UNIVERSITY OF EDUCATION, WINNEBA

KINDERGARTEN TEACHERS USE OF ICT TOOLS IN CLASSROOM PRACTICE TO FACILITATE TEACHING: A CASE STUDY OF NORTH DAYI DISTRICT

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JUNE, 2022

DECLARATION

Student's Declaration

I, LOH GRACE, hereby declare that this thesis, 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 that 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 dissertation were done in accordance with the guidelines for supervision of thesis laid down by the University of

Education, Winneba.

NAME OF SUPERVISOR: DR. NUTIFAFA KWAME BANINI

Signature: ……..

Date……..

DEDICATION

This work is dedicated to my lovely mother, Madam Ampim Comfort and my father

Mr Paul Loh Mensah.

ACKNOWLEDGEMENTS

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TABLE OF CONTENTS

Contents

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The purpose of the study intends to find out how kindergarten teacher in in North Dayi District use of ICT tools in classroom practice to facilitate teaching. This study employed a Descriptive Survey Design. Descriptive survey was used to gather information on Kindergarten Teachers use of ICT tools in classroom practice to facilitate teaching: a case study of in North Dayi District. Descriptive survey research design was preferred because information was readily obtainable from kindergarten teachers in their natural environment, concerning their attitudes or beliefs on certain issues of the study. The population of this study included: basic school kindergarten teachers of in the North Dayi District. Therefore the target population of this study consist of 177 kindergarten teachers. The study of this research involved the use of Multistage Sampling Technique to select North Dayi District as the target population. Cluster sampling technique was employed by the researcher to divide the population of North Dayi District into circuits to make the conduct of the research simpler. The researcher adopt a Simple Random Sampling techniques to select; Aveme, Anfoega Botoku, Bume Awate, Vakpo and Wusuta as 6 circuits in North Dayi District The study used Purposive Sampling to identify the respondents (kindergarten teachers) for this study. This study was conducted by the researcher using prepared questionnaires whereby respondents were kindergarten teachers. The researcher analyzed each questionnaire according to the opinion of respondents. Presentations of research findings was done using data analysis charts, tables, bar graphs, percentages, and frequencies. From the findings of the study, most teachers from the North Dayi District strongly and agreed that, using ICT tools help support language development, ICT tools as a support of creativity, ICT makes lesson easily understandable, using ICT tools support children from diverse cultural background, and ICT helps in retention. It can be concluded that, the very first stage of ICT implementation must be effective to make sure that, teachers and students are able to make the best use of it. Thus, preparations of a technology-based teaching and learning begin with proper implementation and supports by the school top management. Therefore the researcher recommended that, head teacher should make sure that their respective kindergarten classrooms have adequate ICT tools for children. This should be complimented by developing a working plan that gives kindergarteners a balanced timetable for learning ICT. The Ministry of Education and Ghana Institute of Curriculum Development should formulate adequate policies that would ensure all public preschools are funded enough to purchase, install and ensure availability of ICT tools as well as replacing the worn-out and dangerous ICT tools. And teacher should develop positive attitude towards ICT, teachers should be trained on how to use ICT in teaching.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Information and Communication Technology (ICT) has become an important driver of everyday life and economic activity in the present world. The ongoing technology revolution encompasses new ways of capturing, processing, storing and displaying information and is capable of increasing productivity and competitiveness through information provision (Mangesi, 2010). Moreover, ICT has been affiliated with the ability to integrate world economies and its role in the effectiveness, efficiency and service delivery of any institution is undoubtedly vital. The contribution of ICT in knowledge delivery and educational management in schools worldwide is massive.

(Zhao & Frank, 2003). The rapid growth in Information Communication and Technologies (ICT) have brought remarkable changes in the twenty-first century, as well as affected the demands of modern societies. ICT is becoming increasingly important in our daily lives and in our educational system. Therefore, there is a growing demand on educational institutions to use ICT to teach the skills and knowledge students need for the 21st century. Realizing the effect of ICT on the workplace and everyday life, today's educational institutions try to restructure their educational curricula and classroom facilities, in order to bridge the existing technology gap in teaching and learning. This restructuring process requires effective adoption of technologies into existing environment in order to provide learners with knowledge of specific subject areas, to promote meaningful learning and to enhance professional productivity (Tomei, 2005). Ministry of Education Science and Technology recognizes the potential of ICT a tool for improving education delivery,

outcomes and impact, as evidenced through the national plans, policies and strategies. The Tanzania Vision 2025, the key national development strategy, recognizes the role of education as a strategic change agent for transformation of the economy to a knowledge economy, and identifies the potential of ICT to address most of the development challenges including those presented by education. The National ICT Policy of 2003 recognizes that ICT can enhance education opportunities and advocates for the introduction of an e-education system.

In the contemporary globalized world, kindergarten education is considered to be very important to the development of children in most countries. This is mainly because, kindergarten students (usually 4-6 years old) are very curious to their environment, open to learn, eager to try new activities and therefore kindergarten education is assumed meaningful to enable them to understand their environment (Drigas & Kokkalia, 2014). Lemaire, Amoah, Ntsiful, Micah, and Bonney (2013), defined Kindergarten education as the provision of formal education and childcare outside the home. This form of education does not only contribute to cognitive stimulation, socialization, child development, and early education but also lends an essential service to busy parents. KG education has therefore become a haven that has provided parents especially mothers the opportunity to be employed while their children are catered for in child care centres. According to Hinostroza, Labbe & Matamala (2013) it is important for kindergarteners to experience and learn by doing and thus educating young children is vital for future concept development. This therefore explains the reason why key role of early childhood education for improving educational outcomes across the educational system has gained international recognition during the last decade, especially among and supply of Early

Childhood Education (ECE) in low- and middle-income countries (Drigas & Kokkalia, 2014).

Specifically, in Ghana, Kabay, Wolf & Yoshikawa (2017) stated that Ghana's 2004 National Early Childhood Care and Development Policy highlights access to quality kindergarten education as central to improving early childhood development and learning, and a promising way to prevent development delays and foster early learning despite adversity. In 2007, the government of Ghana, therefore, expanded access to 2 years of pre-primary education – called Kindergarten (KG) - by including it in the free and compulsory basic education provided by the state. It was the first country in Sub-Saharan Africa to do so. The KG system is accordingly financed as part of the primary school system. As a result, both public and private schools are required to register with the Ministry of Education and this falls under the supervision of the ministry. The above assertion is also confirmed by Laar (2018) who conducted a recent study and asserts that currently, access to kindergarten education has increased significantly.

1.2 Statement of the Problem

The introduction of ICT tools in education has a lot of benefits. Haddad and Draxler (2005) posit that ICT tools make valuable contribution to various aspects of education development and effective learning through expanding access, promoting efficiency, improving the quality of learning and enhancing the quality of teaching. According to Tinio (2003), appropriate use of ICT tools allows for collaborative learning where pupils interact with other pupils, teachers and experts regardless of where they are. Literature studies (Tedla, 2012 and Makgato, 2012) reveal that the successful integration of ICT in teaching and learning largely depends on teacher

competency, availability of ICT infrastructure/tools and teachers' adoption and embrace of ICT in education. The need for the use of ICT tools in teaching kindergarteners is even made more urgent by the recent global pandemic known as COVID-19. Due to lack of ICT tools in most rural areas, most underprivileged children in these rural areas, had to stay out of school for almost a year without teaching and learning meanwhile their privileged counterparts in the cities had access to teaching and learning via television, zoom application and other ICT tools. However, the use of ICT tools in assisting the teaching process in kindergarten is yet to be known in North Dayi District, as due to the lack of ICT tools in their Basic Schools has cause more harm than good to the performance of the pupils in the area.

1.3 Purpose of the Study

The purpose of the study intends to find out how kindergarten teacher in North Dayi District use of ICT tools in classroom practice to facilitate teaching.

1.4 Objectives of the Study

The study was guided by the following objectives

1. To find out the benefits of kindergarten teacher's use of ICT tools in classroom practice to facilitate teaching in North Dayi District.
2. To identify the challenges of the type of ICT tools used to facilitate teaching in North Dayi District
3. To assess teachers' knowledge on the use of ICT tools in kindergarten classrooms in North Dayi District.
4. What are the available ICT tools used to facilitate teaching in North Dayi District.

1.5 Research Questions

The study was guided by the following research questions

1. What are the benefits of using ICT tools by kindergarten teachers in classroom practice to facilitate teaching in North Dayi District?
2. What challenges do kindergarten teachers face in the use of ICT tools in classroom practice in North Dayi District?
3. What knowledge does kindergarten teachers have about the use of ICT tools to facilitate teaching in North Dayi District?
4. What are the easily ICT tools to facilitate teaching in North Dayi District?

1.6 Significance of the Study

This study focuses on identifying how ICT tools can be used by kindergarten teacher to facilitate the teaching process to enhance students understanding and performance. The conclusion of the study will provide an insight on the benefits, challenges and measures needed to address the use of ICT tools in teaching kindergarten. The study could in the interest of both education stakeholders in the country and lead to the adoption of ICT based classroom teaching. The research study will also be used as guide for policy-makers, decision-makers and educational investors and other stakeholders to make well-informed decisions about the use of ICT tools policies and investment in ICT facilities and infrastructures in regards to education at the kindergarten level by understanding the perceptions of teachers in line with the utilization of ICT tools in facilitating teaching. The findings of the study will inform the government and other interested party on the hindrances to the use of ICT tools by kindergarten teachers to facilitate teaching, the information will enable the government to identify mechanisms that will ensure successful use of ICT tools to

facilitate teaching in primary schools. Additionally, the study will be beneficial in building a knowledge base of perceptions of kindergarten teachers on the use of ICT tools to facilitate teaching. The knowledge may serve as a guide for overcoming challenges that kindergarten teachers' face while using ICT tools in classroom practice in primary schools.

1.7 Limitations of the Study

The study was limited to Anfoega North Dayi District, Volta region of Ghana. This may affect the generalization of the findings of the study to other districts. Also the study needed a lot of resources especially human resources, financial and time resources for its accomplishment in a valid and reliable manner. Therefore shortage of resources limited its validity and reliability.

1.8 Delimitations of the Study

The study was delimited kindergarten teacher in North Dayi District use of ICT tools in classroom practice to facilitate teaching. Also, the study used kindergarten teachers in public basic schools for data collection. Thus, professional and non-professional teachers were used. Moreover, the study was delimited to North Dayi District, Volta region of Ghana

1.9 Definition of Terms

ICT	Information and Communication Technology
BECTA	British Educational Communications and Technology Agency
BEST	Basic Education Statistics in Tanzania
CBET	Competence Based Education and Training
EMIS	Education Management Information Systems

ESDP	Education Sector Development Plan
FOSS	Free Open Source Software
MEST	Ministry of Education Science and Technology
ECE	Early Childhood Education
TAM	Technology Acceptance Model

1.10 Organization of the Study

This study is presented in five chapters. The first chapter discusses the background to the study, statement of the problem, purpose of the study, objectives and the research questions which guided the researcher, significant of the study, limitation and delimitation, definition of terms and organization of the study. Literature review is covered in chapter two, thus the empirical and theoretical work of people which are related to the study are reviewed so as to give explanation of the score and other key points of the study. Chapter three covers and discusses the research methodology used which highlights on the subject of the study, procedures and data analysis procedures of the study. The chapter four also throws more light to the presentation and analysis of data of the study. It includes the tables and the figures collected in the study, the statistical presentation and the discussion of the results. The summary, conclusion and recommendations are presented in chapter five. The last part of the document provides a list of references as well as some of the instruments used to collect data for the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Overview

This chapter presents a literature review in relation to the study. The reviewed literature functioned as a guideline for the study. The literature is discussed under the following subtopics of theoretical frame work and conceptual frame work of the study;

2.1 Theoretical Framework

Theories are very important in research since they serve as guides to the research. Swanson (2013) define theoretical framework as a structure that support a theory of a research study. Theories give explanations or reasons to the way specific group of people behave, do things, understand things and perceive things in relation to their beliefs and practices about a particular phenomenon. The theoretical framework introduces and defines the theory that explains why the research problem under study exists. The theoretical framework for this study is the Classical conditioning theory by Ivan Pavlov (1927).

The empirical science of classical conditioning begins in earnest with the well-known work of Pavlov (1927). Pavlov, a renowned physiologist, was awarded the Nobel Prize for his studies of the digestive glands of dogs. At some point in his investigations, he noticed that sham feedings (in which food never reaches the stomach and instead passes through an esophageal fistula) were nonetheless able to initiate gastric secretions in the stomach.

Pavlov believed that the sensation of tasting the food and the act of swallowing had an influence on the operation of the stomach, calling these influences “psychic

secretions" (Hilgard & Marquis, 1961). Later, Pavlov switched to a much more accessible experimental paradigm: salivary secretions. He demonstrated that the similar psychic secretions of saliva could be conditioned to occur at the sound of a metronome if the dog experienced repeated pairing of the ticking of the metronome and the presentation of food. It was with this experimental paradigm that Pavlov made his most significant contributions to psychology.

Classical conditioning is the name given to a collection of psychological phenomena that are concerned with associative learning. These phenomena are also known as Pavlovian conditioning, named after Ivan Pavlov, one of the primary people who introduced the theory. Pavlov's widely-known experiments with dogs, first published in English in 1927 (Pavlov, 1927) were among the first experiments to demonstrate the fundamental phenomena of Classical Conditioning. Pavlov's cardinal experiment was to create an audible tone (mostly a bell or metronome) immediately prior to the dogs having a substance directly placed into their mouth that would cause the reflex action of salivation (usually meat powder or a weak acid). This was done multiple times. The same audible tone was then presented to the dogs without the presentation of the substance. The result was that the dogs' salivary response was observable with the tone even when substance was not presented. The extent of the salivary response without the substance correlated with the number of prior presentations where both the tone and substance were presented jointly.

Pavlov used this experiment and others like it to derive a theory of learning. The theory of learning that Pavlov derived from this is that an arbitrary neutral stimulus can become associated with any non-neutral stimulus, (i.e. a stimulus that triggers a reflex response) based on their similar co-occurrence in time. Thus when the neutral

stimulus is presented alone, the subject gives a related response to the unconditioned response. In the literature surrounding classical conditioning, the names of the stimulus and the responses have particular names. The neutral stimulus is known as the conditioned stimulus (C.S.) which in Pavlov's experiment corresponds to the generated tone. The non-neutral stimulus is termed the unconditioned stimulus (U.S.) which in Pavlov's experiment corresponds to the substance placed in the dogs' mouths.

The response to the non-neutral stimulus is called the unconditioned response

(U.R.) which in Pavlov's experiment corresponds to the salivary reflex the dogs had to the substance. The response to the neutral stimulus after the association had been formed is the conditioned response (C.R.) which in Pavlov's experiment corresponds to the salivary response the dogs had to the tone when the substance was not present. There are five general observations that have arisen as a consequence of the analysis of classical conditioning. The first and most important of which is that classical conditioning can be seen as a mechanism to learn predictions.

This is not a unique insight of itself, for example the S.B. model (Sutton & Barto, 1981), a model of classical conditioning presented in chapter three, is based on such an observation. However, no mention has been encountered in the classical conditioning literature discussing the issue of noise within the learning process. Noise and the dangers of over-fitting are central concepts within the topic of machine learning (Russell & Norvig, 2003, p. 657 & p. 662) and a key component of the analysis presented in this chapter.

The second observation is that different approaches to understanding the process of learning have given different names to what can be argued is the same thing. In the section deriving the criteria of a learning agent, it is called a sensor state. In the classical conditioning literature, it is called a stimulus.

In the artificial intelligence literature it is called an event. Each of these terms makes sense when used within their particular approach; sensors convey their information in series of momentary states; an animal's neurones are stimulated by a stimulus; an observed event can predict another event. However, when combining the approaches, this can become confusing. Therefore from this point on in this thesis, unless the subject of discussion is better served by using a particular term, this thesis shall refer to all three as an event. The reason the term "event" is chosen it that it is the most general term in a semantic sense, but from the point of view of an agent, all three can be said to be equivalent. Momentary input states can be said to be the smallest perceptible component of a stimulus because their current state is caused by some stimulus and they can be said to be events because they are caused by a dynamic environment and each momentary state value has a definite start and end time. Stimuli can be said to be a set of momentary input states because their presentation causes a set of those states to change and they can be said to be events because they are presented to the subject for a definite period of time. Events can be said to be reducible to input states from the subjective view of an agent because events are observed as changes in input states, and events can be said to be stimuli because an event cannot be observed if it does not stimulate some part of an agent. The third general observation is that, from a logical semantics point of view, conditioning can be seen as a process of discovering material implications between two events spread over time. This can be seen in the requirement for both congruity and contingency

between a first event and a second. Because of sensory preconditioning and secondary conditioning, phenomena of classical conditioning that shall be discussed later in this chapter, this effect can be seen to be independent of the need for an unconditioned stimulus for these implications to form.

The fourth general observation is that the magnitude (or salience / noticeability) of an event is a factor in the conditioning process. This is a rational strategy as by prioritizing the data in order of magnitude the agent can process the data in the likely order that an event will have a large effect on the environment and/or the agent. The fifth and final general point is that the amount of response given in anticipation of an event can be seen to be a gradual change proportional to the certainty of the predicted event and its expected magnitude. The anticipation also gradually changes inversely proportional to the expected timing of the predicted event. By responding proportionally to the certainty, the agent is hedging its bets that the predicted event will occur. By responding proportionally to the expected magnitude of the predicted event, the agent is using as much resources as needed to deal with the predicted event and no more.

By responding in an inversely proportional manner to the expected timing of the predicted event, the agent is avoiding committing to sustaining a large quantity of resource over a long time without any return on that investment.

Many things of the school-subjects are learnt more adequately through this process. Reading writing, spelling or habits are learnt more effectively through the process of conditioning. Direct method of teaching English is just a process of conditioning. We learn many things in a better way through this process; and that is perhaps the reason why language is more efficiently learnt by living in the society in which it is spoken.

Teaching through visual aids also implies the same principle.

Discipline may also be caused through conditioning. Good sentiments, good habits, virtues and ideals etc., which are the components of discipline, are effectively learnt through the process of conditioning, and they are learnt surely, in a society in which they are actually lived and manifested.

Classroom procedures are often far removed from the natural procedures required for the process of conditioning. Languages are not taught as they ought to be in connection with many vivid and widely different experiences. If the regulations, commands and virtues are followed by the friendly behaviour and the most sympathetic attitude of the teacher, he can bring about a complaint emotional tone in the class that no amount of punishment can accomplish. But, uniformity of procedure is essential. Voluntary action may be controlled through reasoning, punishment and reward, but if it's involuntary basis is neglected it will not endure. In conditioning involuntary responses are controlled through the cue stimuli.

Many of our fears and phobias may be traced back to some kind of conditioning. When things and objects associate with an unpleasant experience and a sort of generalization is made, phobias appear. Such fears and phobias can be removed by deconditioning. Disliking for a teacher or certain school subjects can also be helped to overcome these dislikes through reconditioning by associating pleasant stimuli with them.

The conditioned response theory may also help in explaining many of our repugnance's and unexplained reactions to people, places and things. Such conditioning often takes place in childhood and though the real causes are not known

the effects remain. In this way many of our reactions are not natural but simple causes of conditioning.

Moreover, in experimental psychology the theory of conditioned reflex occupies an important place and it has revolutionised child learning. Before the advent of this theory the knowledge of process of learning was vague. It is rightly the importance of association in learning. It is now a psychological truism that the child's learning consists in the establishment of conditioned reflexes through the formation of permanent habits. The intelligent learner can establish conditioned reflexes with facility, while the idiot cannot. Lastly, this theory brings learning under the teacher's control making desired learning conditioned by situations created or regulated by the experimenter himself.

"Different kinds of habits based on training, education and discipline of any short are nothing but a long chain of conditioned reflex."

Empirical Review

- Benefits of using ICT tools in kindergarten classroom practice.
- The Challenges of using ICT tools in teaching kindergarten.
- The concept of ICT,
- ICT tools use in Kindergarten
- Disadvantages of use ICT tools in kindergarten classroom,
- The factors determining the use of ICT to facilitate teaching,
- Conceptual frame work
- Summary of literature review.

2.1 The Concept of ICT

The acronym ICT stand for Information and Communication Technology and is defined as a "diverse set of technological tools and resources used to communicate, to create, disseminate, store and manage information Blurton (1999). These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephone. Teaching process is a means through which the teacher, the learner, the curriculum and other variables are organized in a systematic manner to attain pre-determined goals and objectives. Information and Communication Technology is at the very heart of the educational process, consequently ICT-use in education has a long history. Much has been written about the use of film, radio, telephones, and television in education Ertmer, Conklin, Lewandowski, Osika, Selo and Wignall, (2003).

Because access to digital tools, applications, and networks continues to grow worldwide and media are increasingly available in digital form, use of ICT in education is expected to increase dramatically. As stated by Adomi and Annie (2006) ICT have become within a very short time, one of the basic building blocks of modern society. Many countries now regard understanding ICT and mastering the basic skills and concepts of ICT as part of the core of education, alongside reading, writing and numeracy. As described in the United Nations, (1999) report ICT cover Internet service provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centres, commercial information providers, network-based information services, and other related information and communication activities.

2.1.2 Children behavior and Social Interaction around ICT Tools.

Many studies have explored young children's behaviours and interactions with ICT tools, and with other children and adults, around ICT tools in early childhood education settings. Common areas that have been explored include: differences between boys' and girls' behaviour and attitudes around ICT tools use (e.g. Fletcher-Flinn & Suddendorf, 1998); and the degree to which tools use can promote or inhibit collaboration between children, or comparisons of children's behaviour around, or interest in, using ICT tools, compared with other kinds of play and activity in early childhood education settings (e.g. Graham & Banks, 2000). Graham and Banks argue that research about what actually happens when ICT tools are available to children in early childhood education settings is needed in order for practitioners to make good judgements about how, and when, to use ICT tools with young children. In such studies, practitioners generally feature in a passive supervisory role. Research of this type often leads to recommendations about the roles that adults could or should play in order to support and scaffold children's interactions. For example, guidance to help adults to create collaborative environments around ICT tools, to ensure that all children have adequate access and support to use the ICT tools, and to ensure that children's interactions with these tools are meaningful and have a learning purpose.

2.2 ICT Tools use in Kindergarten

Nowadays kindergarten education is considered and realized to be very important in all over the world. As it is known kindergarten students (4-6 years old; depends on the country's regulations) are very curious to their environment, open to learn, eager to try new activities and therefore kindergarten education is assumed meaningful to enable them to understand their environment. It is thought also important for kindergarteners to experience and learn by doing and thus educating young children is

vital for future concept development. The key role of early childhood education for improving educational outcomes across the educational system has gained international recognition during the last decade, especially among developing countries.

2.2.1 Types of ICT Tools that promote Learning

ICT tools contribute to high quality lesson since they have potential to increase pupils motivation, connect pupils to many information source, support active in-class and out-class learning environments, and let instructors to allocate more time for facilitation. These are some types of ICT tools which promote learning which are group under hardware and software;

Hardware includes;
• Computers/ laptops
• Phones
• Projector
• Televisions
• Radio

Software include;
• Presentation software
• Information literacy skills
• Animation
• Video conferencing
• Educative games etc.

2.3 Benefits of using ICT tools in kindergarten classroom practice,

Several studies from case studies to survey researches have been conducted about the importance of ICT tools and as why teachers use it. ICT tools can play various roles in learning and teaching processes. Here under are a few highlighted benefits of using ICT tools to facilitate teaching:

2.3.1 Using ICT tools help support Language Development

In kindergarten education, there have been conducted several studies that claim that properly designed digital educational activities can become an important educational tool for efficient and effective learning especially in the field of the early literacy skills. Van Scoter and Boss (2002) discuss many ways in which ICT tools can make rich contributions to children's literacy development, in the four interrelated areas of speaking, listening, reading, and writing. For example, "talking" word processors support young children's experimentation as they play with language. Word processors also offer possibilities for children to compose and write without needing to have mastered the production of letters by hand. ICT tools also offer a variety of ways for children to weave together words and pictures. Van Scoter and Boss describe one class where teachers often send home digital photos of children's activities and field trips. Working with children to put captions on these photos offers an opportunity to develop children's written language skills, while photos with captions deliberately left off can promote children's oral language skills, as children use their own words to describe what the photos show. In a Head Start kindergarten in Oregon, the latter strategy is considered particularly useful in homes where English is a second language, to support children's oral language development in their native language.

2.3.2 Using ICT tools support Mathematical Thinking and Problem Solving

A kindergarten child also needs the opportunity to apply its skills in a variety of learning environments, and is strongly recommended that the digital learning media can contribute to the learning of mathematical skills. Many aspects of early informal learning of mathematical concepts, such as numbers, arithmetic problem solving, and spatial syllogism along with general geometrical knowledge, are developed during the kindergarten age. ICT tools have the capacity to support young children to develop mathematical thinking. Clements (2002) reviews research on young children's mathematical learning in conjunction with various forms of computer-mediated practice including the use of drill-and-practice mathematical software, and the exploration of shapes, patterns, and numerical relationships using general-purpose graphics programs, or specialized "computer manipulative" programs in which children are able to perform specific mathematical transformations on objects on screen.

2.3.3 Using ICT tools support Children from diverse Cultural Background

ICT/ ICT tools may provide unique opportunities for scaffolding and supporting children with special learning needs, or children from culturally or linguistically diverse backgrounds. Good software can allow children to engage in self-exploration and tailor the software to their individual needs in a way that traditional print-based material cannot necessarily match. Using ICT tools help bring children's home culture and experiences into the early childhood education centre. For example, Whalley et al. (2001) describe a UK early childhood centre where parents were able to borrow the centre's video camera to film children's experiences in the home. These could then be viewed and discussed between parents and early

childhood educators, as a way of supporting parents' involvement in their children's learning.

2.3.4 ICT tools as a support of Creativity

Creativity involves imagination with purpose and has originality in the sense that something is unique, has value, is useful, offers a valid solution to a problem, or is aesthetically pleasing. ICT tools/ Computer programs that are open-ended and offer the child some control over learning activities can provide opportunities for creative choices and imaginative expression. A current study reports that young children who are exposed regularly to open-ended computer-based learning show more curiosity, creativity and motivation, compared to the children who are engaged in more structured computer-assisted instruction with very little user control (Craft (2005).

2.3.5 Simplify Teaching Job:

Plomp et al., (2007) states that use of ICT such as videos, television and multimedia computer software that combine text, sound and colourful moving images can be used to provide challenging, authentic content that will engage students in the learning process. Moreover networked computers with internet connectivity can increase learner motivation as it combines the media richness and interactivity of other.

2.4 The Challenges/Barriers of using ICT Tools in Teaching

The act of using ICT tools in teaching is a complex process and one that may encounter a number of difficulties. Schoepp (2015) defines challenges/barrier as any condition that makes it difficult to make progress or to achieve an objective. There are several factors that inhibit the use of ICT tools into classroom instruction. Some factors are school base (internal) while some are community base (external) and

teacher's personal issue. Researches identify these factors as non-manipulative and manipulative factors. Non manipulative refers to the factors, such as age, teaching experience, computer experience. Manipulative factors are availability of ICT infrastructures, government policy and the availability of external support; attitude, phobia, interests, skill level in using computer etc.

2.4.1 Teachers' Attitude towards the use of ICT tools and Teachers' ICT Knowledge and Skills

Attitude is a predisposition to respond favorably or unfavorably to an object, person, or event. To successfully initiate and implement ICT tools in teaching depends strongly on teachers' support and attitudes. Among the factors that influence successful use of ICT tools in teaching is teacher's attitudes and beliefs towards technology (Harris, 2002) and (Keengwa, J & Onchwari, G, 2008). Attitudes toward ICT tools influence teachers acceptance of the usefulness of technology, and also influence whether teachers use ICT tools in their classrooms. Many theorists (e.g., Van Braak, 2001b; Vannata & Fordham, 2004) have maintained that teachers' attitudinal factors have a strong impact on technology integration in teaching. Attitude is an important concept in social judgments and behaviors and thus, is one of the most important concepts in decision making, Venkatesh et al., (2003). Teacher attitude is one of the most critical factors that enhance or inhibit the use of ICT tools in classroom instruction. Moreover, Selwyn (1999), insists that use of ICT tools in teaching depends to a great extent, on teachers' attitude towards their use. Myers and Halpin (2002) assert that attitude of teachers towards ICT tools use are a major predictor of future classroom use.

2.4.2 Teacher Competence and Confidence

ICT tools competence is defined as being able to handle a wide range of varying technologies for various purposes. According to Prestride (2012) ICT tools aided teaching is the most appropriate skill required of a teacher, unfortunately, it is the least possessed by many. This may be because it is barely been part of their training course. Prestride (2012) outlined some of ICT packages required of a secondary school teacher as data processing, word processing, use of internet, use of spreadsheet, use of presentation software like PowerPoint and e-mail. These ICT packages are important to teachers because they assist in creating lesson plans, analysing and setting students' tests, acquiring new knowledge and presenting lesson in a clear way among others.

According to (Bordbar, 2005) teachers" computer competence is a major predictor of using ICT tools in teaching. According to (Al-Alwani, 2005) majority of teachers who reported negative or neutral attitude towards the use of ICT tools into teaching and learning processes lacked knowledge and skills that would allow them to make

"informed decision". Teachers" confidence also relate to their perceptions of their ability to use computers in the classroom, particularly in relation to their children's perceived competence.

A very significant determinant of teachers' levels of engagement in the use of ICT tools is their level of confidence in using the technology. Teachers who have little or no confidence in using computers in their work will try to avoid them altogether, Dawes (2000). According to BECTA (2004), much of the research proposes that this is a major challenge/barrier to the uptake use of ICT tools by teachers in the classroom.

Some studies have investigated the reasons for teachers' lack of confidence with the use of ICT tools. Beggs (2000) asserted that teachers' "fear of failure" caused a lack of confidence. On the other hand, Balanskat et al., (2006) found that limitations in teachers' ICT knowledge makes them feel anxious about using ICT in the classroom and thus not confident to use it in their teaching. Many teachers who do not consider themselves to be well skilled in using ICT feel anxious about using it in front of a class of children who perhaps know more than they do. Likewise, in Saudi Arabia, a lack of ICT skills is a serious obstacle to the integration of technologies into science education Al-Alwani (2005).

2.4.3 Limited access to ICT facilities

Access to ICT infrastructure and resources in schools is a necessary condition to the use of ICT tools in education. Inaccessibility or unavailability of ICT tools, a school level barrier, has been identified as a key obstacle that impedes teachers from using ICT tools in teaching. Shortage of resources includes different factors, such as lack of access to hardware and software, poor quality hardware and inappropriate software. Effective adoption and integration of ICT tools into teaching in schools depends mainly on the availability and accessibility of ICT resources such as hardware, software, etc. Obviously, if teachers cannot access ICT resources, then they will not use them. A study by Yildrim (2007) found that access to technological resources is one of the effective ways to teachers' pedagogical use of ICT tools in teaching. Access to hardware and software is not only important, but also the use of suitable kind of tools and programme to support teaching and learning Tondeur et al., (2008).

2.4.4 Teaching Experience

Though some research reported that teachers‟ experience in teaching did not influence their use of computer technology in teaching (Neidarhauser, & Stoddart, 2001) most research showed that teaching experience influence the successful use of ICT tools in classrooms Wong et al., (2008). In her study Gorder, (2008) revealed that effective use of computer related to technological comfort levels and the liberty to shape instruction to teacher -perceived student needs. Also, Beak et al., (2008) claimed that experienced teachers are less ready to integrate ICT tools into their teaching. Similarly, in United States, the (U.S National Centre for Education Statistics, 2000) reported that teachers with less experience in teaching were more likely to integrate computers in their teaching than teachers with more experience in teaching. Furthermore, a meta-analysis and review of 81 research studies by (Rosenet al., 1990) concluded that teachers teaching experience does not eliminate computer phobias and many experienced teachers display some wariness, discomfort and/or mild anxiety in relation to computers

2.4.5 Lack of Technical Support

Without both good technical support in the classroom and whole-school resources, teachers cannot be expected to overcome the barriers preventing them from using ICT tools Lewis (2003). Pelgrum (2001) found that in the view of primary and secondary teachers, one of the top barriers to ICT tools use in education was lack of technical assistance. Technical problems were found to be a major barrier for teachers. These technical barriers included waiting for websites to open, failing to connect to the Internet, printers not printing, malfunctioning computers, and teachers having to work on old computers. “Technical barriers impeded the smooth delivery of the lesson or the natural flow of the classroom activity” Sicilia, (2005). ICT tools

support in schools helps teachers to use ICT tools in teaching without losing time through having to fix software and hardware problems.

2.5 Disadvantages of use ICT tools in Early Grade classroom

There is rarely clear evidence about the degree to which the use of ICT tools pose risk to children and most authors agree that early childhood educators need to be aware of the issue and need to safeguard children health and development. The following below are some of the risk that ICT tools used in early grade classroom has on the children.

2.5.1 Physical health and Safety Concerns

Repetitive strain injury, eye fatigue, and postural effects of extended computer use are established hazards for adults. Although there are few studies of the health and safety effects of computer use for young children, most authors suggest a cautious approach and believe that practitioners and children need to become well informed about safe and appropriate ways to work with computers. In one preschool study, Graham and Banks (2000) observed children had to tilt their heads up to look at a computer screen, and raise their arms to use the mouse, and often assumed a "slouch" position when seated in front of the computer. Some children were also observed to move their noses very close to the computer screen. All these pose a great risk to the health of the children.

2.5.2 Children's learning, cognitive, social and emotional development

Concerns are that computer use might foster learning in a negative sense. For example, that solitary gameplay could lead to children's isolation from social interaction in learning and play, or that violence in computer games could encourage aggressive behaviour. Some reviews of research on computer games conclude that the

question of whether violent games promote aggressiveness cannot be answered at present (Griffiths, 2000, Sakamoto, 2000, cited in Linderoth et al., 2002), because the literature is relatively sparse and contradictory, and game design is evolving so quickly that many studies might be too old to be applicable to the kinds of games children are playing today making it a disadvantage of using ICT tools in classroom practice.

2.6 Factors determining the use of ICT to facilitate teaching Kindergarten

In order to ensure that the use of ICT tool is widely adopted and used in classrooms in basic schools, the following practices should be taken into consideration. Successful implementation of the use of ICT tools based teaching and learning depends largely on the positive interest of teachers, who eventually determine how they exploit and implement ICT tools based teaching in the classroom, Bullock (2004).

2.6.1 Attitude towards the use of ICT Tools

Drent and Meelissen (2007) in their study have established that a positive attitude on the use of ICT tools has a direct positive influence on the innovative use of ICT tools by the teacher. Positive attitudes often encourage less technologically capable teachers to learn the skills necessary for the implementation of technology-based activities in the classroom. In their study Harrison and Rainer (1992) found that participants with negative attitudes towards the use of ICT tools were less skilled in ICT use and were therefore less likely to accept and adapt to technology than those with positive attitudes. They concluded that changing individuals' negative attitudes is essential for increasing their computer skills. Keengwe and Onchwari, (2008) identify that the positive attitude of the teachers towards the use of ICT tool is very

much affected by the experience of the teachers with ICT. Therefore, if teachers want to successfully use technology in their classes, they need to possess positive attitude to use technology. Such attitude is developed when teachers are sufficiently comfortable with technology and are knowledgeable on its use.

2.6.2 Competence in ICT Use

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

2.6.3 Computer Self-efficacy

Research has been conducted on teacher's self-efficacy and reported to have greater effect on their use of ICT tools. Self-efficacy is defined as a belief in one's own abilities to perform an action or activity necessary to achieve a goal or task (Bandura, 1997). In real meaning, self-efficacy is the confidence that individual has in his/her ability to do the things that he/she strives to do. Thus teachers' confidence refers both to the teachers' perceived likelihood of success on using ICT tools for

educational purposes and on how far the teacher perceives success as being under his or her control (Peralta &Costa, 2007). Teachers' computer self-efficacy is described as a judgment of their capability to use a computer (Compeau & Higgins, 1995). According to Liaw, and

Chen (2010), teachers' computer self-efficacy influences their use of ICT in teaching and learning. Similarly, (Yuen & Ma, 2008) revealed that the Hong Kong teachers' implementation of ICT tools was depended on simplicity of computer use and perceived teacher self-efficacy. According to Jones (2004), teachers feel reluctant to use computer if they lack confidence. "Fear of failure "and "lack of ICT knowledge" (Balanskat et al., 2007) have been cited as some of the reasons for teachers' lack of confidence for adopting and integrating ICT tools into their teaching. Similarly, in a survey conducted by (BECTA, 2004), approximately 21% of the teachers who were surveyed, reported that lack of confidence influence their use of computers in their classrooms.

Cubukcuoglu (2013) stated that "many teachers who do not consider themselves to be well skilled in using CT feel anxious about using it in front of a class of children who perhaps know more than they do"

2.6.4 Professional Development

Teachers' professional development is a key factor to successful integration of computers into classroom teaching. Several studies have revealed that whether beginner or experienced, ICT-related training programs develop teachers' competences in computer use (Bauer & Kenton, 2005; Franklin, 2007; Wozney et al., 2006) influences teachers' attitudes towards computers (Harris, 2002; Keengwe and Onchwari, 2008) as well as assisting teachers reorganize the task of technology and

how new technology tools are significant in student learning (Plair, 2008). Pellegrino (2007) claim that teachers may adopt and integrate ICT into their teaching when training programs concentrate on subject matter, values and the technology. BECTA (2008). Teachers' understanding of content knowledge and how to apply technology to support students' learning and attainment are joined to their increase in knowledge level, confidence and attitudes towards technology. Educators who integrate technology with new teaching practices gained through professional training can transform the performance of the students (Lawless & Pellegrino, 2007).

2.6.5 Accessibility

Access to ICT infrastructure and resources in schools is a necessary condition to the integration of ICT in education (Plomp et al., 2009). Effective adoption and integration of ICT into teaching in schools depends mainly on the availability and accessibility of ICT resources such as hardware, software, etc. A study by Yildrim (2007) found that access to technological resources is one of the effective ways to teachers' pedagogical use of ICT in teaching.

2.6.6 Availability of Technical Support

BECTA (2004) agreed that if there is a lack of technical support available in a school, then it is likely that technical maintenance will not be carried out regularly, resulting in a higher risk of technical breakdowns. Jones (2004) reported that the breakdown of a computer causes interruptions and if there is lack of technical assistance, then it is likely that the regular repairs of the computer will not be carried out resulting in teachers not using computers in teaching. The effect is that teachers will be discouraged from using computers because of fear of equipment failure since no one would give them technical support in case there is technical problem.

2.7 Integration of ICT Tools

The integration of ICT tools in classroom is getting more important as it help student in enhancing their collaborative learning skills as well as developing transversal skills that stimulates social skills, problem solving, selfreliance, responsibility and the capacity for reflection and initiative. All these elements are core values that students need to achieve in an active teaching and learning environment (Hammond, 2004). Similarly, in Ghana the government has implemented the integration of ICT tools in learning and teaching process in early 1970's. This is due to the importance of technology literate which produce critical thinking workforce to face and involve the country in the global economy (Murphy and Greenwood, 1998). Accordingly, many schools were upgraded with computer's lab, the internet connection, smart white boards, LCD and other ICT tools and equipment. Despite all these, the problem faced was the teachers' skill and aptitude, technical support and stability of the system in order to implement the policy successfully. However, the government is still improving and upgrading the systems to be fully utilizing by ICT. As a developing country, exploration of the factors that affecting Ghana teachers' ICT tools usage in schools can help to increase the integration of ICT tools in country's teaching and learning process. The new era of ICT tools in education should be developed rapidly to appropriate extent in order to matching the capability of students as well as teachers in educational experience due to the development of new information technology.

Results of a study by Abd Rahim, & Shamsiah, (2008).) suggest that trainee teachers in Ghana have confidence to use ICT tools in their teaching practices. And the male teachers are more confident than female teachers in using ICT integration in teaching. Moreover, it shows that vocational teachers are more confident to integrate

ICT in teaching, because they can handle technical subjects and their experience enable them to integrate ICT effectively in teaching (Abd Rahim, & Shamsiah, (2008). Furthermore, only minority of teachers in Ghana professionally know the basic of ICT. The majority of them just had average knowledge in using ICT tools, and even a group of the teachers are poor in the related knowledge of ICT in Ghana (Yunus, 2007). It indicates that level of ICT knowledge among teachers is one of the key factors for Ghana society to make successful adoption of ICT in its education.

2.8 Teacher's Beliefs

Throughout the literature many authors refer to teachers' beliefs as having a significant impact on the use of ICT tools, as teachers' beliefs are reflected in their classroom practice (Ottenbreit-Leftwich et al, 2010). However, teachers' beliefs are difficult to articulate, as they are often tacit and implicit in practice (Donnelly et al, 2011). This section considers teachers' beliefs further, including beliefs about pedagogy, attitude to the use of ICT tools, confidence and competence in using technology, and also the relationship between these aspects. It is suggested that teachers use ICT tools in ways that support their existing beliefs in terms of student-centred or teacher-centred pedagogies (Palak & Walls, 2009; Ertmer et al, 2012). Liu (2011) suggests that while some studies find that teachers use ICT in ways that support their beliefs in terms of teacher-centred or student-centred learning, beliefs in studentcentred learning are not always translated into practice. This may be due to timeconstraints or external pressures such as curriculum and assessment requirements (Conlon & Simpson, 2003; Ertmer et al, 2012).

Hammond et al (2011) identify teacher-level factors affecting ICT tools use including subject taught, self-efficacy, and beliefs in terms of whether the use of ICT

tools has a positive impact on learning. Teachers who are confident in their own skills make more use of ICT tools and teachers who believe that ICT tools will have a positive impact on learning make more use of ICT tools. Teacher confidence and ICT competence is positively related to how they make use of ICT tools in the classroom (Wastiau et al, 2013). Also teachers who are more confident in their own ICT tools ability are more likely to make use of ICT in student centred ways (Wastiau et al, 2013). Kreijns et al (2013) find that teacher confidence and competence are linked but the causal relationship is unclear. Celik & Yesilyurt (2013) consider relationships between teachers' computer anxiety, self-efficacy, attitudes towards ICT use and use of ICT tools to support teaching and learning. They find that low anxiety, high self-efficacy and a positive attitude to ICT use are all indicators of likelihood to use ICT tools within the classroom and those teachers who develop positive attitudes to ICT also increase their confidence and decrease anxiety.

In summary, developing the use of ICT tools to support teaching and learning across the curriculum places burdens on teachers in terms of developing required knowledge and skills. As discussed above, the SLT set out the policy and identify what makes 'good' teaching and learning within the school context but it is up to teachers to implement this in practice. In addition to interpreting school policy, teachers' own assumptions, beliefs and experience affect how they view ICT and subsequently how they make use of it. This study will investigate how teachers' beliefs affect their practice.

2.9 The Conceptual Framework

For the purpose of this study in light of ICT tools integration to enhance a quality teaching and learning experience in schools, two theories of Diffusion of

Innovations by Rogers (2003) and Technology Acceptance Model (TAM) by Davis (2003), has been identified and adapted to the research setting as the conceptual framework for this research (Figure 1). Rogers's theory stated as the process by which an innovation is communicated through certain channels and over time among the members of a social system. The process will starts with "knowledge" of the first channel that represents characteristics of the decision making unit by the ICT users in order to integrate the technology. And it ends with "confirmation" by the users to accept the technology and integrate it accordingly.

The Technology Acceptance Model (TAM) theory comprises of various parts which is representing the process of ICT acceptance by the users including; behavioral intension, perceived usefulness and perceived ease of use. While, perceived usefulness refers to the degree to which person believes on the benefit from the use of a particular technology by improving the job performance, perceived ease of use refers to the importance of a technology in being user friendly for the users. Generally, TAM theory was developed to measure the effectiveness or success of a technology in helping understanding the value and efficacy of a particular system. It is also considered as one of the most influential theories in contemporary information systems research. However, the theory has evolved with more specific variables explaining how a user can accept a technology over the years.

Conceptual Framework

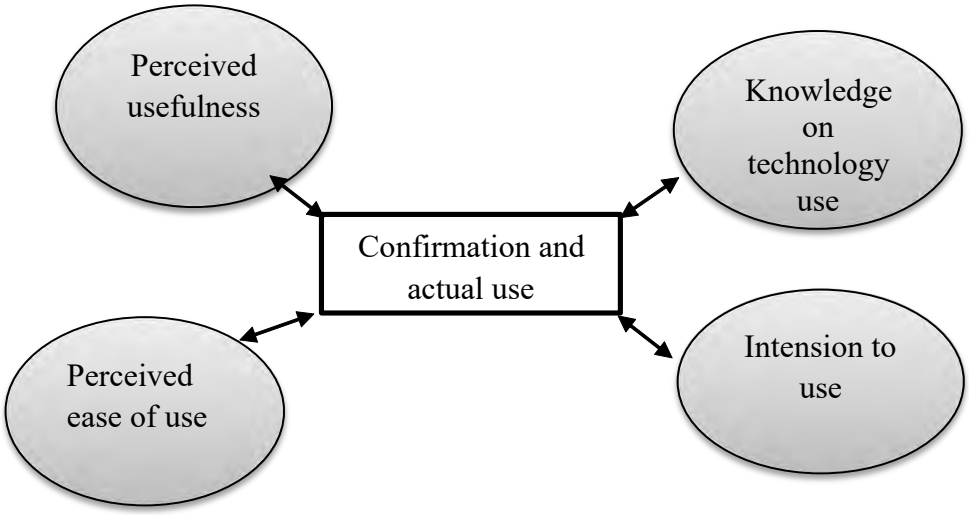

Fig 2.1: Conceptual Framework

The proposed framework includes various factors directly associated with the core aim of the study that explains how knowledge and perceptions will affect the perceived usefulness and ease of use of ICT integration. The factors embedded in the conceptual framework have been meticulously interlaced, so that the interrelationship among them constitutes to measure their effectiveness on ICT integration by teachers. However, intension to integrate ICT by teachers is the main variable that supports the key elements in the above framework such as ease-of-use, functionality, flexibility, accessibility and integration. In addition, the intention of teachers to use the technology is strongly influenced by their perceptions on usefulness of the system as well as perceived ease of use and determines their actual use of ICT. The proposed framework has guided this research in investigating the factors affecting the technology integration by school teachers.

2.10 Empirical Review

Several writers agreed that the use of ICT tools in teaching and learning process provide more knowledge to the pupils. As according to Mathayo (2016) conducted a research on the topic "teacher's experience on the use of ICT tools to help teaching." This research was aimed at collecting views and opinions from teachers regarding their experiences on the use of ICT to facilitate teaching. Also according to Adijatu (2015) also conduct a research on topic "ICT tools use in preschool science education" with the aim of exploring the use of ICT tools for science education for teaching main natural science concept in early years classroom. Finally, as according Ruth Famery (2014), also conducted a research on the topic "the use of ICT tools across the secondary school". Her main aim of this research work was to investigate how ICT is used in practice – in order to identify how ICT can be developed to further support teaching and learning across the curriculum.

2.11 Summary of the Literature Review

In this chapter, attempts were made to learn from the literature, theoretical and empirical knowledge for several issues concerning this study. The review of literature revealed issues like, teachers attitudes, teacher competence and confidence, accessibility, inadequate ICT infrastructures, lack of technical support and lack of effective training as the barriers that hinders the use of ICT tools to facilitate teaching. Furthermore, the review of literature identified issues such as individual interactivity, delivery of education resources, and access to global knowledge base and facilitate interaction with education resources as the benefits of using ICT tools to facilitate teaching. In addition to that issues such as positive attitude towards ICT, competence in ICT use, computer self-efficacy, teacher' working experience, professional

development, accessibility, and availability of technical support were identified as the factors influencing the effective use of ICT tools to facilitate teaching in basic schools. Thus, this study emanates from the thirst of the researcher to explore teachers' experiences on the use of ICT tools to facilitate teaching and learning in selected schools in Aveme, Anfoega and Vakpo Circuits in North Dayi District.

CHAPTER THREE

METHODOLOGY

3.0 Overview

This chapter focused on methods which were used to conduct the research. The chapter covered the area of research design, coverage of the study population, sampling procedures and techniques, data collection instruments and data analysis procedures. Ethics which guided this study was also presented.

3.1 Research Design

Ranjit Kumar (2005) defines research design as a plan, structure and strategy of investigation so conceived as to obtain answers to research questions or problem. Bryman (2008) discusses that research design provides a framework for the collection and analysis of data. Burns and Grove (2001) describe the research design as a blueprint for conducting a study that maximizes control over factors that could interfere with the validity of the findings. The research design guides the researcher in planning and implementing the study to achieve the intended goal. The control provided by the design increases the probability that the study results are accurate reflections of the real situations.

This study employed a Descriptive Survey Design. Descriptive survey was used to gather information on Kindergarten Teachers use of ICT tools in classroom practice to facilitate teaching: a case study of Aveme, Anfoega, Botoku, Bume Awate, Wusuta and Vakpo Circuits in North Dayi District. Descriptive survey research design was preferred because information was readily obtainable from kindergarten teachers in their natural environment, concerning their attitudes or beliefs on certain issues of the study. Descriptive survey research design presents an opportunity to fuse both

quantitative and qualitative data as a means to reconstruct the "what is" of a topic /study. Trochim (2006) states that a survey research design is a very valuable tool for assessing opinions and trends. The main purpose of a descriptive survey design is to obtain information from a defined set of people so as to generalize the sample results to the population.

Descriptive research specifies the nature of a given phenomenon, determines and reports the way things are. It involves collecting data in order to test hypothesis or answer research questions concerning the current status of the subject of the study (Gay, 1992). It is also used to assess and predict the views, reactions or standings of a large number of people on a limited topic.

This design, according to Frankel & Wallen (1993) has the advantage of providing more accurate practice of event and seeks to explain respondents' perception and behaviour on the basis of the data gathered at a point in time.

The descriptive survey design was, therefore, selected because the researcher wanted to ascertain the attitudes, opinions, views and feelings of Kindergarten Teachers use of ICT tools in classroom practice to facilitate teaching. The design was also selected due to its ability to enable the researcher to obtain and to administer the questionnaire to a large sample.

The first limitation of the descriptive survey research design is that without control of independent variable variation, the researcher cannot be certain whether the relations between independent and dependent variables are causal or non-causal. That is, a survey may establish that A and B are related, but it is impossible to determine solely from the survey results that A causes B. Causality is difficult to establish because many intervening and extraneous variables are involved. Time series studies help

correct this problem sometimes, but not always. A second limitation of descriptive survey research design is that inappropriate wording and placement of questions within a questionnaire can bias the results. The questions must be worded and placed to unambiguously format to elicit the desired information / responses.

3.2 Setting/ Area of the Study

The North Dayi District was established by Legislative Instrument (L.I.) 2076 of 2012 located in the Volta Region of Ghana. Its capital is Anfoega. It was carved out of the then Kpando District and inaugurated on 28th June, 2012. This is as a result of the growing population of the Kpando District and also to ensure that development gets to the doorsteps of the people.

North Dayi District lies within latitudes 60 20'N and 70 05'N, and Longitude 00 17'E. It shares boundaries with Kpando Municipal to the north, South Dayi District to the south, and the newly created Afadzato South District to the east. The Volta Lake which stretches over 80km of the costal line, demarcates the western boundary of the district. The district covers a total land area of 462.8 square kilometers with almost 30 percent of the land being submerged by the Volta Lake. The North Dayi District

Assembly comprises of one constituency, twenty three (23) electoral areas, six (6) Area Councils and nineteen (19) Unit Committees. The Assembly has a membership of thirty One (31). The Sub-District structures of the Assembly are: Anfoega, Vakpo, Wusuta, Tsrukpe/Botoku/Tsoxor, Awate and Aveme/Tsyome Sabadu Area Councils. The vegetation of the District is a mix of Guinea Savannah Woodland and Semi-Deciduous Forest. The savannah woodlands consist of grass with scattered trees like acacia, bamboo and baobabs. The average annual rainfall ranges from 900mm to 1300mm. The average annual temperature of the District is about 27°C whereas the

daily mean temperature ranges from 22° C to 33° C with an average relative humidity of 80 percent.

This climatic condition is favourable for agricultural activities in the district.

Fig. 3.1 District Map of North Dayi

Source: Ghana statistical service, GIS, 2010

Education

The North Dayi District Assembly comprises of one constituency, twenty three (23) electoral areas, six (6) Area Councils and nineteen (19) Unit Committees. The Assembly has a membership of thirty One (31). The Sub-District structures of the Assembly are: Anfoega, Vakpo, Wusuta, Tsrukpe/Botoku/Tsoxor, Awate and Aveme/Tsyome Sabadu Area Councils.

Table 3.1: Educational Institutions-North Dayi District

Type	Public	Private	Total
KG	87	35	122
Primary	57	25	62
Junior High School	24	24	48
Secondary/Technical School	3	-	3
Vocational	-	-	-
Total	**101**	**34**	**135**

Source: Ghana Statistical Service (GIS), 2020

Political Administration

The North Dayi District Assembly is the highest political and administrative authority in the District as per the provision of the Local Government Act 1993, Act 462 and Legislative Instrument (LI) 2076 of 2012. It has deliberative, legislative and executive authority and is charged with the responsibility for the total development of the District. The District has one (1) constituency, twenty-two (22) electoral areas and

six (6) sub district councils; Anfoega Area Council, Vakpo Area Council, Aveme Area Council, Botoku Area Council, Awate Area and Wusuta Area Council.

3.3 Population of the Study

Target population refers the grouping from which the researcher intends to gather information related to the stated problem. Burns and Grove (2001) define population as a group of people who share common traits or attributes of interests to researcher. That is to say population is total number of elements identify for study. However, a sample is a small group of respondents drawn from a population that the researcher is interested in gaining target information. The population of this study included: basic school kindergarten teachers in North Dayi District. The total population of the target population of this study consist of 177 kindergarten teachers. Teachers were targeted in this study because they are the major agents of the use of ICT tools implementation in teaching process. In this study the population consisted was consulted to give out their opinions respectively.

3.4 Sample and Sample Size

The sample size study consisted of Kindergarten teacher from the North Dayi District those which have ICT tools within their school and those who do not have. The study targeted kindergarten teachers in respective circuit schools. The sample size for this study involved an approximate of 177 kindergarten teachers from 6 difference circuit schools. The 177 respondents constituted to the percentage of 25.6% of the targeted population. According to Gay and Airasian (2003), a sample size of 25.6 percent of the target population is therefore appropriate for a descriptive survey study.

3.5 Sample Technique

The study of this research involved the use of Multistage Sampling Technique to select North Dayi District as the target population. Cluster sampling technique was employed by the researcher to divide the population of North Dayi District into circuits to make the conduct of the research simpler.

Regards to the size of the population, the researcher adopt a Simple Random Sampling techniques to select six (6) circuits in North Dayi District so as to obtain the relevant information at a minimum cost. This is a technique in which the researcher ensured that each and every member of the target population had an equal and independent chance of being selected and population is represented.

The study used Purposive Sampling to identify the respondents (kindergarten teachers) for this study. Purposive sampling was adopted for this study considering the researchers available knowledge concerning the sample subject, it provides control over significant variables of the study, homogeneity of subjects in the sample. This sampling technique was adopted in order to allow the researcher to concentrate on people with particular characteristics who will be able to assist the researcher with the relevant research. Furthermore purposive sampling offers advantages such as, it is easy to select a sample, it is not expensive and short time is used to select a sample and, results of purposive sampling are usually more representative of target population compared to other sampling methods. To get the sample 6 circuit schools were purposely picked. And to get respondents for the study the researcher purposely picked kindergarten teachers with the help of the principals and heads of departments in the circuits in North Dayi District.

3.6 Research Instruments

According to Asamoah-Gymah and Duodo (2007), research instrument is the device which the researcher uses to collect data. This study was conducted by the researcher using prepared questionnaires whereby respondents were preschool teachers. This instrument helped the researcher to observe the respondents in their natural environment. It was face to face communication where feedbacks were given immediately. This section describes the methods of collecting data for the study.

Questionnaires were used as instruments for data collection.

3.7 Questionnaires

This is a data collection instrument mostly used in normative surveys. This is a systematically prepared form or document with a set of questions deliberately designed to elicit responses from respondents or research informants for the purpose of collecting data or information. Questionnaires serves four basic purposes: to collect the appropriate data, make data comparable and amenable to analysis, minimizes bias in formulating and asking question, and to make questions engaging and varied. In this study a form of inquiry document, which contains a systematically compiled and well organized series of questions intended to elicit the information which will provide insight into the nature of the problem under study. The questionnaires were distributed to teachers. Closed and open end questions were prepared to guide the researcher so as to enable the respondents to provide exact responses as per the research study.

3.7.2 Validation of Data Collection

Validity is an important aspect of an effective research. If research tools aren't valid may affect the effectiveness of a research. Therefore validity of data collecting

tool is very important for both quantitative and qualitative research Cohen (2007). Data collection tools validation involves determining the quality of data collecting tools or procedures that is able to measure what it is supposed to be measured Kombo & Tromp (2006). To attain validity the instruments were sent to the supervisor during proposal writing for suggestions, recommendations and advice. The experts in the area of study helped in improving the instruments. The experts' feedback in form of

recommendations to the researcher, were incorporated in the final instruments. Not only that the researcher conducted a pilot test of the instruments before using them in the study. This was done randomly to colleagues of the researcher. The researcher made use of the supervising experts to ensure proper guidance was given on the piloting of the instruments. Denscombe (1998) comments that there is no research tool that is adequate in itself in collecting and validation of data. The study used more than one research instrument with expectation that one tool could complement the other.

3.8 Ethical Consideration

Ethical consideration is an import factor to observe for any researcher, Cohen et al., (2007). Ethical principles in conducting research include acquiring clearance and the informed consent of the respondents as well as maintaining confidentiality. The researcher obtained a research permit from the University of Education, Winneba. A verbal permission was also granted from the heads of schools to administer the questionnaire to the teachers and also to interview them. Prior to the data collection process respondents were informed about the purpose of the study and were ensured that confidentiality would be maintained for any inform they volunteered during data collection.

3.9 Data Collection Procedure

The researcher administered all the research instruments to all respondents by herself. This allowed the researcher to collect first-hand information. Questionnaires were distributed to teachers and they were given enough time to fill them. The researcher conducted an interview to teachers and a brief notes were taken for data analysis.

3.10 Method of Data Analysis

Kombo et al., (2006) refers data analysis to the examination of data. Data analysis involves uncovering, extracting important variables, detecting any variances and testing any underlying assumptions. Data gathered in this study were both quantitative and qualitative. Data collected from the field was edited first to eliminate the misplaced responses given during the collection of the data. The responses were then coded for analysis. Coding was done to summarize the responses given by the respondents for analysis. The coded items were analyzed with the aid of a computer using Statistical Package for Social Sciences (SPSS) version 20 and MS Excel as a tool for analysis. Data collected through Interviews were analyzed by using themes approach. The responses were presented on the scale of Strongly Disagreed, Disagreed, Agreed and Strongly Agreed. The results were presented and discussed in line with the research questions that guided the study.

3.11 Chapter Summary

In this chapter the area of the study has been identified. The reasons for adopting descriptive survey research design have been discussed. The chapter outlines the procedures adopted for sample selection and research instruments used for the study.

The instruments used were questionnaires and interviews. In addition, the chapter has discussed the validation of the instruments used as well as the data analysis approach.

The next chapter gives a presentation of the data collected.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.0 Overview

This chapter presents data analysis, findings, presentation and interpretation of findings. The purpose of the study intends to find out how kindergarten teacher in North Dayi District use of ICT tools in classroom practice to facilitate teaching. Data was collected through the use of distributed Questionnaires and Interviews from 177 teachers (respondents) from the 5 circuit in North Dayi District. The findings of the study are presented as per objectives of the study in the following sections.

4.1 Demographic information of respondents

Table 4.1: Identification of Respondents

Circuits	Frequency	Percent
Aveme	27	15.3
Anfoega	38	21.5
Botoku	43	24.3
Bume Awate	22	12.4
Vakpo	23	12.9
Wusuta	24	13.6
Total	**177**	**100.0**

Source: Field Data, 2021

Table 4.1 shows the identification of the respondents. It is indicated that 27 respondents representing (15.3%) were from Aveme, 38(21.5%) respondents were from Anfoega 43(24.3%) respondents were from Botoku, 22(12.4%) respondents were from Bume Awate, 23(12.9%) respondents were from Vakpo and 24(12.6%) respondents were also from Wusuta circuits. This helped the researcher to know the number of respondents from each of the five circuits that she worked with in gathering the data for the research work.

Table 4.2: Gender of Respondents

Gender	Frequency	Percent
Male	58	32.8
Female	119	67.2
Total	**177**	**100.0**

Source: Field Data, 2021

Table 4.2 shows the gender of the respondents. As the data is analyzed in accordance to North Dayi district it can be observed that, 58(32.8%) of the respondents were males and 119(67.2%) of the respondents were also females.

It can be deduced form the above analysis that, majority of the respondents from the all the North Dayi district were females.

Table 4.3: Age of Respondents

Age	Frequency	Percent
30 or less	59	33.3
31-35	48	27.1
36-45	46	25.9
46-55	18	10.2
More than 55	8	4.5
Total	**177**	**100.0**

Source: Field Data, 2021

Table 4.3 above shows the age of the respondents, and the data gathered from the questionnaires is analyzed. In North Dayi district, it can be seen that the highest age group was 30 or less such that 59(33.3%) respondent fell within the age of 31-35, 48(27.1%) of the respondents fell in the age group of 31-35 and 46(25.9%) respondent fell in the age group of 36-45, 18(10.2) respondents fell within 46-55, 8(4.5) respondents fell with the ages of 56 or above.

4.2 General concept about ICT Tools

Table 4.4: Do you use any ICT tools at home or School?

Variables	Frequency	Percent
Yes	131	74.01
No	46	25.99
Total	177	100.0

Source: Field Data, 2021

Table 4.5 gives the information on if any ICT tools are been used by the respondents at home or school. It can be seen that, in the north Dayi District, 131(74.01%) responded yes to the fact that they used ICT tools and 46(25.99%) responded to no, also did not use any ICT tools at home or school.

From the analysis, most schools in the District made use of ICT tools at home and school since majority of the respondents said yes to the question been asked.

Table 4.5: How comfortable are you in using ICT tools?

Statement	Frequency	Percent
very uncomfortable	35	19.77
fairly uncomfortable	37	20.90
fairly comfortable	70	39.54
very comfortable	35	19.77
Total	**177**	**100.0**

Source: Field Data, 2021

With comfortability on the use of ICT tools at school, most respondents responded positively showing how comfortable they are in using the ICT tools. This is because, in **Table 4.6**, 70(39.5%) respondent were fairly comfortable with the use of ICT tools, 35(19.7%) respondent were very uncomfortable and very comfortable with the use of ICT tools respectively, and 37(20.9%) respondents were fairly uncomfortable with the use of ICT tools in North Dayi District. This indicates how interesting

teaching will be with the use of ICT tools since major part of the respondents were comfortable in the using ICT tools.

Table 4.6: Does the school have an ICT tools laboratory?

Variables	Frequency	Percent
Yes	59	33.3
No	118	66.7
Total	**177**	**100.0**

Source: Field Data, 2021

For any teacher to be motivated in using any sort of TLRs in teaching, there is the need for the availability of that TLRs the teacher needs. Table 4.7 shows whether the schools in the three circuit had ICT tools and laboratory. In the District, 118(66.7%) responded Yes to the question whiles 59(33.3%) respondent said no to the answers.

Table 4.7: Have you ever used ICT tools in your classroom?

Variables	**Frequency**	**Percent**
Yes	74	41.8
No	103	58.2
Total	**177**	**100.0**

Source: Field Data, 2021

With reference to Table 4.7, without ICT tools laboratory in the schools, using ICT tools in teaching is not possible. Table 4.8, respondents from north Dayi district answered no to the question asked. Thus, in north Dayi district, 103(52.8%) respondents agreed to "No", and 74(41.8%) respondents also said "Yes", It can therefore be concluded that, in other to use ICT tools as TLRs in teaching, there must be the availability of those tools.

Key: SA-Strongly Agree, A-Agree, D-Disagree, SD-Strongly Disagree

Research Question One *"What are the benefits of using ICT tools by kindergarten teachers in classroom practice to facilitate teaching in North Dayi District?"*

4.2 Responses on the use of ICT tools

Table 4.8: Responses from Kindergarten teachers of the five Circuits about the Benefits of using ICT tools

Sta*tement*	Responses				
Benefit of using ICT tools	SA	A	SD	D	
Using ICT tools help support language development	65(36.7)	112(63.3)	0(0.0)	0(0.0)	77(100)
ICT tools as a support of creativity	59(33.3)	118(66.7)	0(0.0)	0(0.0)	177(100)
ICT makes lesson easily understandable	83(46.9)	94(53.1)	0(0.0)	0(0.0)	177(100)
Using ICT tools support children from diverse cultural background	75(42.4)	102(57.6)	0(0.0)	0(0.0)	177(100)
ICT helps in retention	75(42.4)	02(57.6)	0(0.0)	0(0.0)	177(100)

Source: Field Data, 2021

Table 4.9 shows that, in the North Dayi district, 112(63.3%) respondents agree that using ICT tools help support language development, 59(33.3%) respondents agree that ICT tools as a support of creativity, 94(53.1%) respondents agree that ICT makes lesson easily understandable, 102(57.6%) respondents agree that using ICT tools support children from diverse cultural background and 102(57.6%) respondents also strongly agreed that ICT tools helps in retention.

From the analysis, it can be seen that majority of the respondents from all the five circuits agreed to the benefits of ICT tools, hence the needs to use ICT tools in teaching and learning process.

Van Scoter and Boss (2002) discuss many ways in which ICT tools can make rich contributions to children's literacy development, in the four interrelated areas of speaking, listening, reading, and writing. For example, "talking" word processors

support young children's experimentation as they play with language. Again Clements (2002) reviews research on young children's mathematical learning in conjunction with various forms of computer-mediated practice including the use of drill-and-practice mathematical software, and the exploration of shapes, patterns, and numerical relationships using general-purpose graphics programs, or specialized "computer manipulative" programs in which children are able to perform specific mathematical transformations on objects on screen. A current study reports that young children who are exposed regularly to open-ended computer-based learning show more curiosity, creativity and motivation, compared to the children who are engaged in more structured computer-assisted instruction with very little user control (Craft (2005).

Research Question Two *"What challenges do kindergarten teachers face in the use of ICT tools in in classroom practice North Dayi District?"*

Table 4.9: Responses from Kindergarten teachers of the five Circuits about the challenges of using ICT tools

Statement	Responses				
	N (%)	N (%)	N (%)	N (%)	(%)
Teacher's attitude towards the use of ICT tools	62(35.0)	108(61.0)	7(3.9)	0(0.0)	177(100)
Teacher competence and confidence	75(42.4)	98(55.4)	4(2.3)	0(0.0)	177(100)
Limited access to ICT facilities	96(54.2)	75(42.4)	6(3.4)	0(0.0)	177(100)
Teaching experience	58(32.8)	115(64.9)	4(2.3)	0(0.0)	177(100)
Lack of technical support	74(41.8)	101(57.1)	2(1.1)	0(0.0)	177(100)
Power outages	94(53.1)	81(45.8)	2(1.1)	0(0.0)	177(100)

Source: Field Data, 2021

Table 4.10 indicate that, In North Dayi district, 108(61.0%) respondents agreed that teacher's attitude towards the use ICT tools hinder the use of ICT tools. 98(55.4%)

respondent agreed that teacher competence and confidence also serves as a barrier to the use of ICT tools, 96(54.2%) respondents strongly agreed that limited access to ICT facilities constitutes to the barriers to the use of ICT tools, 115(64.9%) respondent also agreed that lack of teaching experience leads to less use of ICT tools in teaching, 101(57.1%) respondents agree and agreed that lack of technical support of the school promote barrier of ICT tools use, and 94(53.1%) respondent agreed that power outages form great part in the challenges faced during the use of ICT tools in teaching.

Moreover, Selwyn (1999), insists that use of ICT tools in teaching depends to a great extent, on teachers' attitude towards their use. Myers and Halpin (2002) assert that attitude of teachers towards ICT tools use are a major predictor of future classroom use.

According to (Bordbar, 2005) teachers" computer competence is a major predictor of using ICT tools in teaching. According to (Al-Alwani, 2005) majority of teachers who reported negative or neutral attitude towards the use of ICT tools into teaching and learning processes lacked knowledge and skills that would allow them to make

"informed decision". A study by Yildrim (2007) found that access to technological resources is one of the effective ways to teachers' pedagogical use of ICT tools in teaching. Access to hardware and software is not only important, but also the use of suitable kind of tools and programme to support teaching and learning Tondeur et al., (2008).

Research Question Three *"What knowledge does kindergarten teachers of Aveme, Anfoega Botoku, Bume Awate, Vakpo and Wusuta Circuits in North Dayi District have about the use of ICT tools to facilitate teaching?"*

Table 4.10: Knowledge about ICT tools

Educational Level	Frequency	Percent	Valid	Cumulative
			Percent	**Percent**
Valid Certificate	15	8.5	8.5	8.5
Diploma	87	49.6	49.6	58.1
Bachelor	60	33.9	33.9	92.0
Postgraduate	15	8.5	22.2	100.0
Total	**177**	**100.0**	**100.0**	

Source: Field Data, 2021

Table 4.11 shows the knowledge about the use of ICT tools in classroom practice and the following analysis was made. In North Dayi district, 15(8.5%) respondents' educational level was valid certificate and postgraduate respectfully, 87(49.6%) respondents' educational level was diploma and 60(11.1%) respondent educational level was bachelor degree.

It can therefore be conclude that most teachers from the various circuit have knowledge about the ICT tools since most of the teachers educational level was Diploma and Bachelor.

Research question four *"What are the factors determining the use of ICT tools to facilitate teaching in North Dayi District?"*

Table 4.11: Responses from Kindergarten teachers of the five Circuits about the factors that determining the use of ICT tools Statement Responses Factors determining the use Total of ICT tools

Statement	**Responds**				
	SA N (%)	**A** N (%)	**D** N (%)	**D** N (%)	**SD**
Competence in ICT use	68(38.4)	109(61.6)	3(13.6)	0(0.0)	177 (100)
Computer self-efficacy	69(38.9)	108(61.0)	1(0.5)	0(0.0)	177 (100)
Professional development	67(37.9)	106(59.9)	4(2.3)	0(0.0)	177 (100)
Accessibility	66(37.3)	109(61.6)	2(1.1)	0(0.0)	177 (100)
Availability of technical support	55(31.1)	119(67.2)	3(1.7)	0(0.0)	177 (100)

Source: Field Data, 2021

Table 4.12 shows that, in North Dayi district 109(61.6%) responded agreed to Competence in ICT use**,** 108(61.0%) responded agreed to Computer self-efficacy, and 109(61.6) responded agreed to Accessibility, 106(59.9%) responded agreed to Professional development, 119(40.7%) responded agreed to availability of technical support. It can therefore be deduced that most respondents from the five circuit strongly agreed and agreed to the factors, which means if all those factors are been solved and provided, the use ICT tools in classroom practice will be motivated and enhanced. Christensen (2000) postulated that educators with higher levels of skill, knowledge using ICT would exhibit higher levels of using ICT tools to facilitate teaching in the classroom. Moreover, Berner (2003) concluded that teachers should develop their competence based on the educational goals they want to accomplish with the help of ICT. Cubukcuoglu (2013) stated that "many teachers who do not consider themselves to be well skilled in using CT feel anxious about using it in front of a class of children who perhaps know more than they do".

Educators who integrate technology with new teaching practices gained through professional training can transform the performance of the students (Lawless & Pellegrino, 2007).

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Overview

This chapter gives a summary of the study, conclusions, and makes recommendations for further research. The main focus of the study was to investigate to find out how kindergarten teachers in North Dayi District use of ICT tools in classroom practice to facilitate teaching.

5.1 Summary of the Study

This study employed a Descriptive Survey Design. Descriptive survey was used to gather information on Kindergarten Teachers use of ICT tools in classroom practice to facilitate teaching: a case study of North Dayi District. Descriptive survey research design was preferred because information was readily obtainable from kindergarten teachers in their natural environment, concerning their attitudes or beliefs on certain issues of the study. The population of this study included: basic school kindergarten teachers of North Dayi District, therefore the target population of this study consist of 177 kindergarten teachers.. The study of this research involved the use of Multistage Sampling Technique to select North Dayi District as the target population. Cluster sampling technique was employed by the researcher to divide the population of North Dayi District into circuits to make the conduct of the research simpler. The researcher adopt a Simple Random Sampling techniques to select 6 circuits in North Dayi District. The study used Purposive Sampling to identify the respondents (kindergarten teachers) for this study. This study was conducted by the researcher using prepared questionnaires whereby respondents were kindergarten teachers. The questionnaires were personally administered to the teachers by the researcher and response recorded. The researcher analyzed each questionnaire

according to the opinion of respondents. Presentations of research findings was done using data analysis charts, tables, bar graphs, percentages, and frequencies. From the findings of the study, most teachers from the six(6) circuit strongly and agreed that, using ICT tools help support language development, ICT tools as a support of creativity, ICT makes lesson easily understandable, using ICT tools support children from diverse cultural background, and ICT helps in retention.

The results of this study show that technology-based teaching and learning is more effective in compare to traditional classroom. This is because, using ICT tools and equipment will prepare an active learning environment that is more interesting and effective for both teachers and students of North Dayi District.

However, most of teachers in this study strongly and agreed that competence in ICT use, computer self-efficacy, professional development, accessibility and availability of technical support constitute to the factors of using ICT tools, which means if all those factors are been solved, the use ICT tools in classroom practice will be motivated and enhanced.

5.2 Conclusions

With reference to the findings obtained and the discussion, it is therefore concluded that, the very first stage of ICT implementation must be effective to make sure that, teachers and students are able to make the best use of it. Thus, preparations of a technology-based teaching and learning begin with proper implementation and supports by the school top management. If the implementation process of technology integration in schools take place appropriately from the very beginning stage and the continuous maintenance are adequately provided, ICT integration in schools will result in a huge success and benefits for both teachers and students. The use of ICT

especially in teaching and learning is more about practicality as compared to theories and that is why teachers must be given time to learn and explore it, face the "trial-anderror" phase before they are completely comfortable with its usage and able to make use of it for teaching and learning.

Lastly, that the impact of ICT on learners is positive in most cases. However, it is important that the introduction of ICT into the curriculum shall be carried out reasonably and with moderation. As it may be noted, a huge impact on how ICT affects the learners has not only ICT itself, but also factors associated with it such as the access to technology, the attitude towards it, as well as the level of knowledge teachers possess. If the above elements are chosen in an appropriate manner, with a suitable technological base, as well as adequately educated staff, I consider that the influence of technology on students could be more positive than it is today.

5.4 Recommendations

The study therefore recommended that;

- Head teacher should make sure that their respective kindergarten classrooms have adequate ICT tools for children. This should be complimented by developing a working plan that gives kindergarteners a balanced timetable for learning ICT.
- The Ministry of Education and Ghana Institute of Curriculum Development should formulate adequate policies that would ensure all public preschools are funded enough to purchase, install and ensure availability of ICT tools as well as replacing the worn-out and dangerous ICT tools.
- Teacher should develop positive attitude towards ICT, teachers should be trained on how to use ICT in teaching.

- School authorities should empower teachers by facilitating in service training, provide enough ICT facilities.
- The study recommends that the government through the Ministry of Education should make ICT training mandatory in teacher education, employ ICT technical staff in public schools as there are laboratory technicians in public school and teacher resource centers should be equipped with ICT facilities for immediate access.
- This study was only carried out in kindergarten classroom in Aveme, Anfoega, Botoku, Bume Awate, Wusuta and Vakpo in the Volta region of Ghana. The researcher therefore recommends that a similar study can be done in other districts in Ghana to widely disclose the experience of teachers on the challenges facing them in using ICT tools in teaching and learning process.

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APPENDIX A

QUESTIONNAIRES FOR TEACHERS

Objective

The questionnaire and interview guide intended to collect information on the Kindergarten teacher's use of ICT tools in classroom practice: A case study of Aveme, Anfoega, Botoku, Bume Awate, Wusuta and Vakpo, Wusuta, Botoku and Vakpo Circuits in North Dayi District. This is purely an academic work conducted in partial fulfilment of Master's Degree in Early Childhood Education**.**

All answers in this work remain as a confidential

Questions

Demographic features of Respondents

Instructions

Indicate your choice by ticking [√] and explain where necessary.

1. Tick your sex

a. Male [ ]

b. Female [ ]

2. What is your age

a. 30 or less [ ]

b. 31-35 [ ]

c. 36-45 [ ]

d. 46-55 [ ]

e. More than 55 [ ]

3. Location of the School

a. Rural area [ ]

b. Urban area [ ]

Your Education Level	**Tick (√)**
a. Certificate	
b. Diploma	
c. Bachelor	
d. Postgraduate	

4. Knowledge about ICT tools.

General concept on the use of ICT tools

5. Do you use any ICT tools at home or school?
   a. Yes [ ]
   b. No [ ]

6. How comfortable are you in using ICT tools?

Statements	**Tick (√)**
a. I am very uncomfortable using ICT tools at home and school	
b. I am fairly uncomfortable using ICT tools at home and school	
c. I am fairly comfortable using ICT tools at home and school	
d. I am very comfortable using ICT tools at home and school	

7. Does the school have an ICT tools laboratory?
a. Yes [ ]
b. No [ ]
8. Have you ever used ICT tools in your classroom?
a. Yes [ ]
b. No [ ]
9. Do you think using ICT tools in kindergarten classroom has benefits to pupils?

Benefits of using ICT tools	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**
Using ICT tools help support Language Development				
ICT tools as a support of Creativity				
Make lesson easily understandable				
Using ICT tools support Children from diverse Cultural Background				
ICT helps in retention				

10. Do you think the following suggested challenges/barriers hinders the use of ICT tools in classroom practice by kindergarten teachers?

Challenges/Barriers that hinders the use of ICT tools	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**
Teachers' Attitude towards the use of ICT tools and Teachers' ICT Knowledge and Skills				
Teacher Competence and Confidence				
Limited access to ICT facilities				
Teaching Experience				
Lack of Technical Support				
Power outages				

11. Do you think the following practice determines the use of ICT in classroom practice?

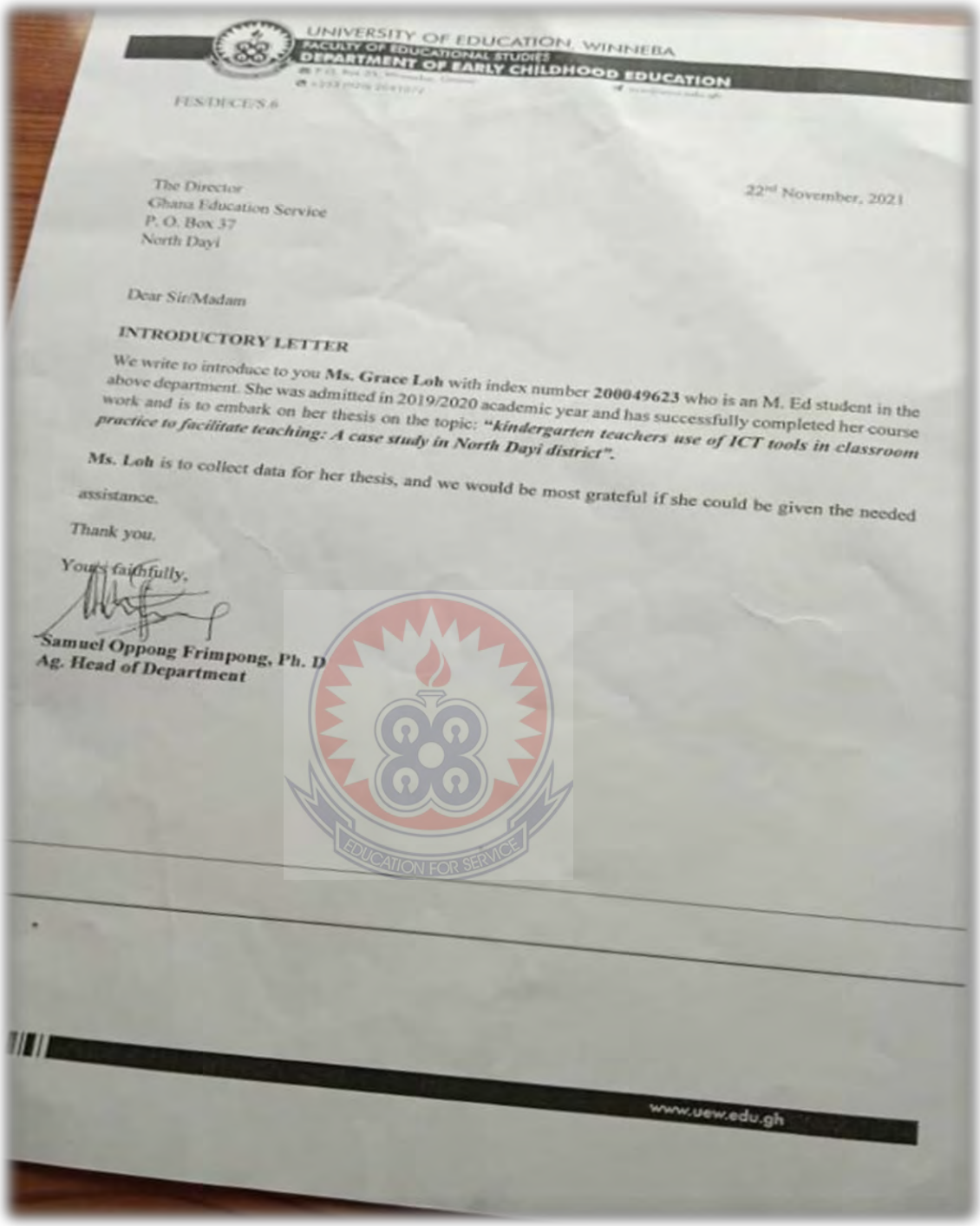
Factors determining the use of ICT tools	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**
Competence in ICT Use				
Computer Self-efficacy				
Professional Development				
Accessibility				
Availability of Technical Support				

12. Do you have these ICT tools available in your class rooms?

Are the following ICT tools available in your classrooms	**Available**	**Not available**
Desktop and Laptops		
Digital Cameras		
Printers		
Photocopiers		
Mobile Phones		
Tablet		
Popplet		

Pendrive		
Modems		
Ipods		
Webboards		
Scanners		
Microphones		
Interactive White Board		
DVDs and CDs		
Flas discs		
Video Games		
Text magnifier		
Head Wands		
Keyboard for Cerebral Percy		
Braille		
Typing aid		
Large print		
Audio books		

APPENDIX B



UNIVERSITY OF EDUCATION, WINNEBA
FACULTY OF EDUCATIONAL STUDIES
DEPARTMENT OF EARLY CHILDHOOD EDUCATION

FES/DECE/S.6

The Director
Ghana Education Service
P. O. Box 37
North Dayi

22nd November, 2021

Dear Sir/Madam

INTRODUCTORY LETTER

We write to introduce to you **Ms. Grace Loh** with index number **200049623** who is an M. Ed student in the above department. She was admitted in 2019/2020 academic year and has successfully completed her course work and is to embark on her thesis on the topic: ***"kindergarten teachers use of ICT tools in classroom practice to facilitate teaching: A case study in North Dayi district".***

Ms. Loh is to collect data for her thesis, and we would be most grateful if she could be given the needed assistance.

Thank you.

Yours faithfully,

Samuel Oppong Frimpong, Ph. D
Ag. Head of Department

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