementary activities are indicated as potential sources of funding and resources for ICT use programs (Tinio, 2002). The benefits of this technology for education systems may be maximized by overcoming the aforementioned difficulties.



#### **2.7.4 Perceptions of Stakeholders towards ICT**

Through international competitiveness and the power of ICT tools, society underwent significant change in the new millennium. The educational system, school administration, and the creation of schools using ICT tools and systems are all significantly impacted by this growth. According to Olson (2000), community views influenced whether or not ICT was accepted by the populace. The same study also found that 67.7 percent of Malaysians had neutral views regarding ICT, compared to 18.6 percent who have good perceptions of it and 13% who have negative ones. These findings demonstrated that Malaysian society is unaware of the influence and impact that ICT has on their daily life.

On either hand, the context of current technology and obligations must be taken into account when analyzing instructors' resistance to implementing innovations. According to Fullen (1989), referenced in Watson (2007), schools can change or improve if teachers can communicate effectively with one another and with students. For instance, many teachers are now unable to decide which ICT tools would best complement their teaching and learning objectives. Clearly, there are still a number of factors that make integrating ICT into the curriculum difficult (Watson, 2007). Within teaching - learning activities that makes use of technology and online connections, teachers' attitudes and views are crucial. Despite the fact that instructors' attitudes and beliefs about using these technologies are crucial, numerous observations reveal that teachers lack understanding on how far technology can impact and be advantageous for the facilitation and enhancement of teaching and learning. According to Bandura (1986), self-efficacy is "an individual's perception of their capacity to plan and carry out courses of action to attain specific types of performances." In addition, Brosnan

(2001) noted that attitude, motivation, computer anxiety, and computer self-efficacy are elements that influence teachers' use of technology in their teachings.

### **2.7.5 Lack of Structures**

The inadequate state of the existing infrastructures makes it the most difficult to adopt an ICT strategy in African schools. Even while the implementation plan gave proper respect to integrating ICT use in the teaching-learning process, only around 40% of the nation's schools have computers, and the majority of them are in urban regions, creating a rural-urban split in access to equity and high-quality education. Additionally, those schools with computers have poor or limited access to the internet connectivity. The infrastructural issues that might be present include a lack of suitable structures and spaces to store the technology, a lack of phone and electricity lines, and a lack of various ICTs. As a result, infrastructure-related issues must be resolved before ICT integration into educational systems is planned (Brosnan, 2001).

### **2.7.6 Students' Attitudes and Perceptions**

The other difficulty with using ICT in education, however, has to do with student behavior. Students' attitudes and academic performance are significantly improved when they use computers and the internet properly. Nevertheless, restrictions on student behavior are frequently seen. Students frequently overuse technology for recreational purposes, which leaves them with less time for learning and studying. Online gaming, Facebook use, chat rooms, and other forms of communication are cited by Yousef and Dahmani (2008) as perceived downsides of ICT use in education since students can easily divert to these sites and disregard their essential coursework. Because of social networking sites and online games, having internet access at home, for example, might be a distraction from learning and completing schoolwork (Kulik,

1994). As a result, the specific uses of ICT have a significant impact on how well students learn.

## **2.8 Measures to Adopt to Improve ICT in Basic Schools**

Numerous authors offer varied solutions for the implementation of ICT in a primary school classroom, according to their opinions. One of the many suggestions made by numerous academics is to train instructors in the art of teaching computers. Bordbar (2010) identified teacher competencies as a key factor in predicting ICT integration in the classroom. He also suggests that a lack of technical skills results in a bad attitude toward the use of ICT in teaching and learning. There is a pressing need for teachers to acquire the skills required to use ICT in the classroom. Osin (1998) also argues that teacher training programs should offer computers because qualified instructors who were raised in extensively electronic environments can work as catalysts in schools that aren't yet digitized. He also suggests that training the present crop of teachers may be a difficult endeavor since they will need to relearn their established teaching patterns and learn how to use tools that are alien to them. This is likely the reason why it has taken so long for ICT to become widely used in primary school classrooms, given the majority of the present administrators were trained in teacher's colleges where computers were rarely or never used.

A further significant obstacle to the inclusion of ICT in a primary school classroom is a lack of infrastructure. Mandina (2015) asserts that adequate infrastructure, apparatus, deliveries of equipment, and operation of those computers, as well as other accessories, are necessary for the effective integration of ICT (software and hardware). To ensure that the computer lessons are not unnecessarily disrupted, there must be appropriate provision of ICT-related materials such as the internet, reliable

electricity supply, and electricity backup in the form of a functional generator. BECTA (2005) highlighted that the process of integrating technology is hampered by a lack of internet connectivity and areas where connectivity is difficult to obtain. ICT is steadily turning into a requirement in every part of life. ICT should be a vital information planning tool at all levels of a schooling institutions, from classrooms to ministries, because schools are institutions that store knowledge. Early digital use helps pupils develop ICT skills that are useful as instruments in the educational process (Kok, 2007). As evidenced by the proverb "catch them young."

Improved education and training are more likely to occur from aligning the introduction of computers with national policies and initiatives relating to improvements in curriculum, pedagogy, assessment, and teacher training. Policies must consider how teachers are trained to use ICT technologies in the classroom. To enable students to apply their newly acquired ICT abilities to different applications in an ICT-rich setting, teachers should expertly facilitate the learning process (Mikre, 2011).

The proper ICT infrastructure, skills, and usage and advancement policies should be provided to teachers, students, and the relevant community in order to realize this vision of ICT proficiency in every educational setting. It demands that the competencies and skills ICT offers that are necessary for a knowledge-based economy be acknowledged. It demands that 21st-century-appropriate pedagogies be used in both teaching and learning. Therefore, in order for it to be a reality, educators must be given the tools they need to integrate ICT into their classroom instruction (Hawkins, 2010).

Prior to launching any ICT program, policymakers and planners must thoughtfully remember the following: if there are suitable rooms or structures to house the technology; as to if vast modification would be essential to ensure electrical work; protection; and, taking into account the power situation in the country and the impact of the power outage, government agencies could perhaps actively encourage the use of appropriate sources of energy (Hawkins, 2010).

According to Hawkins (2010), effective use of ICT requires both the community's and school authorities' cooperation. Teachers should also have ample access to functional computers and technological support. To use ICT in education as effectively as possible, pedagogical changes, curriculum and assessment tool redesigns, and more local school independence all play a part. Considering that teachers do not feel comfortable utilizing ICT, it is crucial to put an emphasis on teacher capacity building so that they are sufficiently prepared to use ICT. It is possible to employ a local trainer or instructor to teach the teachers how to utilize computers and the internet.

Teachers' abilities and readiness to use ICT in learning and teaching are referred to as teachers' abilities and readiness. Osman and Ahmed (2003) assert that in order to use ICT effectively in teaching and learning, teachers must be persuaded of its significance and advantages. In order for instructors to use ICT technologies successfully and productively, they should receive adequate training. Further research revealed that compared to teachers without training, those who had taken English and ICT training courses were more effective, computer literate, and open to implementing the teaching of science in English (Saamad, 2003). According to Becker (2001), a key element in the effective use of ICT in classrooms is the instructors' knowledge of the technology. However, in order to aid instructors in their

work, the government has provided resources like laptops, manuals, textbooks, reference materials, and activity books. Consequently, in order to have a significant impact on the field of education, teachers were urged to utilize ICT in teaching and learning (Romai Nor, 2003).

## **2.9 ICT Policies in Ghana**

ICT integration plans have been created by nations all around the world. By using ICT to ease the constraints placed on teachers and modernize delivery, the integration of ICT aims to improve the efficacy of schools and teachers in particular in the UK. The Canadian ICT strategy expects that the use of ICT in schools would increase the equity of academic achievement among students and, eventually, students' capacity to use and apply technology and software in the workplace (Corbett & Willms, 2002).

According to Hodgkinson-Williams (2005), there are several African nations adopting computers for specific educational NGO programs, but the establishment of properly articulated national policy on ICT education seems to be in the making (Howie, Muller & Paterson, 2005). ICT policies seem to be scarce in Southern Africa, and those that do exist are difficult to discern and don't provide much guidance on how ICT implementation should proceed (Howie, Muller & Paterson, 2005).

ICT4AD is the name of Ghana's ICT policy, which covers all economic sectors, including education (ICT for Accelerated Development). The Government remains responsible to a detailed plan of redeployment, usage, and manipulation of ICTs within the educational system from primary school through higher education as part of the policy's mission to "transform the educational system that provide the necessary educational, and training services and environment capable of producing

the right kinds of skills and human resources required for developing and driving Ghana's information and knowledge-based economic system (Republic of Ghana, 2003). The ICT4AD's mission statement places a strong emphasis on the use and exploitation of ICTs across the educational system, from primary schools to post-secondary institutions. This shows unequivocally that the Ghanaian organization remains committed to promoting effective ICT use at all levels of the country's educational system in order to create an enabling environment.

Furthermore, to encourage the deployment, utilization and exploitation of ICTs inside the educational system to improve on educational access and delivery and to enhance teaching and learning from primary school upwards is one of the ICT4AD's policy objectives (Republic of Ghana, 2003). The government's recognition of the possibilities for ICT integration in the curriculum to enhance delivery and support pedagogical practices even at the elementary school level is reflected in this objective.

## **2.10 Chapter Summary**

The chapter played a crucial role in what other academics had to say about the employment of ICT technologies in elementary schools and other educational settings. ICT was defined precisely in the context of the research, and its functions were also covered in detail. The researcher also spoke on the components of ICT systems and the difficulties that educational institutions, particularly primary schools, have in implementing and utilizing ICT tools. The chapter ends by outlining the steps that primary schools and their administration should take to manage the adoption of ICT technologies and use them effectively.

## CHAPTER THREE

### METHODOLOGY

#### 3.0 Introduction

In order to accomplish the goals mentioned, this chapter discusses the specifics of the data collection process. The study design and methodologies employed are described and justified at the beginning of the chapter. The researcher will focus on the problems related to population, sample, and sampling techniques. The chapter also discusses the methods and tools used in research to acquire the necessary data. The techniques for gathering data, presenting the data, and providing an overview of the analysis will all be covered in the final section of this chapter.

#### 3.1 Research Philosophy

This study adopts a positivist research philosophy in investigating the incorporation of Information Communication and Technology (ICT) into teaching and learning practices, specifically focusing on the benefits and challenges. The positivist research philosophy is characterized by its emphasis on empirical observation, measurement, and the establishment of causal relationships between variables (Babbie, 2016). This approach aligns with the objective of this study to investigate the incorporation of Information Communication and Technology (ICT) into teaching and learning practices, focusing on the benefits and challenges. Positivism asserts that knowledge can be gained through systematic observation and measurement, and that the resulting data can be analyzed to derive objective conclusions (Creswell, 2013).

Positivist research is guided by the assumption that the social world operates according to certain laws and patterns, and these can be uncovered through scientific inquiry (Sekaran & Bougie, 2016). In the context of this study, adopting a positivist



approach allows for the collection of quantifiable data that can be statistically analyzed to draw generalizable conclusions about the prevalence of benefits and challenges associated with ICT integration in teaching and learning.

The positivist approach is particularly suited for this study's research questions, which seek to understand the extent to which ICT integration leads to benefits and challenges and to establish causal relationships between variables. By employing a quantitative research design, the study aims to measure and quantify participants' perceptions and experiences, enabling the identification of patterns and trends that contribute to a deeper understanding of the research topic.

### **3.2 Research Approach**

The quantitative research approach serves as the foundation for this study's investigation into the benefits and challenges of incorporating ICT into teaching and learning processes. This approach emphasizes the collection of numerical data, which can be analyzed statistically to identify patterns, trends, and correlations. The quantitative research approach, grounded in the positivist philosophy, forms the basis of this study's investigation into the benefits and challenges of incorporating Information Communication and Technology (ICT) into teaching and learning practices. This approach is characterized by its systematic collection of numerical data, its emphasis on measurement, and its application of statistical analysis to draw objective conclusions (Creswell, 2013).

Quantitative research seeks to establish patterns, correlations, and cause-and-effect relationships through the rigorous examination of numerical data. By employing a structured survey questionnaire, this study aims to quantitatively measure participants' perceptions and experiences related to ICT integration. The objective nature of

quantitative data collection and analysis aligns with the study's aim to provide empirical evidence regarding the extent of benefits and challenges associated with ICT integration.

The structured survey questionnaire will include closed-ended questions, often in the form of Likert-scale items, which allow participants to rate their level of agreement with statements related to benefits and challenges. These quantitative responses was transformed into numerical data that can be processed and analyzed using statistical methods.

The statistical analysis will involve descriptive statistics, such as frequencies, percentages, means, and standard deviations, to summarize participants' responses and provide an overall view of their perceptions. Inferential statistical tests, such as chi-square tests or correlation analysis, was used to explore relationships between variables and draw conclusions based on the data collected (Hair et al., 2010). The quantitative approach adopted in this study enables the systematic examination of the prevalence of benefits and challenges of ICT integration, allowing for generalizable findings that contribute to a broader understanding of the research topic.

### **3.3 Study Area**

The study was conducted at the Korle Klottey District. The area is one of the 29 districts in Greater Accra Region. Originally it was formerly part of the then-larger Accra Metropolitan District in 1988, until a small portion of the district was split off to create Korle -Klottey Municipal District on 19<sup>th</sup> February 2019. The Korle Klottey district was selected due to its unique context and characteristics, making it a suitable location for examining the benefits and challenges of ICT integration within a specific geographic area.

### **3.4 Research Design**

A research design is described as a plan for carrying out a study with maximal control over issues that may interfere with the validity of the findings by Creswell (2012). He further insisted that, a research design is a plan that defines why, what, and where data are to be collected and processed.

This study used quantitative research design. Descriptive studies are employed when a population's characteristics are either unknown or only partially understood, they further add. A study is the strategy a researcher uses to pursue their research questions. Since the researcher needed to quickly get data from the sampled population of teachers and administrators that use ICT, the researcher employed a descriptive survey. Utilizing quantitative method design enabled the database's integrity to be verified (Creswell, 2014). He opined that, data is gathered once from a sample chosen to represent a larger population for cross sectional surveys. As a result, the researcher quickly gather data for this study. The design indicated here significantly contributed to revealing ICT use in basic school classrooms in respect to schools in Korle Klottey District.

### **3.5 Population of the Study**

The population of interest for this study comprises teachers within educational institutions located in the Korle Klottey district. Specifically, the study focused on individuals who are directly involved in the teaching processes where Information Communication and Technology (ICT) integration occurs. In this study, the researcher's target population was all teachers in the district whiles the accessible population was all teachers who teach ICT in such schools. The researcher is eager to

learn more about how ICT is used in basic schools' settings. The total population of teachers in the district at the time of the study was 383.

### **3.6 Sampling Technique and Sample Size**

A sample is a portion of a population chosen to take part in the research effort; it is a subgroup of the entire population (Creswell, 2012). This segment is chosen because it possesses the necessary traits to serve as a reflection of the target respondents. There are 27 basic schools in the district with a population of 383 teachers as at the time the study was conducted. The researcher employed purposive sampling to select the sample size since it was thought they would be able to provide information for the study. In addition to the aforementioned through purposive sampling as part of the sample to reflect the population since they held qualities adequate to offer the data necessary for generalizations to be established and provide key information about how they think integration of ICT can improve their wards. Furthermore, the researcher used convenience sampling technique to add other teachers that use ICT gadgets in teaching. In all, the sample size for the study was 105 participants: ICT teachers, teachers who have prior knowledge or use ICT in teaching in class. For a participant to be selected for the study, he/she must be an ICT teacher in the Korle Klottey district and should be willing to take part in the study.

### **3.7 Research Instrument**

Questionnaire was used as a research instrument. The researcher used questionnaire because it is simple to conduct. A questionnaire enhances anonymity of respondents and uniformity of questions, thus, allowing comparability. The questionnaires was administered by the researcher by the appointment time set by the researcher and the respondents. The questionnaire was structured to have both open and closed ended

questions. The questionnaires was administered to the school teachers to answer some vital questions related to the integration of ICT in teaching and learning.

The questionnaire was in sections; the first section sought to get biodata from the respondents, such as age, gender, number of years in teaching, region of teaching and either they have attended any ICT workshop or not. The questionnaire also inquired from the participants to provide and identify ICT resources tools they use in their schools, ascertain techniques and knowledge in integrating ICT in teaching and lastly, some possible solutions to the challenges of integrating ICT in the teaching and learning in the district. A 5-point Likert scale ranging from Strongly Agree through Disagree (SD) and etc. was used.

### **3.8 Validity and Reliability**

Ensuring the validity and reliability of research findings is crucial to maintaining the integrity of the study. Validity pertains to the accuracy and truthfulness of the inferences drawn from the collected data, while reliability refers to the consistency and stability of research findings (Babbie, 2016).

#### **3.8.1 Validity**

The survey questionnaire used to collect data undergone a thorough review by subject matter experts to ensure that it adequately captures the concepts related to the benefits and challenges of ICT integration. Pilot testing was conducted with a small sample of participants to assess the clarity and relevance of the questions. The survey questionnaire included questions that measure the constructs of benefits and challenges related to ICT integration. These constructs were derived from a comprehensive review of existing literature and theoretical frameworks. The survey was designed to accurately measure the intended constructs. The survey questionnaire

will be designed to be easily understandable and relevant to participants. The language and wording of the questions were reviewed to ensure that they are clear and aligned with participants' experiences.

### **3.8.2 Reliability**

To establish test-retest reliability, a subset of participants were invited to complete the survey questionnaire on two separate occasions. The responses were compared using statistical methods to assess the consistency of participants' answers over time. For scales within the survey that measure related constructs, Cronbach's alpha coefficient was calculated to assess the internal consistency of the items. The Cronbach's Alpha was 0.78 indicating that the instrument was 78% reliable.

### **3.9 Data Collection Procedures**

The concept, goals, and advantages of the study were stated in an introductory letter that the researcher got from the Department of Educational Foundation at the University of Education, Winneba and was given to the participants. The researcher visited the schools and shared the goal of the study with the administrators or the participants. This provided them with information about the purpose of the researcher's study in that location and guaranteed the participants' anonymity and safety throughout the research process. Using purposive sampling, the researcher sent questionnaires to the school teachers. Participants who wished to answer the questionnaire online also be given a link to assess. The researcher regularly check on the actions involved in gathering data, which helped to guarantee that all tasks are finished on time.

### **3.10 Data Analysis Processes**

The data was analyzed in order to derive meaning that could be debated and applied to other past research investigations. Data analysis is condensing a large amount of data into a sensible size, searching for patterns, and using statistical methods. The researcher used MS excel and SPSS for the analysis of data. Tables was used to present the information that was gathered through organized interviews and questionnaires. Tables was used since they are easy to use, understand, and can effectively convey the biggest amount of information. Tables was used to analyze the quantitative information gathered from the participants through the surveys. In order to identify patterns in the answers, the data sets was statistically analyzed by producing statistical metrics like percentage.

### **3.11 Ethical Considerations**

When conducting the study, it is very important to make sure the subjects are well informed about the research, what it is about, where the results was published and that their participation is volunteer (Kvale, 1997). What this actually means is that the subjects have the opportunity to leave the interview if they do not want to continue. The researcher therefore inform all participants about all protocols of the study. Also the information on those who participate was confidential, therefore all information collected that can identify a participant was well protected. If names are to be appeared in the written report, the researcher changed the names to fictional ones. Ethical consent was sought after a review of the research protocol and questionnaires are submitted for a review by the researchers' supervisor and the vital adjustments was made. All participants 'information was kept confidential and was recorded.

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.1 Introduction

The chapter deals with the presentation of results and the discussion of the data collected. It is in two sections. The first part deals with the presentation and discussion of preliminary data especially the bio data of the respondents. The second section deals with the presentation of results and discussion of the main objectives/questions of the research.

#### 4.2 Background Data of Respondents

Section A of the questionnaire was meant to solicit demographic information from the respondents. This information includes their gender, age distribution, classes and some other invaluable data on their teaching experience. The results were discussed using frequency and percentages and are presented in Tables 4.1 to 4.6.

**Table 4.1: Gender of Respondents**

Gender	Frequency	Percentage
Male	54	51.4
Female	51	48.6
<b>Total</b>	<b>105</b>	<b>100</b>

From the results presented in Table 1, among the 105 respondents, 54 (51.4%) were males while 51 (48.6%) were females. This is an indication that the number of males in the sample was slightly more than that of females.



**Table 4.2: Age of Respondents**

<b>Age Bracket</b>	<b>Frequency</b>	<b>Percentage</b>
20-25	37	35.2
26-30	13	12.4
31-35	10	9.5
36-40	16	15.2
41-45	6	5.7
46-50	8	7.6
50+	15	14.3
<b>Total</b>	<b>105</b>	<b>100</b>

Table 4.2 presents the age distribution of the respondents participating in the study. The respondents are categorized into different age brackets, ranging from 20 to 25 years old up to those aged 50 and above.

The largest age group among the respondents falls within the 20-25 age bracket, constituting 35.2% of the total sample. This indicates a significant presence of younger participants in the study. Participants aged 26-30 make up 12.4% of the respondents. This group is notably smaller compared to the 20-25 age group, suggesting a decrease in participation as respondents get older. The 31-35 age bracket constitutes 9.5% of the total sample. This group continues to show a decrease in representation compared to the younger age brackets. Respondents aged 36-40 account for 15.2% of the sample. This age group shows a notable increase in representation compared to the previous two brackets, indicating a slightly higher participation rate among individuals in their late 30s and early 40s. The 41-45 age bracket comprises 5.7% of the respondents. This group represents a smaller

proportion, suggesting a lower participation rate among individuals in their mid-40s. Participants aged 46-50 make up 7.6% of the total sample. This group represents a slightly higher proportion compared to the 41-45 age group, showing a relatively consistent distribution. The 50+ age group constitutes 14.3% of the respondents. This group represents a significant proportion, indicating that a notable portion of participants are older than 50.

The data reveals that the majority of respondents are in their 20s and 30s, with the 20-25 age bracket having the highest representation. This distribution suggests a younger sample, possibly indicating that younger individuals are more inclined to participate in the study. However, it's important to consider potential implications related to the age distribution, such as how age might influence responses to the study's questions about ICT integration in teaching and learning.

**Table 4.3: Rank of Respondents**

<b>Rank</b>	<b>Frequency</b>	<b>Percentage</b>
No Rank	10	9.5
Assistant Superintendent	10	9.5
Superintendent	6	5.7
Senior Superintendent	17	16.2
Principal Superintendent	24	22.9
Assistant Director	30	28.6
Deputy Director	0	0.0
Other	8	7.6
<b>Total</b>	<b>105</b>	<b>100</b>

Table 4.3 provides information about the distribution of respondents based on their ranks within their respective educational institutions. The ranks vary from "No Rank" to specific administrative and leadership positions. Respondents without a specific rank represent 9.5% of the total sample. These individuals are likely individuals who may not hold a formal administrative position within their institutions. Participants with the rank of "Assistant Superintendent" also make up 9.5% of the respondents. This indicates a small representation of individuals at this rank. The "Superintendent" rank constitutes 5.7% of the total sample. This group represents a smaller proportion, suggesting a lower presence of individuals at this rank. Respondents with the rank of "Senior Superintendent" account for 16.2% of the sample. This group represents a significant proportion, indicating a notable participation rate among individuals at this rank. The "Principal Superintendent" rank has the highest representation at 22.9% of the respondents. This indicates a significant presence of individuals at this administrative level. Participants with the rank of "Assistant Director" make up 28.6% of the total sample. This group represents the largest proportion among all the ranks, indicating a notable participation rate among individuals at this rank. There are no respondents with the rank of "Deputy Director," representing 0.0% of the sample. The "Other" category constitutes 7.6% of the respondents, indicating that a subset of participants holds ranks that are not specifically listed in the provided categories.

The data reveals a diverse distribution of ranks among the respondents, with significant representation at the "Principal Superintendent" and "Assistant Director" ranks. This distribution suggests that the study has engaged participants from various administrative levels within educational institutions, contributing to a comprehensive understanding of the benefits and challenges of ICT integration across different leadership roles.

**Table 4.4: Years of Teaching Experience of Respondents**

<b>Years</b>	<b>Frequency</b>	<b>Percentages</b>
Below 1 year	17	16.2
2-3 years	10	9.5
4-5 years	13	12.4
Above 5 years	65	61.9
<b>Total</b>	<b>105</b>	<b>100</b>

The distribution of respondents' years of teaching experience is presented in Table 4.4. The table provides insight into the diversity of teaching experience among the participants, allowing for a nuanced understanding of their backgrounds. A notable proportion of respondents, constituting 16.2% of the total sample, have teaching experience below 1 year. This group is comprised of educators who are relatively new to the teaching profession, possibly indicating a mix of fresh graduates and individuals transitioning into the field. The data indicates that 9.5% of the participants possess 2 to 3 years of teaching experience. This group represents educators who have gained some level of experience, potentially having surpassed their initial probationary period. A segment of respondents, accounting for 12.4% of the sample, reports having 4 to 5 years of teaching experience. This group encompasses educators who have likely moved beyond the early stages of their careers and might be more familiar with instructional practices. The largest group among the respondents, comprising 61.9% of the total sample, indicates having more than 5 years of teaching experience. This substantial portion includes seasoned educators who likely hold valuable insights and expertise in their field. The finding is in line with the study conducted by Shelly et al., (2000), who also found out that,

many teachers are enthused to attend in their numbers workshop that involve more of integration of ICT.

**Table 4.5: Designated Class of Respondents**

<b>Class</b>	<b>Frequency</b>	<b>Percentages</b>
Basic 1 or Basic 2 (B1/20)	7	6.7
Basic 3 or Basic 4 (B3/4)	20	19.0
Basic 5 or Basic 6 (B5/B6)	22	21.0
Junior High School (JHS0)	45	42.9
Kindergarten (KG)	11	10.5
<b>Total</b>	<b>105</b>	<b>100</b>

The classes taught by the respondents are presented in Table 4.5. From the table, it can be seen that 7 (6.7%) of the respondents teach Basic 1 or Basic 2, 20 (19%) of them teach Basic 3 or Basic 4, and 22 (21%) of them teach Basic 5 or Basic 6. While 45 (42.9%) of the respondents teach in Junior High School, 11 (10.5%) of them teach in Kindergarten. The result reveal that majority of the respondents teach at the Junior High School.

**Table 4.6: Attendance at ICT Integration Training**

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
No	36	34.3
Yes	69	65.7
<b>Total</b>	<b>105</b>	<b>100</b>

Table 4.6 presents the ICT integration trainings attended by the respondents. The results revealed that 36 (34.3%) of the respondents did not attend any ICT integration training while 69 (65.75) of them received ICT integration training. The results implies that majority of the respondents received some training on ICT integration in teaching and learning.

### **4.3 Analysis of Research Questions**

#### **4.3.1 What are the ICT resources Basic Schools in Korle Klottey District use?**

According to Volman (2005), there is a widespread perception that the use of ICTs in education promotes a more flexible learning environment, as well as more student involvement and responsibility. This changes the teacher's duty from primarily imparting knowledge to one of assisting, counseling, and coaching students. Learning to use computers resources and tools in instructions progresses gradually, moving from learning about computers to utilizing them to study. Therefore, research question one was meant to find out what ICT resources were available for use in Basic Schools in Korle Klottey and their integration in teaching and learning. To answer this question, the respondents were asked to indicate which ICT resources were available for use in their schools in response to six specific items on the questionnaire.

Their responses were summarized in Table 4.7, which presents the summary for the descriptive statistics in percentages and frequencies for each of the 6 items. The result in Table 4.7 is an indication of the respondents' responses to the 6 items. The items were to solicit information from respondents to know the ICT resources they use in their classrooms. The results are presented in percentages.

**Table 4.7: ICT Resources Teachers Use**

Statements	SD	D	N	A	SA
There is an ICT resource center in the district	16 (15%)	36(34%)	11(10%)	24 (23%)	18(17.0%)
Our school is having a well-equipped ICT laboratory	19(18%)	31(30%)	17(16%)	27(26%)	11(10%)
The district or my school normally organize ICT training or workshop for the teachers	27(26%)	41(39%)	5(5%)	15(14%)	17(16%)
The district or my school provides reading materials/resources for the teachers and the students/pupils	20(19%)	36(34%)	12(11%)	26(25%)	11(10%)
The provision of internet by the government/district is available in my school	14(13%)	42(40%)	21(20%)	16(15%)	12(11%)

**Key: Strongly Agree (SA) Agree (A) Not Sure (NS) Disagree (D) Strongly Disagree (SD)**

Table 4.7: ICT Resources Teachers Use" presents data related to the usage of ICT (Information and Communication Technology) resources by teachers. The results revealed significant portion (49% combined from SD and D) of respondents do not believe there is an ICT resource center in the district. On the other hand, 42 (40%) believes that such a center exists. The "Not Sure" category indicates uncertainty among some respondents. Similar to the first statement, about half of the respondents, 50 (48%) do not believe their school has a well-equipped ICT laboratory. Around 38

(36%) think their school does possess such a laboratory. A substantial portion of respondents, 68 (65%) indicates that ICT training or workshops are not regularly organized by the district or their school. Only 32 (30%) have a positive view of such training initiatives. Similar to the previous statements, around 56 (53%) of respondents do not believe their district or school provides sufficient reading materials/resources. Only 37 (35%) hold a positive view.

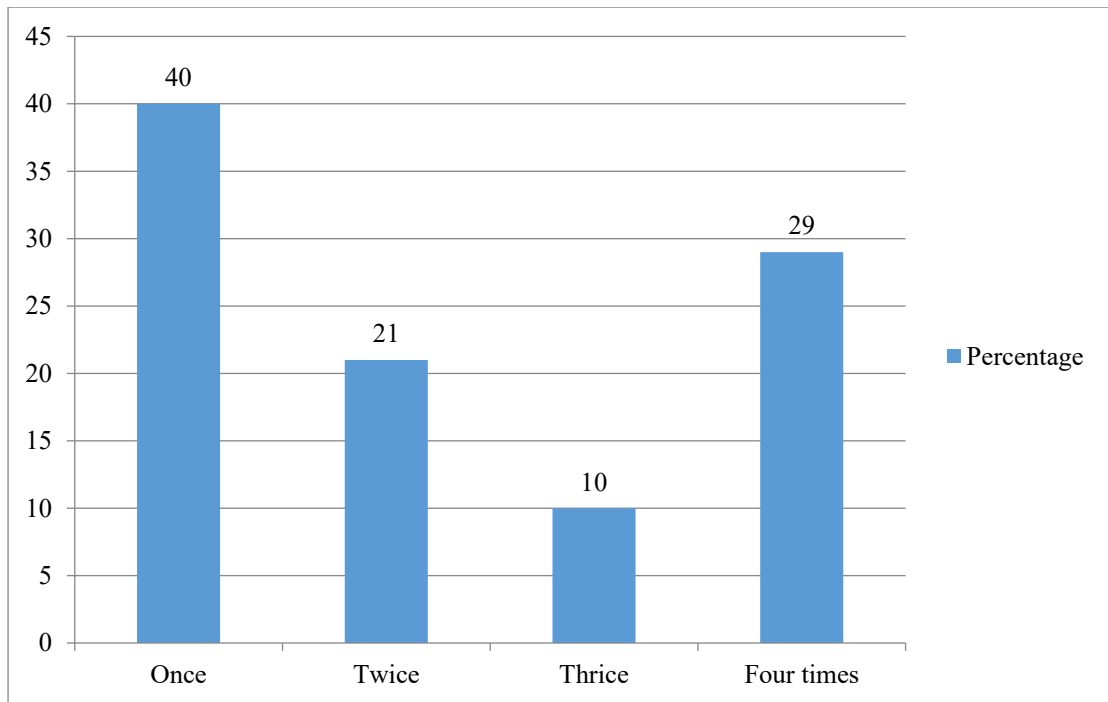
A significant proportion 56 (53%) of respondents disagrees with the availability of government/district-provided internet in their school. Only 28 (26%) agree that such provision exists.

In summary, the data suggests a lack of confidence and satisfaction among respondents regarding the availability and quality of various ICT resources and support. These findings provide insights into the challenges and gaps that educators perceive in their access to ICT resources, training, and infrastructure. The "Not Sure" responses also indicate a degree of uncertainty or lack of awareness among some participants. This analysis underscores the importance of addressing these issues to enhance the effective integration of ICT in education. This finding is not in line with the claim of Mandina (2015), who asserts that adequate infrastructure, apparatus, deliveries of equipment, and operation of those computers, as well as other accessories, are necessary for the effective integration of ICT but are lacking in various schools in developing countries. With respect to whether the district organizes ICT workshop for the teachers, majority were not in favor with that assertion This finding is in line with Osin (1998) also argues that teacher training programs are being focused in many basic schools. He also suggests on the contrary that, training the present crop of teachers may be a difficult endeavor since they needed to relearn their



established teaching patterns and learn how to use tools that are alien to them. This is likely the reason why it has taken so long for ICT to become widely used in primary school classrooms, given most of the present administrators were trained in teacher's colleges where computers were rarely or never used. From Table 4.2 majority of the respondents disagree to the statement that, the government or the district provide them with internet. This agrees with Brosnan (2001) findings, who asserted that, schools with computers have poor or limited access to internet connectivity.

The researchers wanted to ascertain how many times teacher integrate ICT in their instruction in the classroom. Hence, participants were asked how often they incorporate ICT in their teachings and the results are presented in Figure 1. From the figure, it can be indicated that, majority, 40% of the teachers integrate ICT just once in their daily instruction in class. Whiles only 29% integrate it four times or always in class. These findings indicate that, teachers in the district do not normally use ICT resources in their teaching and learning. This supports the findings of Bordbar (2010) who identified that, teacher competencies a key factor in predicting ICT integration in the classroom. He also suggested that teachers do not integrate ICT in their teaching as a lack of technical skills results in a bad attitude toward the use of ICT in teaching and learning.



**Figure 4.1: Number of times teachers use ICT tools in teaching**

#### **4.3.2. What are the ICT Tools Teachers in Korle Klottey Use?**

According to Kok (2007), ICT tools should be a vital information planning tool at all levels of a schooling institutions, from classrooms to ministries, because schools are institutions that store knowledge. He opined that; early digital use helps pupils develop ICT skills that are useful as instruments in the educational process. Consequently, research question 2 sought to find out what ICT tools teachers use in Korle Klottey District. The results presented in Table 4.3 indicate the type of ICT tools used in the district. It also shows who uses majority of the ICT tools in the classroom.

**Table 4.8: Using Cellphone and Computers at Home Enhance Teaching and Learning**

Scale	Frequency	Percent
Strongly disagree	13	12.3
Disagree	5	4.8
Neutral	7	6.7
Agree	54	51.4
Strongly agree	26	24.8
<b>Total</b>	<b>105</b>	<b>100.0</b>

It can be indicated from Table 4.8 that, 80 (76.2%) support that assertion using cellphones and computers at home enhance teaching and learning in school, 7 (6.7%) of them neither agree or disagree and 18 (17.1%) of the disagree. This finding disagrees with Kulik (1994), who believes that social networking sites and online games, having internet access at home, for example, might be a distraction from learning and completing schoolwork (Kulik, 1994).

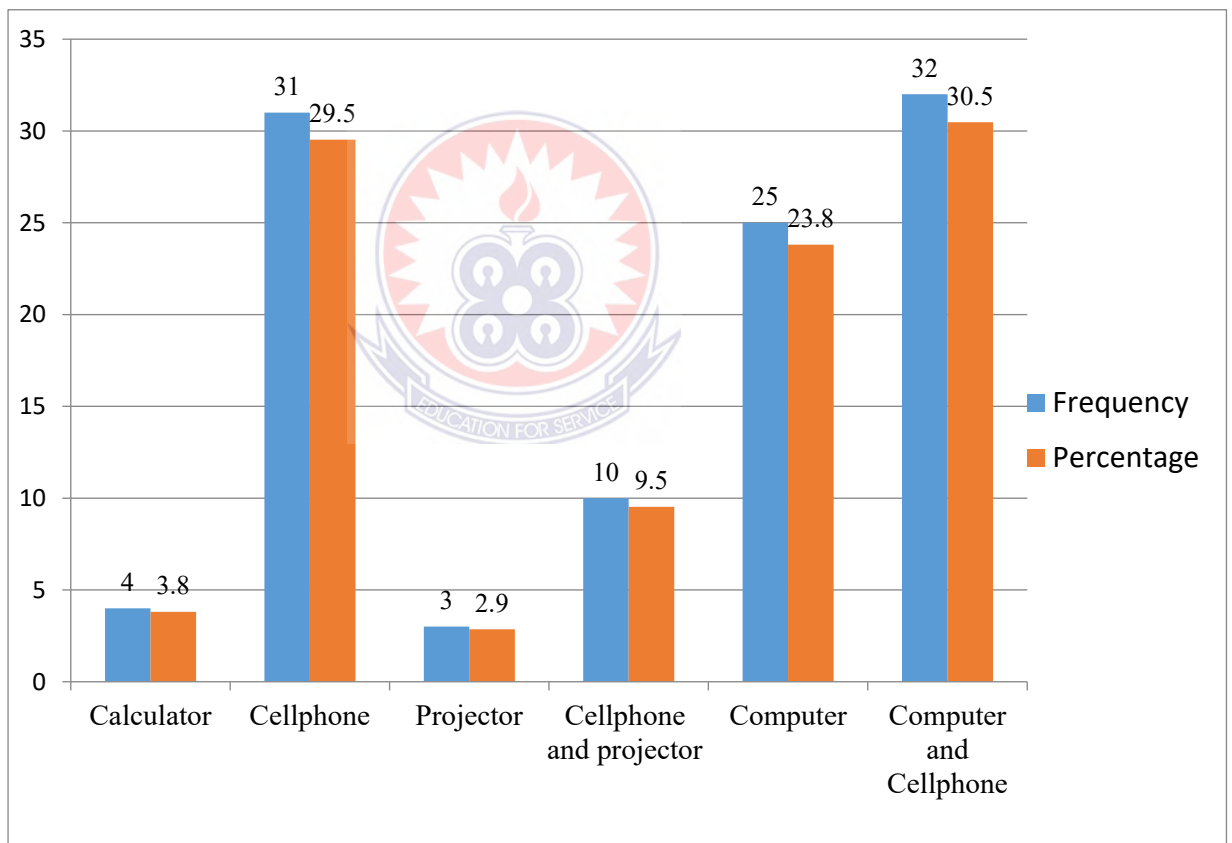
The results presented in Table 4.9 gather information about accessibility to internet connection in the selected schools in the district. The researcher use frequencies and percentages to present the results.

**Table 4.9: Access to Internet Connection in School**

Response	Frequency	Percent
No	86	81.9
Yes	19	18.1
<b>Total</b>	<b>105</b>	<b>100.0</b>

On the issues of schools having access to internet connectivity, 86 (81.9%) representing majority of the schools in Korle Klottey do not have access to internet connectivity while 19 (18.1%) of the have access to internet connectivity. This finding is also in line with a research done by Kulik (1994), who asserted that, many organizations do not have access to internet connectivity as they expensive to acquire.

The researcher asked participants the type or kind of ICT tools they normally use in their teaching and learning. Figure 4.2 presents the various ICT tools that respondents indicated that, they normally use in their instructions.



**Figure 4.2: ICT tools which are frequently used in the classroom**

It can be observed from Figure 4.2 that, majority of the teachers with a percentage of 30.5% normally use computer and cellphone. Whiles the least of the teachers hardly use projector during their instructions. This agrees with Olaboye (2004) who found out that, teachers are now thought to be the people that use various communication platforms through their phones and laptops (computers) the most to try to solve issues that come up during the teaching and learning process. The researcher wanted to determine how teachers normally use ICT tools in teaching and learning and the results of such enquiry are presented in Table 4.10.

**Table 4.10: The Uses of ICT in the Classroom**

Uses of ICT Tools in Class	Frequency	Percent
Lesson delivery	73	69.5
Presentation	13	12.4
Record Keeping	12	11.4
Testing	7	6.7
<b>Total</b>	<b>105</b>	<b>100.0</b>

From the results indicated in Table 4.10, it can be noticed that 73 (69.5%) representing majority of the teachers use their ICT tools during lesson delivery in the classroom, 13 (12.4%) of them use it for presentation, 12 (11.4%) of them use it to keep students' records and the remaining 7 (6.7%) of them use it in testing students.

### 4.3.3 What are the Techniques and Knowledge in ICT Teachers Use in Korle

#### Klottey?

According to Volman (2005), there is a widespread perception that the use of ICTs' techniques and knowledge in education promotes a more flexible learning environment, as well as more student involvement and responsibility. For the researcher to find out ICT techniques that are used in the selected school, he posed some questions to be answered by the teachers. The results are presented in percentages in Table 4.11.

**Table 4.11: Techniques and Knowledge in ICT that Teachers Use**

Statements	SD	D	N	A	SA
I am well equipped with using ICT tools to collect students data for academic purposes	14(13.1%)	12(10.5%)	11(10%)	36(35.2%)	32(31.2%)
Familiarization and application of various ICT tools in teaching and learning in the classroom	4(3.1%)	19(17.8%)	19(18%)	48(46.9%)	15(14.2%)
I always direct my students to online sources for teaching and learning	5(3.8%)	17(16.3%)	28(26.7%)	39(37.9%)	16(15.3%)
I am well equipped in using Microsoft PowerPoint during teaching and learning process	12(10.9%)	26(25.6%)	17(16.4%)	37(36.6%)	12(10.5%)
I use video making software for recording and teaching during classes hours	16(15.0%)	36(35%)	25(24.6%)	21(20.4%)	6(5%)
I use animation programs in teaching during classes hours	11(10.3%)	31(30.0%)	26(25%)	18(17.3%)	18(17.4%)

The results indicates that a significant portion of teachers 68 (36.4%) agree that they are well-equipped to use ICT tools for collecting students' data, while a notable number 26 (23.6%) disagree. Also, majority of teachers 63 (61.1%) feel familiar with and apply various ICT tools in their teaching. A small percentage (20.9%) disagrees. A significant proportion of teachers, 55 (53.2%) direct their students to online sources for learning. However, 22 of the respondents representing a notable percentage (26.7%) is not sure about this practice. The data indicates that 49 (47.1%) of teachers feel well-equipped in using Microsoft PowerPoint for teaching, while 38 (36.5%) disagree with this statement. A relatively low percentage, 38 (35.4%) of teachers agree to using video-making software for teaching, while 49 (47%) disagree. Fewer teachers 29 (27.7%) indicate using animation programs in teaching, while a significant number 44 (42.3%) is unsure about this technique.

In summary, the analysis indicates varying degrees of familiarity and utilization of ICT techniques among teachers. While some techniques, such as using various ICT tools and directing students to online sources, seem more prevalent, others like video-making and animation programs appear less commonly used. This finding is in agreement with the findings of Kok (2007), who also found out majority of teachers are quite good in using simple ICT tools to students' data. Additionally, a substantial proportion of teachers are unsure about certain practices, indicating potential areas for professional development and support. The findings are in line with Watson (2001), who indicated in his research that, within teaching - learning activities, teachers make use of technology and online connections to assist their students with respect to assignments and projects.

#### **4.3.4 What are the possible solutions to the challenges of integrating ICT in the teaching and learning in Korle Klottey District?**

Numerous authors offer varied solutions for the implementation of ICT in a primary school classroom, according to their opinions. One of the many suggestions made by numerous academics is to train instructors in the art of teaching computers. Bordbar (2010) identified teacher competencies as a key factor in predicting ICT integration in the classroom. He also suggests that a lack of technical skills results in a bad attitude toward the use of ICT in teaching and learning. There is a pressing need for teachers to acquire the skills required to use ICT in the classroom. Osin (1998) also argues that teacher training programs should offer computers because qualified instructors who were raised in extensively electronic environments can work as catalysts in schools that aren't yet digitized. Therefore, the researcher also wanted to find out various possible solutions to the challenges of implementing ICT in teaching. The results of the researcher's enquiry about solutions to the challenges in integrating ICT are presented in Table 4.12. The results presented in percentages for discussion.



**Table 4.12: Solutions to the Challenges of Integrating ICT in Teaching**

Statements	SD	D	N	A	SA
Provision of ICT tools/internet for ICT teachers	18(17.1%)	4(2.7%)	11(10%)	37(35.3%)	35 (34.9)
Providing of reliable supply of electricity	17(15.5%)	3(2.4%)	3(2.4%)	48(45.6%)	35(34.1%)
Providing expertise in the teaching of ICT teachers on proper integration of ICT in teaching and learning	11(10.2%)	16(15.4%)	7(6.3%)	35(34.3%)	34(33.8%)
Providing funds for building of ICT labs	18(16.8%)	6(5.3%)	7(6.1%)	44(43.1%)	30(28.7%)
Motivating ICT teachers	18(16.2%)	3(2.0%)	5(4.3%)	34(32.8%)	45(44.7%)

Table 4.12 presents the results of the solutions to the Challenges of Integrating ICT in Teaching" presents the results of a survey conducted to determine potential solutions to the challenges of integrating ICT in teaching.

The results reveal that a substantial majority of respondents 70 (70.2%) believe that providing ICT tools and internet for ICT teachers would be a solution to the challenges. Only a minority, 22 (19.8%) disagree with this solution. The data indicates that a large majority, 83 (80.0%) of respondents see a reliable supply of electricity as a solution. Only a small percentage 20 (18.0%) disagrees. Also, a significant proportion, 69 (67.6%) of respondents believe that providing expertise in the proper integration of ICT for teaching would be a solution. However, a notable number 17 (25.6%) still disagrees or strongly disagrees. A majority 74 (71.8%) of

respondents consider providing funds for building ICT labs as a potential solution. About one-fifth 24 (22.1%) disagrees. The data suggests that a significant majority 79 (77.5%) believe that motivating ICT teachers is a solution. Only a relatively small percentage 21 (18.2%) disagrees.

In general, the analysis indicates that the majority of respondents generally agree with the presented solutions to the challenges of integrating ICT in teaching. This study's finding agrees with Kok (2007) assertion that, to ensure that the computer lessons are not unnecessarily disrupted, there must be appropriate provision of ICT-related materials such as the internet, reliable electricity supply, and electricity backup in the form of a functional generator. The solutions that received the highest agreement percentages include providing a reliable supply of electricity, motivating ICT teachers, and providing ICT tools/internet for ICT teachers. These findings provide insights into the perceived strategies that could effectively address the challenges faced in integrating ICT in educational settings. This finding is in line with Hawkins (2010) who opined that, for it (implementation of ICT in teaching) to be a reality, educators must be given the tools they need to integrate ICT into their classroom instruction. Volman (2005) also stated that, the role of the teacher shifting to that of the ICT tools, learners will have more responsibility for their education. This agrees with Brosnan (2001), who noted that attitude, motivation, computer anxiety, and computer self-efficacy are elements that influence teachers' use of technology in their teachings.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter presents a summary of the findings of the study as well as conclusions drawn from the findings. Based on the findings and conclusions drawn from the study, recommendations are also made to guide educational practitioners and stakeholders.

#### 5.2 Overview of the Study

The study investigated the incorporating of ICT into teaching and learning in Basic Education, the benefits, challenges, and the way forward; a case study of selected schools in the Korle Klottey District. The purpose of the study was to determine how ICT can be incorporated into teaching and learning in basic education, the benefits, and challenges in the Korle Klottey District. To achieve the purpose of the study, the descriptive survey design was used for the study. Questionnaire was used as the main instrument for data collection to obtain information on the status quo of the phenomenon. The researcher designed the questionnaire with the assistance of my supervisor.

The population of the study comprised all the teachers of public Basic schools in the Korle Klottey District in the Greater Accra Region. A sample size of 105 ICT teachers. The purposive sampling technique was used in the sampling procedure.

The questionnaires were administered through volunteer teachers/online who offered to assist in each of the selected schools. The researcher explained the purpose of the questionnaires and how they should be answered to the respondents and a date for collection was scheduled before they were administered or sent through a link online

to answer the questionnaires. The main data collection took two working weeks from, and the data obtained from the questionnaires were coded and analyzed using the SPSS version 16. Again, frequencies and percentages of the descriptive statistics method were used in the presentation and discussion of the result obtained from the questionnaires in response to the research questions.

### **5.3 Key Findings**

A few findings emerged from the study. The researcher has outlined the key findings based on the objectives of the study.

#### **5.3.1 ICT Resources Basic Schools in Korle Klottey District Use**

It was indicated that, majority of the respondents agree to the assertion that, many of their districts are installed with ICT resources center to promote teaching and learning and there is availability of ICT resource center in their district. It can also be assert that, there are ICT resources available for use in Korle Klottey public basic schools and they are mainly computers and School's cellphone, with very few schools having television sets.

#### **5.3.2 ICT Tools Teachers in Korle Klottey Use**

With respect to the type of ICT tools use by teachers in the District, the researcher found out that, many of the teachers stated that, they do not have access to internet connection in their schools and it is always the teacher that uses ICT tools. It was also found out that, if students keep using cellphone and computers at home, it can enhance teaching and learning. Again, it was found from the study that, teachers in Korle Klottey always use their ICT tools during lesson delivery in the classroom but a least of then integrate it during testing.

### **5.3.3 Techniques and Knowledge in ICT Teachers Use in Korle Klottey**

On techniques and knowledge ICT teachers use in Korle Klottey, it was found out that they are well equipped with using ICT tools to collect students' data for academic purposes and the teachers have familiarized themselves with application of various ICT tools in teaching and learning in the classroom. It was also found out that, teachers in the district are well equipped with Microsoft packages in their teaching and learning.

### **5.3.4 Possible Solutions to the Challenges of Integrating ICT in the Teaching and Learning**

The researcher found out that, installation of internet connectivity is a possible solution to the challenges of integrating ICT in instruction. Also, it was indicated from the responses that, educators must be given the tools they need to integrate ICT into their classroom instruction. Furthermore, it was noted from the respondents that, provision of stable electricity in schools will serve as a solution to the challenge of integrating ICT in teaching. The study found out that, the government provision of expertise in ICT to enhance the integration of the subject implementation will go a long way to curb the challenge of ICT integration in teaching and learning. Lastly, it was found out that, motivation of teachers will go a long way to help integrate ICT in teaching and learning.

### **5.4 Conclusions**

On the basis of the key findings, it could be concluded that teachers in the Korle Klottey Basic schools have requisite skills in integrating ICT in their teaching but with challenges, there should be both pre-service and in-service teacher training programmes to boost their skills. Likewise, lack of ICT integration components

which would otherwise equip teachers to use ICT in teaching their respective subjects should be provided.

### **5.5 Recommendations**

Based on the findings and conclusions of the research, the researcher recommends the following for consideration:

1. The government and other stake holders of the education in Ghana should consider providing variety of Information and Communication Technologies or resources proportionally to all public basic schools to encourage more effective teaching and learning. This is necessary because different technologies are more effective in different lesson situations than others, but in the case of Korle Klottey public basic schools, it was found that computers (laptops) were main ICT resources available which would not encourage diversity in ICT resource usage.
2. Teachers should find and use variety of ICT resources, basically online tools, and resources, besides computers (laptops) that can be more effective in attaining different lesson objectives and with learners of different learning styles to enhance effective teaching and learning.
3. Teachers who do not have practical skills in ICT usage should seek some training to enable them competently and confidently use them in teaching their respective subjects.
4. Teacher training programs in universities and colleges should consider including courses that involve practical methods of integrating ICT in the teaching of various subjects to equip pre-service teachers with necessary skills to enable them effectively integrate ICT in their lessons after their training. Also, the Ghana Education Service in collaboration with the Ministry of

Education should organize in-service training on strategies of integrating ICT into the curriculum as well as emerging e-learning technologies and methodologies for all teachers to equip them with relevant skills or train their representatives as facilitators to organize similar workshops in schools or circuit centers for other teachers intermittently.

### **5.6 Suggestions for Further Research**

Future researchers should expand the scope of a similar study to include school management and their institutional policies on ICT integration into the curriculum.



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## APPENDIX

### QUESTIONNAIRE FOR TEACHERS

My name is Moses Boye, and I am a student at the University of Education, Winneba, pursuing a postgraduate diploma in education. I require information for my research; ICT into teaching and learning in Basic Education, the benefits, challenges and the way forward; a case study of particular schools in Korle Klottey District. Your contributions was held in complete confidence, and the data is only being collected for academic purposes. I appreciate your involvement and support in advance.

#### SECTION A: BIO DATA

*Please fill in the following information by ticking in the appropriate box and fill in blank spaces provided. (√)*

X1. Gender: Male  Female

X2. Age range: 20 – 25  26 – 30  31 – 35   
 36 – 40  40 – 45  46 – 50   
 50 +

X3. Present Rank: No Rank  Assist Sup  Sup   
 Senior Sup  Principal Sup  Ass. Director   
 Deputy Director  other (please specify) .....

X4. How long have you been teaching? 2 years or less  3-5years  6 – 8years  9-12 years  13- 20years  21 years & up

X5. Which class do you teach?  
 KG  B1/2  B3/4  B5/6

X6. Have you attended any ICT integration training?  
 Yes  No

**SECTION B****ICT RESOURCES TEACHERS NORMALLY USE IN TEACHING THEIR  
SUBJECTS IN KORLE KLOTTEY DISTRICT**

For each of the following statements, indicate your level of (dis)agreement by choosing from the options: *Strongly Agree (SA) Agree (A) Not Sure (NS) Disagree (D) Strongly Disagree (SD)*, & checking (✓) in the right box

	Statements	SA (5)	A (4)	NS (3)	D (2)	SD (1)
Y1	There is an ICT resource center in the district					
Y2	Our school is having a well-equipped ICT laboratory					
Y3	The district or my school normally organize ICT training or workshop for the teachers					
Y4	The district or my school provides reading materials/resources for the teachers and the students/pupils					
Y5	The provision of internet by the government/district is available in my school					

**SECTION C****ICT TOOLS TEACHERS NORMALLY USE IN TEACHING THEIR  
SUBJECTS IN KORLE KLOTTEY DISTRICT**

Show your choice by ticking in the appropriate box and writing in the spaces provided

√.

8. How often do you use of ICT tools in your classroom per week?

Scale	Once	Twice	Thrice	Four Times	Always
Rate √					

9. At your school who uses ICT tools in your classroom?

Teacher	Student	None

10. The use of Cellphone and computers at home and at school by learner can enhance teaching and learning. Do you agree?

Response	Strongly disagree	Disagree	Not Sure	Agree	Strongly agree
Tick√					

11. Does your school have internet connection?

Yes

No

12. The use of ICT tools teaching and learning in the classroom.

Response	Agree	Strongly Agree	Not Sure	Disagree	Strongly Disagree
Tick✓					

13. Of these ICT tools which ones do you use in your classroom?

ICT tool	Tick if used✓
Computer	
Printer	
Cellphone	
Projector	
Television	
Calculator	
Any other (specify below)	

14. What do you use these ICT tools for in your classroom?

Use	Tick✓
Record Keeping	
Lesson delivery	
Homework	
Testing	
Playing Games	
As Media	
Other Specify	



**SECTION D: TECHNIQUES AND KNOWLEDGE IN ICT THAT TEACHERS USE**

15. For each of the following statements, indicate your level of (dis)agreement by choosing from the options: *Strongly Agree (SA)* *Agree (A)* *Not Sure (NS)* *Disagree (D)* *Strongly Disagree (SD)*, & checking (✓) in the right box

	<b>Statements</b>	<b>SA</b> <b>(5)</b>	<b>A</b> <b>(4)</b>	<b>NS</b> <b>(3)</b>	<b>D</b> <b>(2)</b>	<b>SD</b> <b>(1)</b>
15a	I am well equipped with using ICT tools to collect students data for academic purposes					
15b	Familiarization and application of various ICT tools in teaching and learning in the classroom					
15c	I always direct my students to online sources for teaching and learning					
15d	I am well equipped in using Microsoft PowerPoint during teaching and learning process					
15e	I use video making software for recording and teaching during classes hours					
15f	I use animation programs in teaching during classes hours					

**SECTION E: POSSIBLE SOLUTIONS TO THE CHALLENGES OF  
INTEGRATING ICT IN TEACHING AND LEARNING**

16. For each of the following statements, indicate your level of (dis)agreement by choosing from the options: *Strongly Agree (SA)* *Agree (A)* *Not Sure (NS)* *Disagree (D)* *Strongly Disagree (SD)*, & checking (✓) in the right box

	Statements	SA (5)	A (4)	NS (3)	D (2)	SD (1)
16a	Provision of ICT tools/internet for ICT teachers					
16b	Providing of reliable supply of electricity					
16c	Providing expertise in the teaching of ICT teachers on proper integration of ICT in teaching and learning					
16d	Availability of computers for students					
16e	Providing funds for building of ICT labs					
16f	Motivating ICT teachers					