UNIVERSITY OF CAPE COAST

EVALUATING TEACHERS' AND SCHOOLS' CAPACITY TO INTEGRATE TECHNOLOGY IN THE NEW EDUCATIONAL CURRICULUM: E-CAPACITY MODEL APPROACH

ADADE RICHARD

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BY

ADADE RICHARD

Dissertation submitted to the Department of Mathematics, Science and ICT Education of the College of Distance Education, University of Cape Coast in partial fulfilment of the requirements for the award of Master of Education Degree in Information Technology

DECEMBER 2022

DECLARATION

Candidates Declaration

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

Candidate's Signature:…… Date……

Name:……..

Supervisors Declaration

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

Supervisor's Signature…… Date……

Name:……..

ABSTRACT

Ghana's educational system has changed as a result of this global embracement of ICT. In order to improve the effectiveness and relevance of the educational process in the pre-tertiary school curriculum ICT needed to incorporated into the educational curriculum, in spite of this, the National Council for Curriculum & Assessment (NaCCa) and Ministry of Education (MOE) introduced the Common Core Programme (CCP) in September 2020. As a result, teachers and schools in pre tertiary are now expected to integrate ICT the new curriculum. This study focused on evaluating teachers' and schools' capacity to integrate technology in the new educational curriculum: e-capacity model approach. Both quantitative and qualitative research methodology were used. Simple Random sampling technique was used to sample 722 teachers from five circuits in the Hohoe Municipality. A self-designed questionnaires was used to gather data. In SPSS version 26.0, descriptive statistics were used to examine the data. The analysis's findings showed that teachers frequently use ICT to in their lesson's delivery. Additionally, it was noted that the schools lacked the necessary infrastructure and assistance to facilitate a seamless transition to the new curriculum. The study advised the government and other interested parties to assist schools by providing ICT infrastructure.

ACKNOWLEDGEMENTS

I wish to express my profound gratitude to all who in diverse ways assisted in the preparation of this paper, most especially Dr. Arthur Nyarko my supervisor, whose useful suggestions, critiques and recommendation guided me throughout the writing of this dissertation. In fact, this study wouldn't have been successful without him.

I also wish to acknowledge the love and support from all my course mate throughout the writing of this dissertation.

I say God richly bless you

DEDICATION

To my family.

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CHAPTER ONE

INTRODUCTION

Background to the Study

Information and communications technologies (ICTs) have been outlined severally from completely different views, ICT is defined as something that takes a human's sense or ability and enhances it and makes it more authoritative. It is now a vital part of learners' day-to-day lives within and outsides the confines of the classroom (Mack Zuckerberg, 2011). With ICTs, complex and difficult content has been made easy to understand, and again through group or collaborative learning experiences students grasp and master concepts with ease. As a result, current reforms in education demand teachers and the school to implement some sort of technology in the classroom by integrating it into the pedagogies during lessons. However, both the school and teachers find it difficult to do so due to inadequate ICT facilities in the schools (Ghavifekr, 2015) Additionally, scarcity continuous professional development for teachers is also considered a barrier to classroom implementation of such educational reforms. (Polikoff & Porter, 2014).

In accordance with United Nations Educational Scientific and Cultural Organization (UNESCO, 2015). ICT could be a scientific-techno engineering discipline and management skills utilized in managing processed data in programs and associating it with social, instructional and cultural aspects of life. Which is the combination of processed data and communicational technologies that will facilitate lecturers and students toward instructional coming up with and development (Manichander, 2016).

According to Shamim Talukder (2015), ICTs are the technologies that assists the user to get access to tons and tons of information easily through the interactions with mobile devices and advanced technologies. It encompasses the internet, public address systems, internet technologies like Mi-Fi, Wi-Fi, projectors, cellphones, and other mediums for communication. ICTs also include personal computers, operating systems and application software, storage devices and mediums, audio-visual media and custom-made software that gives user the chance to contact, search, transfer, and manage personal data.

Over time, there have been significant improvement in ICT development. Social media platforms which are used mainly for information dissemination are essential for learners. The growing trend of Web2.0 (Internet) has amplified the way knowledge is acquired is shared as compared to how information is transferred has been made simple as compared to the olden days (Voccia, 2011) management of expertise for environmental sustainability in the cloud computing era: The triangle of dichotomies, management of knowledge for development Journal. Information can now be shared globally because the internet has made the world a global community; pictures, videos and posts both motivational and educational thoughts can be easily shared, even including jobs adverts. With the evolution in technology, all the above-mentioned can be done by learners at any place at their own convenient time being it on smart devices like mobile phones, laptops, palmtops, iPads, tablets, or personal computers. From a broad perspective, social media platforms encompass; all web-based technologies like YouTube,

instant messaging services, personal blogs, micro-blogs such as Instagram, and social networking services (Facebook Messenger, and WhatsApp platform).

There is a surge belief that ICT increases the superiority of education and converts teaching-learning methodologies from being heavily teacher-dominated to being student-dominated, leading to increased learning for trainees, producing and permitting for an educational process that will bleed learners who are creative, innovative, improve their problem-solving skills, informational processing skills and their mode communication (Khan et al., 2015). ICTs are accepted in all corners of the world as a futuristic medium or strategies that teachers use to tweak their teaching methods to improves students' enabled learning and achievements. In a broader context, ICT covers digital information and electronic information storage, retrieval, manipulation, transmission, or reception. In fact, Information and Communication Technology broadens the entrée to education.

Through ICT, learners can study at anytime and anywhere. For instance, the online learning management systems can be accessed seven days a week, round-the-clock provided there is internet connectivity. Video conferencing platforms also allow both learner and teacher to engage in simultaneous interactions with ease and convenience in their comfort zones. Thus, the teaching-learning process no longer depends exclusively on classroom block approaches and hard copies of materials. The internet is a trustworthy source of limitless electronic resources that students can utilize to update their knowledge by watching videos, listening to podcasts, viewing visual presentations like PowerPoint presentations, and other methods (UNESCO,2013). ICT aids in the transformation of teacher-centered lessons

into learner-centered ones (Alemán and Castro, 2011). Therefore, ICTs provide both students and educators with numerous educational resources and opportunities. Likewise, instructors' Skill sets need to be strengthened for a successful ICT integration. The correct incorporation of ICT into the curricular depends on teachers' duties or roles when accessing teachers' technological competencies (Almadhour, 2010). This idea is undoubtedly supported in 2012 by (Hismanoglu,2012) who discovered that the prospective teachers having five ICT-related courses relevant to professional development displayed enhanced dispositions in contrast to those not complete this learning curve.

The National Council for Curriculum & Assessment (NaCCa) & Ministry of Education (MOE) in September 2020, introduced a new curriculum and assessment reform called, the Common Core Programme (CCP) to enhance effectiveness and relevance of the educational process in the pre-tertiary school curriculum (MOE,2020). The new curriculum included ICT as a subject.

According to the curriculum in the new reform (NaCCA, September, 2020), the justification for including information technology in this educational curriculum as a pedagogical and instruction aid is to deeply promote independent knowledge acquisition (education). It was:

1. enhance lesson delivery and learners' knowledge retention processes;
2. enhanced uniformity, excellence and speed in the teaching and learning processes;
3. increased chances for more learner-learning pedagogies;
4. upgraded inclusive gender education;

5. enhanced co-operation, creativity and higher-order critical thinking skills among learners;
6. enhanced elastic and distinguished method of teaching;

The adoption of Information and Communications technology as a means for education and formal instructions is to give students entry to enormous amounts of information via the internet. And also provides the outline for analysing information, examine geographical trends and associations. When learners research and come up with data, they then use ICT to process it into information, after which they can easily learn and comprehend. ICT integration allows learners to be introduced to a huge number of ICT tools. Examples such ICT tools are personal digital assistants, calculators, radios, cameras, phones, televisions and personal computers. It helps learners to be abreast with software like Mavis Beacon, Microsoft Encarta, the Office suite which contains Excel, PowerPoint from Microsoft Corporation which serve as teaching and learning aids. The introduction to using ICT for rubber-necking learning that students receive at the pre-tertiary level can boost their self-esteem and inspire them to utilize ICT in the near future, both inside and outside of formal schooling. Information and Communications Technology as an education and instruction tool is geared towards the enhancement in learners' level of competence in the Reading, wRiting, aRithmetic and cReativity (NaCCA & MOE, 2019).

The phrase "ICT inclusion in education" frequently denotes a digitally enabled method of learning and education that is intimately connected to the adoption of instructional resources in classrooms. The importance of ICT inclusion in schools, particularly in the classroom setting, cannot be overstated

because young children quickly become is comfortable with technology and perform much better in an environment that emphasizes technology. This is due to the fact that using ICT will result in successful learning with ICT elements and components supporting and assisting it (Jamieson-Procter et al., 2013). Nevertheless, when they are not limited by the curriculum and resources at their disposal, kids will benefit from ICT integration. Instead, individuals can participate in practical exercises in a technology-aided lessons that are pre-designed to assist them better understand the material.

In addition, it helps teachers create interesting teaching materials that will motivate learners to participate actively in their learning. According to earlier research, incorporating ICT into the classroom can increase student involvement and speed up instructions (Jamieson-Procter et al., 2013). Education might well be revolutionized by technology-based learning and teaching, but this would require rigorous planning and policy creation. The future approach must be understood by both policymakers and researchers on an equal footing. National ICT policies can serve a number of crucial goals (Dudeney, 2010). They help a nation's overall population as well as its instructors, parents, and pupils. ICTs offer a rationale, a list of goals, and an illustration of how educational institutions would function if ICTs were incorporated into the process of instruction and learning, national ICT policy can accomplish a number of significant goals. They benefit both the general populace of a country and its educators, parents, and students. They provide an explanation, a set of objectives, and an example of how educational institutions would function well if ICT were incorporated in the process of instruction and education. One of the main issues schools today face is a lack

of sufficient ICT resources, especially in rural regions. For instance, studies suggest that some schools in Kenya might only have a single personal computer in the office. Even in classrooms with personal computers, there are still a lot of students per computer.

Furthermore, they claim that parents' or the community's initiative helps schools use ICT infrastructure (Chapelle, 2011). Technical problems have become more prevalent causing frustration amongst staff members and pupils, as well as impeding instruction and education. If there isn't any technical help or repair, teachers can't use the personal computer for a while (Jamieson-Proctor et al., 2013). Because they won't get assistance with the issue, teachers won't use computers out of fear that the technology will break down. The study by Türel and Johnson (2012) found that technological issues are a great setback for teachers. Unreliable internet connectivity, computer virus attacks, as well as broken printers are some of these challenges. Instructors should be given training sessions to study more about incorporating ICT in the process of education and instructions. Peer tutoring programs, however, were used at many educational institutions. In order to prepare for teaching and learning, a teacher with more ICT experience would guide and mentor a teacher with less ICT experience. As was already said, a number of variables enable the incorporation of ICT for learning and instruction in classroom settings. ICT support policies should come first, followed by all the ICT tools plus software, and lastly an evaluation of the instructor’s readiness and capacity to incorporate them into the educational curriculum (Agbatogun, 2012).

Statement of the Problem

The government of Ghana implemented a new curriculum into the educational system in September 2020. The new curriculum was intended at addressing the gaps in the old curriculum and promoting teamwork, problem-solving and critical thinking, creativity and innovation, interpersonal development and leadership, communication and collaboration, cultural identity and global citizenship, and digital literacy skills acquisition (NaCCA, 2020).

In addition, the new curriculum seeks to improve the teaching and learning of all subjects, concentrating on learner-centered pedagogies and improving the use of ICT as a teaching tool while emphasizing pedagogies with a focus on equity and inclusion (GhanaWeb, 2019).

The Ministry of Education (MOE) in connection with the teacher unions in Ghana implemented the one-teacher one laptop policy to supply all teachers' laptops to help them integrate ICT into the new curriculum. The National Teaching Council (NTC) responsible for incising in the quest to help teachers integrate ICT into the new curriculum has been organizing online training for teachers regularly to abreast them with the needed ICT competence level to integrate technology into the new curriculum. Besides, the new curriculum has also attached high importance on the incorporation of ICT in all subject areas in Ghana (Moess, 2010).

Having done all these, it necessary that the teacher who is at the centre of the implementation of this curriculum, ought to have the capacity to integrate technology into education and instruction. Teachers' technology incorporation ability is inextricably tied to the success of the new curriculum.

The MOE and NTC need to have data on the level of teachers' capacity and readiness for ICT integration. This will provide stakeholders with the necessary information and knowledge gaps that need to be filled.

It is against this backdrop that this study seeks to evaluate teachers' and schools' capacity to integrate technology in the new education curriculum in Hohoe.

Purpose of the Study

This study sought to use the e-capacity model to evaluate teachers' and school's capacity to integrate technology in the New Education curriculum in the Hohoe Municipality

Specifically, the objective of this study sought to:

1. Investigate the competence level of teachers to integrate ICT into the new curriculum in the Hohoe Municipality.
2. Determine how frequently instructors in the Hohoe Municipality use ICT in the classroom setting.
3. Investigate the availability of ICT infrastructure in schools in the Hohoe Municipality.
4. Determine if there is continuous teachers' profession development to promotes teachers' ICT competencies.

Research Questions

The study addressed the following research questions:

1. What competencies do teachers possess to integrate ICT into the new curriculum in the Hohoe Municipality?
2. How frequently do instructors in the Hohoe Municipality use ICT in the classroom?

3. What ICT infrastructure exist in schools to support the inclusion of ICT in the new curriculum?
4. Do teachers go through Continuous Professional Development to promote Teacher' competencies?

Significance of the Study

The study is significant because it would provide in-depth knowledge on the competencies teachers possess to ICT into the curriculum. Which would lead to improvement in teaching pedagogies and practices that would make learners acquire knowledge, improve their information and recall abilities.

Again, the study is significant in the sense that its contribution would help the Ministry of Education (MOE) to formulate educational policies, set standards, and monitor and evaluate the frequency of ICT usage in the Ghana.

Practically speaking, the study's conclusions will shed light on the benefits and drawbacks of the existing implementation of ICT integration in the Ghanaian setting for ICT policy makers, school administrators, and the global research community.

Moreover, findings of the study would help the National Teaching Council (NTC) to make decision as to what continuous development courses to include in their training sessions for teachers in other to make them well equipped to use ICTs in the classroom setting and improve upon their ICT skills.

It would also be beneficial to National Council for Curriculum & Assessment (NaCCa) in the formulation of national curriculum and assessment standards for pre-tertiary education institutions and improve upon existing ones.

Delimitations

The study was restricted to only the circuits the Hohoe municipality. Again, the outcome may differ if other Private Basic schools are included in the study. A huge number of basic schools will be left out. The content will also be restricted only to a few aspects of technology.

Limitations

The results of this work cannot be generalized to all basic schools in Ghana because responders were from only five selected public basic schools in the Hohoe Municipality of Ghana, such schools were selected due to ease accessibility and busy schedules of teacher in schools and other factors. Furthermore, the time allotted was further limited because the research must be completed while studying for our final semester's exams.

Organization of the Study

The entire study was done in five chapters. The first chapter looked at the introduction of the study, statement of the problem, the objectives of the study, research questions, significance of the study, limitation, delimitation and how the study was organised.

A review of related literature on the study was addressed in chapter two, then the methodology used for the study was discussed in chapter three. It looked at the population and sample, sampling procedure, the research instruments, data collection techniques and the intervention. The outcomes

and findings of the study was discussed in chapter four. Finally, chapter five which is the last chapter dealt with the summary, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

Background of Education in Ghana

Ghana's educational system was first established in 1852; upon independence, it was modelled after the British systems and underwent a number of revisions. The first step to develop-formal education in Ghana were crafted during colonialism by a number of European merchants, comprising the Danes of Denmark, the Dutch of Germany, and the English of England. Businessmen from Europe and Christian protestant started educational institutions midst of the eighteenth century to combat the high illiteracy levels as well as to share the word of God with the local community. A six-year basic instruction, junior secondary educational system of a three-year period, a three-year senior cycle educational system, and a four-year of college study make up the current structure of Ghana's educational system, which starts at age six (MOE,2013).

Moreover, students who pass their summative assessment at the senior cycle level (West African Secondary School Certificate Examination), may also enrol in programmes at a technical college, a teachers' training institution, or other higher educational institutions. Directions given by Mr. John Agyekum Kuffour, then leader and the flag bearer of the New Patriotic Party (NPP) transformed senior secondary instructions from a three-year system to a four-year system in 2000. The National Democratic Congress (NDC), however, reformed the educational system at the basic level back to three years after the 2008 change in governance. This work focuses on all educational sectors with regard to the various educational institutions in Ghana

and specifically concentrates its argument toward Senior High School Education. After several years, a number of educational reforms have emerged with the motive of bringing to light long-term answers to issues relating to Ghana's educational system. Such as, the duration students should spend at a second cycle institution has not always been fixed. (MOE,2013).

The second cycle institution was four years long during Ignatius Kutu Acheampong's National Redemption Council in1974. However, this time of second cycle education was changed from four years to three years by the Provisional National Defence Council in 1987. But the New Patriotic Party upon regaining power in 2000 reverted the decision back to a four-year secondary education, which was later changed again to the three-year system under the NDC from 2009 to the present days. The Ghanaian educational system has struggled with the problem of how long learners should remain in senior high school. Government officials do not, however, choose how long students should study at the second cycle level. (Adu-Gyamfi, Donkoh & Addo et al., 2016).

Education become a primary focus after Ghana gained independence, past administrations made education an imperative, making a number of reforms in an effort to find a model that would meet the country's aspirations and demands (MacBeath, 2010). The Junior High School (JHS) previously called Junior Secondary School was made up of a three-year post primary education. Which was a transitional period from basic to second cycle education. Which focused on the introduction of learners to elementary scientific and technical related pedagogies plus lifelong skills preparing them for progressive academic upliftment and mastery of pre-technical and pre-

vocational skills at the intermediary level. Subjects like English and Ghanaian Languages, Arithmetic, Social Studies, Pre-Technical and vocational skills, General and Agricultural Sciences, Religious and Moral Education were studies. Learners in the final year of all junior high education in Ghana are examined by the Basic Education Certificate Examination in order to select students who are qualified to go ahead with their level of education in the Second Cycle Education (Inkoom, 2012).

The introduction of Tertiary Education in country by the British dates back to 1948, following the advisory of the Royal Commission a commission formed by Oxford in collaboration with Cambridge universities, the University College of Gold Coast in the central Region of the country was established. Undergraduate, graduate, certificate in diploma programs was offered at the University level as well as other academic and professional disciplines. Currently many public universities exist in Ghana. University of Ghana at Legon-Accra, Kwame Nkrumah University of Science and Technology in the garden city of the country popularly known as KNUST, The Cape Coast University in the Central Region of Ghana (UCC), University of Education at Winneba, University of Development Studies (UDS)-Tamale, Ghana Institute of Management and Public Administration-GIMPA at Accra as well as Tarkwa University of Mines and Technology, (Akyeampong, 2010).

New Educational Curriculum in Ghana

In September 2020, the National Council for Curriculum & Assessment (NaCCa) of the Ministry of Education (MOE) introduced a new curriculum and assessment reform that is, the Common Core Programme (CCP) to enhance the level of quality and relevance of instructional experience

at the pre-tertiary school curriculum by integrating ICT into the curriculum. The curriculum focuses on character building and values nurturing, most importantly, ensuring seamless progression for all learners from Pre-Senior High School and creating a pathway for academic and career development. The adoption of Information and Communications technology as a tool for education and instruction is to provide learners entrée to enormous amounts of data and information via the internet. And also provides the outline for analysing information, examine geographical trends and associations. When learners research and come up with data, they then use ICT to process it into information, after which they can easily learn and comprehend. ICT integration allows learners to be introduced to a huge number of ICT tools. (NaCCA, September, 2020)

ICTs include personal digital assistants, calculators, radios, cameras, phones, televisions and personal computers. It helps learners to be abreast with software like Mavis Beacon, Microsoft Encarta, the Office suite which contains Excel, PowerPoint from Microsoft Corporation serves as instruments for instruction and education. The introduction to using ICT for rubber-necking education that students receive at the pre-tertiary stage can boost their self-esteem and inspire them to utilize ICT in the coming years, both within and outside of formal education. Information and Communications Technology as a teaching and learning tool is geared towards the enhancement in learners' level of competence in the Reading, wRiting, aRithmetic and cReativity (NaCCA, September, 2020)

Among the 12 key educational reforms of the new educational curriculum include the integration of ICT into education reforms which aims to improve

professional development and advanced education through technology-based training, equip pre-tertiary learners with ICT skills, ignite ICTs into education management, build early desires as well as competencies in children to use ICT. (MOE, 2019).

Integration of Technology in Schools

Information and communication technology (ICT) continue to have an enormous influence on all facets of our life, including the learning setting. There are many reform programs in motion that aim to integrate ICT into educational systems. Most people agree that teachers are the main force behind any reform in education. In spite of this, the Ministry of Education carried out a number of ICT training programs to help instructors become proficient at integrating ICT into the curriculum (Ministry of Education, 2020).

The incorporation of ICT in schools entails a long-term, sustainable strategy that supports student learning in addition to the use of technology during instructions. With how the integration process might contribute to student learning becoming increasingly important in technology integration, it is quite a struggle to comprehend and implement a complex, multi-dimensional, dynamic process like technology integration in schools (Shaw et al., 2018).

In an effort to uncover solutions to support Palestinian secondary schools in efficiently integrating technology into teaching, Barham (2014) concluded that technology integration in Palestinian schools is still geared toward a traditional approach. Principals that are able to implement

technology in their schools should conduct themselves in a supervisory role (Demski, 2012).

Pedagogical activities should be supported by learning technologies in fun ways that would not be possible otherwise. Learning activities should satisfy instructional goals and incorporate technology when it improves learning rather than placing a heavy emphasis on it. Instead of seeing integration as largely curricular, educators may view it as technical (Hutchison & Reinking, 2011). Nonetheless, learning and the curricula could perhaps take precedence over technology.

There are different models which have been developed to allow for integration of technology in schools such as the Generic Model of Pedagogy, Social Interaction and Technology, the E-Capacity Model and the Concentric Ring Model and these entail integration from different perspectives (Shaw et al., 2018). In this study, by using the E-capacity model approach we will be evaluating the capacity of schools and teachers to integrate technology as part of the new education curriculum in the Hohoe Municipality.

E-Capacity Model Approach

The e-capacity model was invented by Vanderlinde and vanBraak (see Figure 1). (2010) It represents the potential for a school to establish and enhance livable conditions for students and teachers in order to use ICT effectively to affect change (p.3). As seen in Figure 1, this model is composed of several layers, each of which is depicted by a different circle and is embedded in a larger social and political framework (macro level). These rings show that ICT needs to be integrated into several areas (Vanderlinde & Braak, 2010)

The e-capacity model was created with the goal of enhancing schools, and the outer circle of the model includes three aspects that help schools innovate: connections between teachers on a professional level, leadership, and decision-making (Vanderlinde & vanBraak, 2010).

The second circle is made up of school-level circumstances. This relates to the school's ICT infrastructure, policy, coordination, and support, as well as the institution's goal for ICT integration. Third-circle circumstances comprise the instructors' professional growth and ICT competencies and the first component, namely the ICT support (Vanderlinde & Vanbraak, 2010). The fourth circle demonstrates how teachers employ ICT during class sessions in numerous ways, including as a fundamental tool, a teaching aid, and/or a source of information. ICT inclusion in the curriculum and the use of it as a resource for educational innovation, there are two main areas of concentration. This indicates that the model's central idea has a broad scope because it deals with how ICT affects the teaching and learning processes (Vanderlinde & vanbraak, 2010). The fact that more and more digital competencies are expected of both students and teachers is one effect that has previously been mentioned (Karsenti & Fievez, 2013).

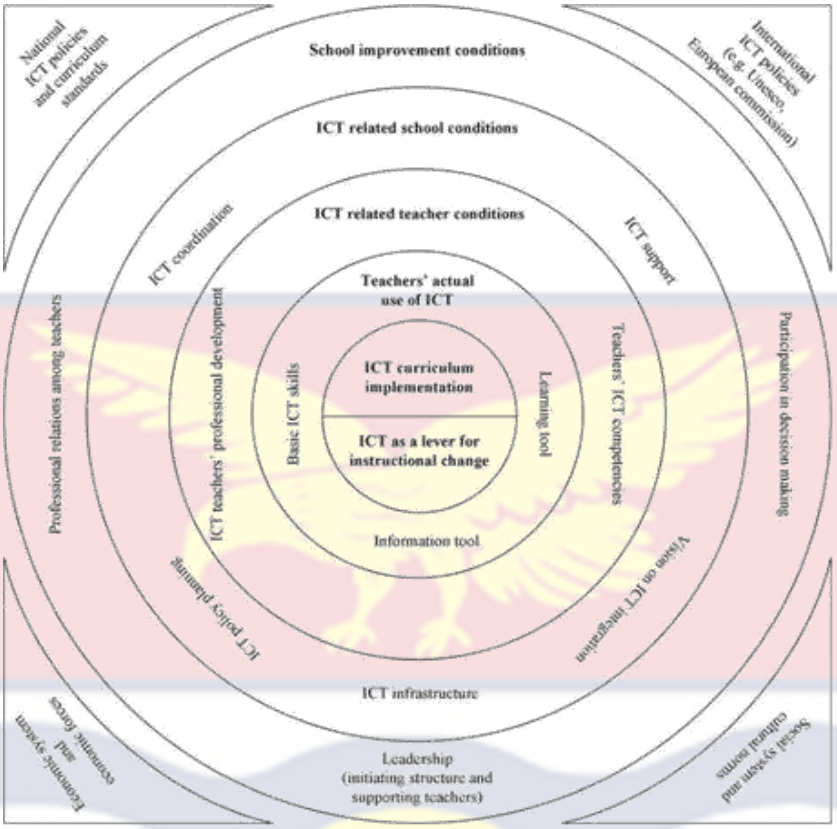

Figure 1: E-Capacity Model

The different layers of the E-Capacity model are described below:

School Improvement Conditions

The variables recommended in the school improvement resource as being favorable for the successful improvement of innovative reform make up the first layer of the e-capacity model.

Leadership

In this regard, many countries have lately enacted educational policies that primarily rely on ICT usage in classrooms. Spain and Galicia began adopting the one-to-one idea in 2010. In other words, on a technological level, a sizable number of classrooms from diverse universities are contributing to that endeavor. The process of incorporating ICT in educational settings involves a variety of factors. However, the function of the ICT coordinator is crucial (Tondeur, Newhouse &Cooper, 2010). As a facilitator or "change

agent," the ICT coordinator appears to be a crucial position that can transform a school (Devolder, Vanderlinde, vanbraak, & Tondeur, 2010). Therefore, it may be suggested that a proper investigation of this role is required.

ICT planners must meet instructors' expectations for both pedagogical and technical activities, such as equipment upkeep. They must take the initiative in collaboration with their universities to improve students' digital literacy throughout the academic experience. With the view of enhancing staff growth in the use of ICT, they also have a duty to offer instructors appropriate and contextualized training (Valverde & Sosa-Daz, 2014).

The administration's lack of support runs counter to the findings of a significant body of research that highlights the significance of the ICT coordinator's leadership in the ICT implementation in schools (Devolder et al, 2010; Rodrguez- Valverde & Sosa-Daz, 2014), coupled with the support that they provide to instructors in other for them to resolve these issues (Tondeur et al., 2010).

Participation in Decision Making

Schools and other educational institutions must take into account integrating ICT into their curricula as part of this effort to educate pupils for life in "a knowledge - based society" (Ghavifekr, Afshari & Salleh, 2012). Instructors are seen as the key players in integrating ICT into routine educational environments and preparing students for the emerging digital environment. This is due to ICT's capacity to offer an engaging and dynamic teaching-learning environment (Arnseth & Hatlevik, 2012). A teacher with greater ICT expertise would support and mentor a teacher with less ICT expertise as they prepared for teaching and learning. As was previously said, a

variety of elements make it possible to employ ICT for teaching and learning in classroom settings. Start with the policy, add all the ICT hardware and software, and then evaluate the teacher's readiness and ability to incorporate it into the curriculum (Agbatogun, 2012). According to Winzenried, Dalgarno, and Tinkler (2010) claim that instructors who already have undergone an ICT course are much more competent using technology in their classrooms than those who have not. Teachers in Ireland's reputed school avoided using ICT if they didn't receive sufficient confidence.

Collegiality

The collegiality and collaborative efforts of teachers is essential for innovation and changes in the educational system such as ICT integration. Of course, in practice, recent research (Walsh, Bradshaw, & Twining, 2011) has emphasized the importance of practice-based informal learning networks for instructors' ongoing professional development as well as the usefulness of unofficial components, such as inclusiveness, for cultivating mutual recognition teaching among introductory and qualified teachers (Twining, & Walsh, 2011).

Other studies have emphasized the necessity of help at all levels within an organization while bolstering the value of collaborative learning for career development (Schulz-Zander & Eickelmann, 2010).

ICT Related School Conditions

ICT-related school conditions comprise the second layer of the e-capacity model, and Integration of ICT should place a strong emphasis on these factors. The process of integrating ICT in teaching and learning is

impacted by a variety of organisational factors or local situations, and the following conditions were among those noted in the e-capacity model:

1. ICT Support.
2. ICT Coordination
3. The Schools' Vision of ICT Integration
4. ICT policy planning.
5. ICT Infrastructure

ICT Support

Lack of appropriate ICT resources, particularly in rural areas, is one of the biggest problems that institutions are currently facing. For instance, according to research findings, some schools may just have one computer in the office. Even in classrooms with computers, there are still a lot of students per computer (Chapelle, 2011). Technical issues have become more prevalent in most schools, frustrating students and teachers and interfering with the teaching and learning process. If there isn't any technical help or repair, teachers can't use the computers for a while (Jamieson-Proctor,2013).

Because they won't get assistance with the issue, teachers won't use computers out of fear that the technology will break down. The study by Türel and Johnson (2012) found that technological issues are a major barrier for teachers. Poor connectivity, virus attacks, and broken printers are some of these problems. Although there are a few exceptions, schools in countries like Malta, the UK, and the Netherlands have recognized the usefulness of technical support for assisting instructors use ICT in teaching (Wang & Yang, 2012).

ICT Coordination

Research that has sought to define the responsibilities of ICT coordinators in the classroom (Devolder et al., 2010; Valverde and Sosa-Daz, 2014), suggest that the degree of educational leadership as well as the support of ICT coordinators are both necessary for ICT integration to be successful in schools (Tondeur et al., 2010). The elements that promote the use of ICT in the classroom are the most crucial, and they are also the simplest since they are created to meet the conventional function of the instructor (Pozuelos-Estrada, & León-Jariego, 2014). ICT administrators at the school have a number of duties that affect how kids are taught and how they learn. As per Devolder et al. (2010), the ICT coordinator frequently assigns numerous, difficult, and demanding tasks, so only a select number can be completed in practice.

The Schools' Vision of ICT Integration

In order to meet these problems, the school is expected to give kids and teens the skills they'll need in the future, to consider informal learning methods, to use digital technology, and new pedagogical techniques (European Union, 2010). However, schools have not been able to overcome all of these obstacles: For instance, despite its widespread use in other aspects of society and the workplace, digital technology has not yet been used much in education (EU 2013; Livingstone 2012); students do not develop the necessary skills at school to pursue university courses (such as cooperation, making plans, learner autonomy, digital literacy, or starting to work with expertise) (Hautamäki et al. 2012; Kiili 2012; Lundahl et al. 2010).

The majority of studies on education focus on the use and effectiveness of ICTs in classrooms, with this century's rapid increase in Inclusive growth leading to countless renovations and having an impact on community involvement. ICTs and e-learning are effectively included into the curriculum as part of a revamping process with the aim of supplying and supporting learners with knowledge of certain subject areas in an effort to increase and improve significant learning (Moila & Makgato, 2014).

ICT Policy Planning

According to this paradigm, a number of issues, including Legislation and policy, infrastructures, educational resources, training for teachers, curricula, and evaluation, have an impact on ICT in education (Tay, Lim, & Lim, 2015). In the same context, Tairab et al., 2016 showed that ICT policy is one of the key elements that can propel educational advancement in Sudan's K–12 system.

ICT has the power to revolutionize education, especially in developing nations where it can help advance educational advancement. Future planning and ongoing efforts are required for this development (Price, 2015), However, there are differences in how infrastructure, curricula, capacity building, and the use of ICT in schools are undertaken in poor nations, notably in sub-Saharan countries (Mominó & Carrere, 2016).

ICT Infrastructure

ICT infrastructure provides an educational atmosphere that nurtures independent thought, teamwork, and problem-solving amongst learners (Kimanzi, Bwire, & Miima, 2018). In other to use ICT infrastructure in teaching and learning, different nations have tried to create national policies

that will steer and guide the integration of ICT into social and educational programs (Hallissy, Butler, Hurley, & Marshall, 2013).

ICT infrastructure use in instructions is still in its early phases in Africa, and the vast of the continent's nations run the risk of falling behind in the case of technological development due to various their slow pace of integrating ICT into their educational systems (Lloyd, 2020). According to Tondeur, Krug, Bill, Smulders, and Zhu (2015) the process of designing instructions, the choice of resources and techniques to design and implement a design, evaluations of designs, the efficiency of working as a team, and the use of technology to push the improvement and delivery of lessons are just a few of the aspects of the application of ICT in instruction that could be considered.

ICT Related Teacher Conditions

It was discovered that teachers' usage of computers for communication and lesson planning is being impacted by the pedagogic, technological, and monetary support provided by the school. Ohya and his colleagues discovered that the attitudes of Mongolian primary school leaders toward the use of ICT in educational activities are influenced by teacher cooperation and ICT resources (Takada, & Luvsandash, 2017).

ICT Teachers' Professional Development

It is important to implement ICT in educational systems methodically using diffusion theories based on evidence (Kozma and Vota, 2014). Online seminars can be an efficient approach to deliver teachers' professional development by allowing instructors to learn in an asynchronously fashion, considering instructors' hectic schedules and locally limited learning materials (Fishman et al., 2013). Again, ICT may offer students incredibly engaging and

pertinent learning opportunities when imaginatively utilised by teachers in their instructional activities (U.S. Department of Education, 2016).

But using ICT to assist instructional practices and classroom practices effectively is still difficult (Wilson, 2013). Traditional teacher certification and professional development programs do not provide instructors with the information and skills necessary to successfully incorporate ICT into their teaching practices (U.S. Department of Education, 2016). In view of Scheerens (2010), professional learning for teachers is based on a performance-oriented study of the literature that highlights the importance of continuing education for educational quality.

Professional development, according to Blocher, Armfield, Sujo-Montes, Tucker, and Willis (2011), had a positive influence on teachers' application of technology, and study suggested that professional development has a large effect on technology integration. Professional development has a significant influence on teacher judgments of the benefits of incorporating technology along with their self-confidence, though not on technological use but instructors' self-efficacy, according to Hur, Shannon, and Wolf (2016). Almadhour (2010) emphasized the importance of teachers' ICT abilities and advised that, in order to effectively integrate ICT into the curriculum, teachers' ICT skills should be enhanced. This assertion is unmistakably backed by a recent empirical study by Hismanoglu (2012), who found that prospective teachers who had taken five ICT-related courses exhibited better attitudes than those who had not gone through this training period.

The use of ICT in the classroom, as already mentioned, brings about a lot of changes and calls for new teacher competencies (Karsenti & Fievez,

2013; Ocak & Baran, 2019). The professional development of teachers is one of the requirements from the third circle of the e-capacity model to ensure effective ICT transition (Vanderlinde & van Braak, 2010). Teachers' ought to devote enough time to this to learn about technology (Burden et al., 2012 To successfully integrate technology into classroom practice, however, instructors utilize goal-oriented professional need development, according to research (Ferguson & Oigara, 2017), and they also make sure that ICTs are used in pedagogically sound ways (Geer, White, Zeegers & Barnes, 2017).

Teachers' ICT Competence

ICT competencies are a collection of knowledge, abilities, and attitudes required for the integrated and effective use of ICT in a learning environment (Vanderlinde & van Braak, 2010, p. 546). According to research, teachers always focus on technology launching software or whiteboards or double-checking the connection of tablets) (Ocak & Baran, 2019). When Karsenti and Fievez (2013) discuss digital capabilities, they do not, however, mean technological features, but rather didactic-pedagogical ones. They argue that it has to do with how teachers employ technology tools in the classroom. Many theorists stress classroom management. Dillenbourg (2012) referred to this as "classroom orchestration." Teachers should use technology to manage a variety of tasks when instructing students, including maintaining discipline, paying attention to what they must learn and how they will acquire it, accounting for the passage of time, etc (ICLS NAPLeS, 2012).

Ability, aptitude, competence, efficacy, and capabilities are all synonyms for competency. It suggests specific abilities and activities that people can engage in (Allan, 2011). Information literacy improves students'

skills in analyzing, managing, and utilizing information, according to Ogunlana et al. (2013). It is currently regarded as a crucial skill that all teachers must master. In order to adapt to the digital age, ICT competency is now given top emphasis in every area of life. According to Ofoegbu and Uche (2013), using ICT to enhance instruction has the potential to help present information in a variety of ways, boost learners' confidence in the learning process, help them effectively communicate in any situation, help them become autonomous learners and excellent beginners, help them communicate more effectively, and help them develop stronger problem-solving and skills for critical thinking.

Teachers' Actual Use of ICT

The e-capacity model considers teachers' actual use of ICT, with instructors' ICT use taken into account as an additional intermediary layer or continuous variable. That is, the actual use of ICT by teachers is considered as a predictor variable. Lots of studies have shown that the type and effectiveness of teachers' ICT skills included in their teacher education programmes have a significant impact on teachers' acceptance of ICT (Agyei & Voogt, 2011). However, research have revealed that both younger instructors and trainees' underuse ICT (Tondeur,2011). It is evident from the literature that instructors' use of ICT in the classroom differs from what student teachers are taught in schools (Ottenbreit-Leftwich, Glazewski, Newby & Ertmer, 2010). Research shows that new teachers are ill-equipped to use technology into their instruction (Sang, Valcke, van Braak and Tondeur, 2010).

Teachers' Roles, Perceptions and Barriers to Using Technology

The level of instructors' faith in and are confident about integrating technology is a major factor in resource and access limits (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, 2012). However, the researchers of the same study contended that more training and expertise should be produced in order to shift attitudes and beliefs in order to absorb technology, rather than more work being placed into reducing first-order (the outside) constraints. Researchers Wong (2015) and Russell (2012) discovered that teachers' perceptions of the value of using technology to accomplish predetermined goals had an impact on how they used technology in their lessons. Many instructors want to use technology in their instructional strategies, but they lack the motivation and expertise to do so (Aslan & Zhu, 2015; Kimmons & Hall, 2016); Mishra & Koehler, 2006; Vatanartiran and also Karadeniz, 2015).

Refusal and lack of self-confidence are two traits that determine how well technology is implemented into the educational system, according to Alkhawaldeh & Menchaca (2014). Kim et al (2013), Lee, Spector, & DeMeester (2013) noted that instructors' opinions of effective teaching strategies were influenced by their tactics for integrating technology. If teachers are knowledgeable about integrating technology in the classroom, their degree of ICT use will increase (Kim et al., 2013).

In addition, internal impediments to integrating technology include teachers' ignorance of new technologies and their reliance on conventional teaching methods (Prasojo et al., 2019). On the other side, Kilinc, Tarman, and Aydin (2018) discovered that in-service instructors believed that a lack of technology, access, and managerial and technical assistance were the main

obstacles to integrating technology. Teachers sometimes find themselves unable to apply their newly acquired information since ICT integration training places more of an emphasis on teaching techniques and expertise than on how to add technology, pedagogy, and content. If teachers want to find a legitimate purpose for incorporating technology into the classroom, they must understand how to integrate the usage of technology into educational contexts and create a learner-centered educational environment for their field of study.

Advantages and Disadvantages of ICT in Education

ICT today permeates educational settings and is essential to the success of education in the twenty-first century. ICT improves the way that learning is done as well as how educational institutions are run. In both developed and developing countries, technologies are a major driving force behind much of the progress and innovation. ICT is regarded as being widely used in postsecondary learning (UNESCO, 2002). ICTs are used in a variety of contexts, including the development and giving of talks and presentations, academic enquiry, administrative assistance, and student enrollment. They are also used for developing course materials, sharing content, and communicating with students, teachers, and outside world (Mandal & Mete, 2012). It also improves the global scope of educational services since learners may use ICT to search out the information they need in their profession, and the information they get is not just in Persian but also in English (Khaleghi, 2010).

Additionally, the usage of visual materials in the classroom as part of technology integration in education promotes student engagement in class activities that allow them focus in class (Shaymlee & Phil, 2012). Educators

will be able to deliver rich visual content that replicates real-life situations as a result of integrating technology into the teaching process. This helps to hold students' attention throughout listening and speaking. Additionally, students can participate more fully in their education and maintain contact with their professors and classmates outside of the classroom (Rideout, 2012). However, a few more teachers worry that students might become more reliant on technology rather than seeking out their own answers to inquiries (Kemp et al., 2014). These worries can be allayed if teachers are aware that technology is used to support teaching and not to take the place of them as the class's teacher (Shyamlee & Phil, 2012).

One disadvantage of incorporating technology into school is that students' writing habits will be negatively impacted. Most pupils will write in text language rather than using sentence structures that is grammatically acceptable. There are also some unfavorable problems now. Some claim that writing has deteriorated, whether (Shyamlee & Phil, 2012; Rideout, 2012). According to research done in 2011 on elementary, secondary, and collegiate students by Kemp et al. (2014), texting does in fact have an impact on how youngsters and adults use language and punctuation. The study does point out that not all participants adhere to grammatical norms, however, since some do so to save time and effort or for social texting purposes. Additionally, there are worries that the widespread use of technology has caused pupils to become less attentive during face-to-face interactions. According to Shyamlee and Phil (2012), excessive technology use would result in less engagement between both students and teachers. Additionally, Shyamlee and Phil (2012) contend that if technology is exclusively used in the classroom for visual displays, kids

may gradually lose practice speaking verbally and risk social isolation in the classroom. In addition to teaching academic subjects, schools also help children learn how to fit in with their classmates and the rest of the school community. If there is an excessive reliance on technology, this will be negatively impacted (Ernst & Moye, 2013). He makes it clear that in in addition to academic disciplines, schools also educate kids social skills that help them blend in with their classmates and the decent school community.

CHAPTER THREE

RESEARCH METHODS

This chapter describes the methods used in the study. The chapter explains the research design, the population, sample population instrument for data collection, data collection procedure and the data processing and analysis. It also describes how ethical issues were handled.

Research Design

In order to evaluate how well teachers and schools in the Hohoe Municipality might incorporate ICT into their new curricula, the researcher used a descriptive research approach. A research design or research strategy is a plan for addressing a number of topics (McCombes, 2019). It is a structure that outlines the strategies and steps for data collection, analysis, and interpretation. In other words, a critical component of this plan is the descriptive research, which describes how the researcher would address the major study subject. The study design will influence the type of data collected and, as the findings. The research design determines the other characteristics of a study, such as parameters, assumptions, experimentation, methodologies, and scientific analyses (Creswell et al., 2018). Again, a mixed methodology was utilized; though many writers have chosen to use the phrase mixed methods, other terms like integrating, multi-method, or mixed methodology have been used to describe this type of data collecting (Tashakkori & Teddlie, 2010). In the 1980s, research in sociology, education, management, and health sciences all adopted the mixed methods approach. It has undergone several stages of procedural improvement and discussion. It was selected because of its ability to combine qualitative and quantitative approaches while

minimizing their drawbacks. When conducting research, it offers a "sophisticated, complex method that appeals to individuals at the vanguard of new research techniques" (Creswell, 2013).

In educational research, the mixed methods approach has become increasingly popular during the past few years among scholars (Bryman, 2006; 2012). According to Creswell (2009), a mixed - method approach has the advantage for acquiring, examining, and combining both quantitative and qualitative data in a single study. Numerous academics, most notably Creswell (2013), claim that this method is effective at assimilating both quantitative and qualitative data and that it may also be used to fill in gaps in the literature (Flick et al, 2004; Robson, 2011)

A mixed methods approach has the benefit of being able to handle research issues that each method by itself would not have been able to fully handle. The researcher can concurrently respond to confirmatory and exploratory questions while also validating and developing theory in the study by using a mixed methods technique (Rajab, 2013, p. 76). In a guidebook published in 2003 by Tashakkori and Teddlie, the use of a mixed methods approach in the social sciences is well covered. Many journals now emphasize the use of this methodology, following in their footsteps, including the International Journal of Multiple Research Approaches, the Journal of Mixed Methods Research, and Field Methods (Creswell, 2013). According to Creswell & Clark (2018), after a study has been designed and while using a mixed methods approach, specific procedures must be taken. The first step in doing this is gathering the necessary quantitative and qualitative data. In order to respond to the survey questions, the study then analyzes this data. The

results of the analysis are integrated using the rationale chosen for the study after the data have been analyzed.

Ultimately, they use the selected theory to frame the results. There are two purposes for doing mixed methods research. It is possible for two sets of data to be additive or complimentary to one another. One technique function as an additional to the other when this is employed in a supplemental manner. However, if they work in tandem, one strategy can compensate for the drawbacks of the other (Cohen et al., 2018). The researcher should ascertain the purpose for which they require a second method. This study chose quantitative information to complement the qualitative information.

Data from the questionnaire were utilized to verify and confirm the interview findings. It was determined that this study would stand to gain from relevant information to replenish the qualitative findings in order to evaluate teachers' and schools' capacity to integrate ICT into the new educational curriculum after carefully examining the research questions and considering if one scientific method would be sufficient to answer them. To investigate and comprehend social groups or individuals in particular circumstances or places, a qualitative technique might be employed. Data are gathered in formal or casual social contexts. Reports are then created using adaptable formats after being subjected to themes analysis and the researcher's interpretation of the information. Researchers that employ this approach are interested in studies that value an exploratory approach, an emphasis on personal significance, and the significance of accurately depicting the diversity of a topic (Creswell, 2013).

To gain a deeper understanding of the sample instructors' viewpoints and sentiments, qualitative semi-structured interviews were included. This guaranteed that a lot of time was spent with them. The researcher also had the chance to meet and listen to my instructor sample by using semi-structured interviews as a method of acquiring qualitative data. As a result, the researcher was better able to comprehend their thoughts and feelings. Quantitative techniques by themselves could not provide me that information. The use of qualitative approaches makes up for the fact that the voices of respondents are not audible in quantitative methods (Creswell & Clark, 2018, p. 12).

The research design entailed the dissemination of a questionnaire through the use of the Internet, with the perception to reach teachers in the Municipality. The next step was to schedule first interviews with School Improvement Support Officer (SISOs) from all the circuits in the Municipality during the same period as the distribution of the questionnaires. brief follow-up conversations. To assess how well instructors and schools could incorporate ICT into the new curriculum, follow-up data were gathered. Quantitative data was used to complement and corroborate the research results throughout the interpretation phase. Parallel design is now known as convergent design, according to Creswell & Clark (2018). The reason for the name change is that the results of the two techniques are compared not just side by side and again after being individually examined. In order to provide a result with a deeper grasp of the research topic, the methodology's goal is to achieve so. Furthermore, it can confirm the findings and enable cross-referencing.

Study Area

One of the 25 administrative districts in Ghana's Volta Region is Hohoe Municipality. It was separated from the previous Kpando District. The Legislative Instrument (L.I. 2072) of 2012 created it. A total of 1,172 km2 of land makes up the Municipality, or 5.6% of the total land area in the area. Hohoe is a city is located at Ghana with the gps coordinates of 7° 9' 6.6636" N and 0° 28' 25.7844" E. Its eastern border, which is part of Ghana's international border, is shared with the Republic of Togo; its southeast and southwest borders, the Afadzato district and Kpando Municipality; its northern border, the Jasikan district; and its northwest border, the Biakoye districts. Hohoe, the nation's capital, is located 78 kilometers from Ho, the regional capital, and 220 kilometers from Accra.

According to the 2021 Population and Housing Census, Hohoe Municipality has 114,472 residents, or 8.9% of the entire population of the Volta Region. There are 54,893 men and 59,579 women in it. Major Areas in Hohoe includes Alavanyo Dzogbedze, Alavanyo-Deme, Alavanyo Agorme, Alavanyo-Kpeme, Alavanyo Wudidi, Alavanyo-Agorxoe, Alavanyo-Abehenase, Gbi-Bla, Gbi-Kpeme, Gbi Godenu Gbi-Abansi, Gbi-Wegbe, Gbi-Kpoeta, Gbi-Atabu, Gbi-Kledzo, Gborxome, Blave, Kitikpa, Lowcost, Segbedenu, Fodome and Torkorni (GhanaWeb,2022). When fully developed, the tourist potential of the Hohoe Municipality has the potential to completely revolutionize both its economy and its entire contribution to national GDP. It is one of the most significant tourist destinations in the nation due to its stunning landscapes and abundance of eco-tourism destinations.

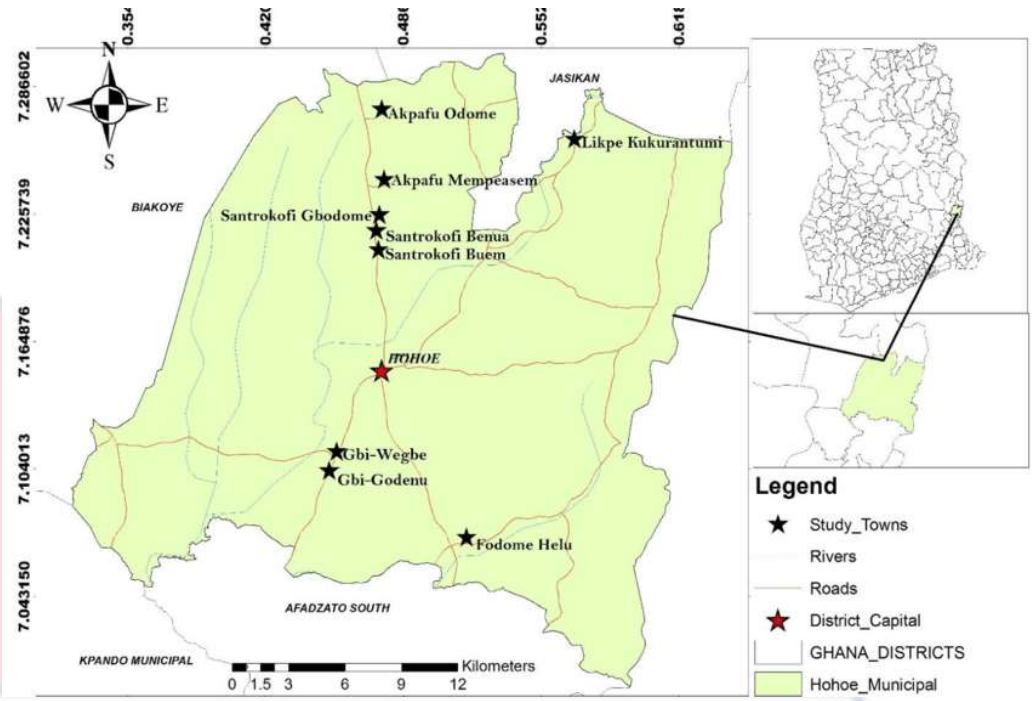

Figure 2: Map of Hohoe Municipality

Population

The population research work has been defined by many researchers in a variety of ways. Population, according to Popoola (2011), is the whole of the items or items that make up the study universe. It is the total number of large human settlements of people in a specific geographical region, such as the population of a country, according to Adeniyi et al. (2011). It is generally relevant to the entire target audience of the study as outlined by its aims and objectives. The definitions offered by the academics above are ones we concur with. However, when we refer to the population of a research, we mean the full set of items that are present in the area that a researcher is aiming to study, regardless of whether they are people, objects, materials, or other things.

The population for this study comprised teachers from all 62 Junior high schools in the Hohoe Municipality which is divided into four districts. Hohoe West, Hohoe East, Hohoe Central and Hohoe North. There are 1,322 teachers.

However, the accessible population consisted of 722 teachers from the five circuits in municipality using simple random sampling.

Table 1: Summary of Accessible Population

SN	Circuit	Teachers' population
1	Hohoe East	295
2	Hohoe West	283
3	Gbi South	261
4	Fodome/Wli	266
5	Alavanyo	217
	Total	1,322

Source: Field Data, MOE, 2022.

Sample and Sampling Procedure

According to Kindy et al. (2016), sampling is the process of selecting subjects for a study. Kothari defines sample size in Njoya (2017) as the quantity of objects that must be chosen from the population in order to create a sample. The two major types of sampling procedures are non-probability sampling techniques and probability sampling methods (Alvi, 2016). The techniques used were probability sampling and straightforward random sampling. According to Cooper and Schindler (2014), every item or person in the population has an equal chance of being chosen in a simple random selection. Sampling is not a strategy or methodology of information collection, but it did ensure that whatever approach was used helped in getting data from a smaller group that fairly reflected the population at large.

The study's sample consisted of the junior high schools' teachers in the five circuits in Hohoe Municipality. The study's sample was chosen using a process called simple random sampling. A total of 722 teachers were chosen

using simple random sampling. Table 2 below shows the sample size from each circuit.

Table 2: Sample Size Distribution for the Selected Teachers in the five circuits

SN	Circuit	Teachers' Population	Sample Size
1	Hohoe East	295	130
2	Hohoe West	283	128
3	Gbi South	261	204
4	Fodome/Wli	266	130
5	Alavanyo	217	130
	TOTAL	1,322	722

Source: Field Data, MOE, 2022.

In other to project the identities of respondents' pseudonyms were used. Table 3 below lists the School Improvement Support Officers (SISOs) of the various circuits in the municipality, sample detailing all the participants who were interviewed to collect data.

Table 3: Sample Size Distribution for the participants who were interviewed

SN	Name of SISO	Working Experience
1	Prince	15
2	Godswill	12
3	Joyce	13
4	Emmanuel	20
5	Grace	10

Source: Field Data, MOE, 2022.

Data Collection Instruments

Data collection is the systematic procedure of collecting and analyzing information on pertinent factors in order to answer particular research questions, test hypotheses, and evaluate outcomes (Mohammed,2016). This

study used a self-created questionnaire and interview guide to gather data from respondents.

Questionnaire

Questionnaires can now be accessible more quickly and conveniently through email, internet, mobile devices, and other electronic devices. Modern technology has advanced quickly, including internet access. Likewise, the questionnaire made it possible to collect data more quickly. In addition to saving the researcher time, sending the link electronically to participants instead of manually or via the mail allowed researchers to potentially get more respondent's view (Robson, 2011).

The simplicity in dissemination makes employing questionnaires one of their key benefits. They may be distributed electronically, which is a benefit that gave the raw data collection process a great deal of flexibility (Robson, 2011). to add to the benefits is the affordable price, particularly if done online. It was also deemed cost-effective to distribute the survey online because it saved money that would have otherwise been spent on buying paper, printing hardcopies, envelopes, and stamps for postage. The key benefits are quickness, accessibility, and efficiency.

The Internet made it possible for the questionnaires to reach a numerous target demographic and it gives respondents a quicker way to complete the survey at a time that was convenient for them, the questionnaires were shared with the SISOs and they shared with the respondents through the various circuits WhatsApp platforms. A bigger number of participants, which in turn improves the generalizability of the findings, is what wider access ideally produces. Furthermore, due to the respondents' anonymity, online polls

are thought to produce more truthful answers. The absence of face-to-face communication results in more truthful responses (Cohen et al., 2018; Kayam & Hirsch, 2014). Questionnaires have to be created while keeping a few things in mind. According to Brown (2002), the questions should be clear, simple to respond, and neatly and simply formatted without appearing crowded or disorganized. Simple survey forms increase the response rate (Cohen et al., 2018). Additionally, there shouldn't be any embarrassing or unfair questions, as well as any that are deceptive. There must be no ambiguity or in-between responses to questions; they must be clear and concise. Avoiding so-called "double-barrelled" queries, which question regarding multiple topics in a single inquiry, is also crucial (Cohen et al., 2018). A researcher called Bell (2010) adds that a questionnaire's design is crucial since participants are primarily motivated to completing it based on their initial impressions. In agreement with Bell, Robson (2011) and Cohen et al. (2018) claim that short, straightforward questionnaires work best. Additionally, investigators must carefully design their investigation with a defined aim in mind. This guarantees that respondents won't lose interest in filling out the survey, which will help the researcher collect more information.

This study made use of a self-crafted closed-ended questionnaires items. It was made up of five sections: A, B, C, D, and E. The respondents' demographic characteristics was covered in Section A. Gender, age, and teaching experience are factors that was taken into account.

Section B dealt with teachers' level of competence in integrating ICT in new curriculum in the Hohoe Municipality. With four (4) Likert scale

responses from "very much confident" (VC), "confident" (C), "somehow confident" (SC), and "not confident" (NC).

Section C contained items on teachers' frequency of ICT usage in classroom. With four (4) Likert scale responses from Always (A), Sometimes (S), Rarely (R), and Never (N). (See Appendix A).

Section D contained items on availability of infrastructure in schools in the Hohoe Municipality to help ICT integration in the new curriculum. With four (4) Likert scale responses from Very-Much Available (VA), Available (A), Somehow Available (SA) and Not Available (NA). (See Appendix A).

Finally, Section E was made up of items on teachers' continuous professional development. With four (4) Likert scale responses from Strongly Agree (SA), Agree (A), Undecided (U) Disagree (D), and Strongly Disagree (SD).

In all, the questionnaire was made up of 35 items, with Section 'A' consisting of three (3) items and sections B, C, D, E will contain (32) items. (See Appendix A).

Interview

A typical interview entails a face-to-face conversation between a researcher and a respondent during which the respondent gives the interviewer information. Most qualitative research is carried out through interviews, which comprises asking one or even more people broad, open-ended questions and recording their responses. It is common practice to use audiotapes to facilitate more precise transcription. In interviews, open-ended questioning is frequently posed in the goal of eliciting unbiased responses, as opposed to closed-ended questions, which could coerce respondents to give a particular response. In

response to a broad question, participants have more options (Creswell, 2012). Interviews are one of the most common and effective methods collecting due to their versatility (Bryman, 2012; Cohen et al., 2018; Creswell & Clark, 2018). Interviewing, according to Rajab (2013), is a crucial qualitative method of data collection that may be utilised to explore and describe issues and practices in education. Interviews enable a researcher to conduct a more thorough analysis of the subject with the interviewees than would otherwise be possible (Robson, 2011).

The versatility as well as adaptability of interviews tools for data gathering allowed me to acquire more information and gave me the chance to go deeper into the specifics of my issue. Additionally, they have a significant benefit over questionnaires. In contrast to questionnaires, the researcher can contact the individuals thereafter. However, conducting interviews takes a lot of time, and they produce a ton of data. Additionally, scheduling an interview to accommodate all parties can be laborious and take a lot of time. Utilization of a recording device might also make the interviewee feel threatened, which can have an impact on their responses. Interviewees may not be able to answer honestly because of their anxiety about being judged if they are aware that the interview is being recorded (Wellington, 2015).

Circuits' School Improvement Support Officers (SISO) also known as Circuits Supervisors of the five circuits in the Hohoe municipality were interviewed. The reason behind choosing that is dues to the fact that, their main duty is to monitor and supervise teacher in the circuit for quality education and education in schools as well as access the level of teaching and learning resources usage in the various schools. It took each interviewee thirty

minutes to answer the questions. The Appendix B contains the interview questions. The interview guide's questions were all of the open and closed-ended variety. The responders were able to explain themselves clearly as a result.

Validity and Reliability of the Instrument

The measure to which a research instrument collects what it is designed to collect is referred to as validity (Robson, 2011). How much important is the objectivity of the findings. This involves the application of a research tool (questionnaire) to accurately measure the subjects of the study (Pallant, 2011). It examines the entire experimental concept and determines whether the results meet all of the parameters set in the scientific research technique. According to Zohrabi (2013), the foundation of exploratory investigations is the idea that validity has many characteristics, including dependability, utility, and trustworthiness. How closely the rules of empirical research design were adhered to when formulating the research conclusions is what determines the validity of a study. It is required in all study styles (Oliver, 2010).

Moreover, to ensure that the research to was valid, my supervisor accessed to a draft of the questionnaire for in-person discussion and content validity. Before the final questionnaire was distributed, it will first be reviewed and critiqued by technocrats with sufficient knowledge of how to incorporate ICT resources into teaching and learning as well as research in general.

Drost (2011) defined reliability as the extent to which measures are repeatable when performed by multiple individuals on countless occasions, in

diverse situations, and supposedly with diverse equipment to evaluate the structure or skill. The constancy or reliance of the construct's measure is another way to state it. For instance, the measurement is said to be inaccurate if different people estimate your weight since the extremely important to the success by the weight may not be correct because it will not agree with the exact amount.

A research tool's validation process involves evaluating the survey questions to guarantee reliability (Ahmed, 2022). To ensure validity of the instrument my supervisor will have access to a draft of the questionnaire for in-person discussion and content validity. Before the final questionnaire is distributed, it will first be reviewed and critiqued by technocrats with sufficient knowledge of how to incorporate ICT resources into teaching and learning as well as research in general. Prior to starting the actual data collecting, a pilot test will be conducted at Hohoe A. M. E. Zion JHS. The school was picked because it shared similarities with the primary respondents' learning environment and conditions. The main goal of the pilot testing is to determine how trustworthy the study's questionnaire is.

Additionally, thorough field notes and recording tools were employed, and the digital files were transcribed, to guarantee the legitimacy of the interview questions. Member checking, often referred to as participant or respondent validation procedure, was employed to examine the veracity of the results. Participants received data or findings back to confirm their answers to interview questions and to check for correctness and consistency with their own experiences.

To ensure reliability of the data, Statistical Product and Service Solutions (SPSS) version 26.0 software was used to determine the questionnaire's Cronbach's Alpha value and determine its strengths and weaknesses. The value of 0.945 obtained from the twenty elements was trustworthy. This made sure that the questionnaire's items corresponded to the study's goals and its research objectives and questions. According to Kinash (2010), the instrument's reliability coefficient, measured as a Cronbach's alpha value, serves as a foundation for analyzing and assessing regularity and predictability of the instrument's elements.

Data Collection Procedure

Pilot research was carried out to identify any issues that would have complicated the study's execution before the final questionnaire was sent. The questionnaire and interview guide were first made available to subject matter experts who had sufficient knowledge on how to employ ICT in teaching and learning as well as research in general. A. M.E. Zion JHS served as the site of the pilot study. Because the respondents had comparable difficulties in the Hohoe Municipality. The pilot study, which was based on simple random sampling, utilized a total of 16 teachers.

The Coordinator of the Master of Education (Information Technology) at College of Distance Education, University of Cape Coast was consulted for a formal letter of consent to conduct the research in the Hohoe Municipality. Permission from the District Education Office of the Ghana Education Service (GES) in Hohoe was requested before the teachers were chosen. This made it possible to schedule the best time and day to distribute the last questionnaire. Three weeks were needed to collect all the data.

Through the various School Improvement Support Officers, The online questionnaire allow a participant to answer only once. I was able contact every teacher in the Municipality with the help of all the SISOs of the various circuits in the Municipality. On an online platform, the instrument was devised and conducted. The head of supervision received the link to the survey, who then shared it on the various headmasters' WhatsApp platforms and to the various schools' platforms by the headmasters. The majority of surveys and questionnaires today are conducted online, according to Cohen (et al., 2018). Surveys are what questionnaires really are. To define the type of current situations, surveys are utilized. When surveying a sizable group of participants for educational research, questionnaires are the most widely utilized method for gathering information about responses, opinions, attitudes, or motivations related to classroom learning (Rajab, 2013). Within three weeks, the data had been gathered.

A mixed methods strategy allows data to be individually analyzed and then blended. Data-merging is classified into three types by Creswell & Clark (2018): convergent design, explanatory sequential design, and exploratory sequential design. Each survey data in the convergent design is obtained and evaluated individually in the convergent design. The researcher should attempt to emphasize each group of data similarly. However, they are still subject to change because the qualitative data may be given priority or not. The results of one data set are then presented and supported by the results of the other set. Both data sets are interrelated and not independent in the explanatory sequential design. The approach's goal is for the researcher to compile all of the information into a single visual that encapsulates the key results and

concepts of the study. Since no data is a stand-alone entity, the data are combined. The exploratory sequential approach, on the other hand, begins with qualitative data, analyzes them, and then leverages the findings to create quantitative material for a subsequent round of data gathering.

This study used the convergent design as proposed by Creswell and Clark (2018), and distinct sets of data were obtained for each analysis. It was then followed by a parallel analysis of the data to see how much they concurred and supported one another's conclusions. However, broadly speaking, this study prioritized the quantitative findings over my qualitative findings, as stated by Creswell & Clark (2018). The study found the qualitative data beneficial since they allowed me to triangulate research findings, despite the researcher's belief that the qualitative data were richer and more relevant.

Ethical Consideration

The researcher took measures to make sure that appropriate ethical standards and study protocols are followed. A letter of introduction from the University of Cape Coast's College of Distance Education was first obtained in order to request permission for the study. The Ghana Education Service, Hohoe Municipality then received the letter asking for permission to conduct the study.

A clause ensuring respondents' secrecy and anonymity was also be inserted to the questionnaire's introduction. This is to guarantee that taking part in my study won't hurt any participants. Furthermore, it's crucial that the participants aren't deceived about the study's goal. The participating teachers were given a thorough explanation of the research's goals at the outset. They

were courteous enough to read a participant information note that described the study they were participating in before answering the questionnaire. The participants were well informed of the study and what it entailed and sought to accomplish thanks to the numerous written and verbal explanations of the research goals. They were made aware that anything said or done during the interviews would be kept in confidence, and that both their names and identities would be preserved and kept anonymous. It was made sure that no identifiable information from the respondent list was collected in the survey responses in order to preserve respondent anonymity; specifically, the username and email address fields were not used as pre-population factors in the study.

Additionally, they were made aware that completing the questionnaire was entirely voluntary and that they could opt out of the study at any time without having to provide a justification if their minds changed. Finally, the researcher impartially analyzed the data and presented the findings without favoritism or personal bias.

Chapter Summary

The study was conducted to evaluate the teachers' and schools' capacity to integrate technology in the New Educational Curriculum: E-capacity model approach in the Hohoe Municipality of the Volta Region. The data collected from teachers were analyzed using descriptive procedure.

CHAPTER FOUR

RESULTS AND DISCUSSION

The goal of this study was to evaluate teachers' and schools' capacity to incorporate ICT into the new educational curriculum in the Hohoe Municipality using the e-capacity model approach. In order to collect information from respondents for the study, the researcher used questionnaires. Descriptive statistics was computed in order to analyze the collected data. The interpretations, discussions, and implications drawn from the analysis were presented in this chapter.

Analysis of Data from Respondents

The Table 4 show the results of the respondents regarding their gender, age group and work experience.

Table 4: Demographic Information of Respondents (n=722)

Category	Sub-Category	Frequency	Percentage
Gender	Male	431	59.7
	Female	291	40.3
Age	Below 25 years	54	7.5
	26-35 years	418	57.9
	36-45 years	206	28.5
	46-55 years	44	6.1
	Above 55 years	-	-
Teaching Experience	1-5 years	179	24.8
	6-10 years	245	33.9
	11-15 years	115	21.5
	16-20 years	63	8.7
	21-25 years	36	5.0
	26-30 years	38	5.3
	31-35 years	6	0.8
	Above 36 years	-	-

Source: Field Data, Adade (2022)

It is evident from table 4 that 722 respondents participated in the study to use the e-capacity model to evaluate teachers' and school's capacity to

integrate technology in the New Education curriculum in the Hohoe Municipality. Out of the total respondents who were involved in the study, 59.7% were males, whiles 40.3% were females. It should be noted that the gender inequality recorded is an indication that male teachers dominate the Hohoe Municipality. Again, concerning the age groups of the respondents, 7.5% were below 25 years, 57.9 were between the ages of 26 to 35 years, 28.5% were between 36 to 45 years, 6% were between 46 to 55 years, and 0% were 56 years old and above. Thus, the majority of the respondents were between the ages of 26 to 35 years.

Furthermore, concerning the teaching work experience of the respondents, 24.8% have 1 to 5 years of work experience, 33.9% of the respondents have 6 to 10 years of work experience in teaching, 21.5% also have 11 to 15 years of work experience, 5.0% have 16 to 20 years of work experience, and 8.7% have 21 to 25 years of work experience. Also, 0.8% of the respondents have 31 to 35 years of work experience and 0% have work experience above 36 years. The majority of the respondents had 6 to 10 years of work experience, pointing to the fact that they are knowledgeable and experienced teachers.

Research Question 1: What competences do teachers possess to integrate ICT into the new curriculum in the Hohoe Municipality? Research question one sought to examine the level of competence of teachers in integrating ICT into the new education curriculum in the Hohoe Municipality? The results are presented in Table 5

Table 5: Teachers' level of competence in integrating ICT in new curriculum in the Hohoe Municipality

Statements on Level of Competence	M	SD
Use of YouTube to search for videos	3.97	.176
Use of Microsoft word	3.96	.329
Use of Microsoft excel	3.97	.250
Basic internet skill	3.99	.148
Use of social media in lesson delivery	3.98	.162
Basic computer skills	3.99	.148
Use of e-textbooks in teaching	3.99	.144
Digitization of learners' records such as report cards	3.99	.148
Use of teachers' online portfolio	3.99	.129
Online downloading of lesson notes	3.93	.340

Source: Field Data, Adade (2022)

From table 5, the result revealed that the majority of teachers were competent in the use of YouTube to search for videos (M=3.97, SD=.176), use of Microsoft word (M=3.96, SD=.329), use of Microsoft excel (M=3.97, SD=.250), basic internet skills (M=3.99, SD=.448), use of social media in lesson delivery (M=3.98, SD=.162), basic computer skills (M=3.99, SD=.148), use of e-textbooks in teaching (M=3.99, SD=.144) , digitization of learners' records such as report cards (M=3.99, SD=.148), use of teachers' online portfolio (M=3.99, SD=.129) and online downloading of lesson notes (M=3.93, SD=.340). All in all, the mean of means value of 3.34 indicates that the respondents, teachers, were competent in the use of YouTube to search for videos. Thus, the competence level of teachers in integrating ICT into the new educational curriculum is high.

The respondents were through interview asked about teachers' level of competence in integrating ICT in the new educational. From the responses

given, majority of School Improvement Support Officers (SISOs) indicated that teachers in the municipality possess the needed competence to integrate ICT into the curriculum. When asked the kind of competence teachers demonstrate. Their responses are quoted below:

> *"I observe teachers' lessons every week, I have noted that many teachers used laptops, projector, mobile phones and even play back videos from the internet to learners. Again, majority of teachers type their end of term exams themselves. I even know of a teacher who has developed an automated report card using Microsoft Excel for the* m*unicipality" (Reported by Prince).*

Research Question 2: How frequently do instructors in the Hohoe Municipality use ICT in the classroom? The research question two sought to assess how frequent instructors in the Hohoe Municipality use ICT in the classroom? The results are presented in Table 6.

Table 6: Frequency of ICT usage in classroom in the Hohoe Municipality

Statements on Frequency of use of ICT in classroom	Always	Sometimes	Rarely	Never
I take learners to the computer lab at least twice a week	89.2%.	0.8%	9.0%	1.0%
I use projector in lesson delivery	68.0%	29.6%	2.1%	0.3%
I use laptop in class during lessons to explain concepts	97.1%	1.2%	1.1%	0.6%
I use mobile phone to facilitate teaching in the classroom.	96.4%	1.4%	1.5%	0.7%
I use you tube videos to enhance my lessons	94.2%	1.9%	3.2%	0.7%
I use devices like printers, keyboards, mouse, speakers, monitors, hard disks, pen drives etc as TLMs during lesson delivery	86%	10.7%	3.2%	0.1%
I use television to show short videos when teaching	84.5%	7.3%	6.9%	1%
I use tape recorder to play back sounds when teaching	81.3%	13.2%	4.3%	1.2%

Source: Field Data, Adade (2022)

Table 6 results indicated that 89.2% of the respondents agreed to the statement they always take learners to the computer lab at least twice a week. Furthermore, when asked whether the use projector in lesson delivery, 68.0% of the respondents agree that they always use projector in lesson delivery.

The use of the laptop in class during lessons aim to promote students' understanding. As such, 97.1% of the respondents agreed with the statement that they always use laptop in class during lessons to explain concepts and 96.4% of the respondents agreed that they always use mobile phone to facilitate teaching in the classroom. Moreover, 94.2% of the respondents accepted that they use YouTube videos to enhance their lessons.

The respondents also strongly believe in the use devices like printers, keyboards, mouse, speakers, monitors, hard disks, pen drives etc. as TLMs during lesson delivery. This is evident by the percentage of 86. In addition, inasmuch as the respondents accepted that they use television to show short videos when teaching, a percentage of 85.5 was realized.

Moreover, the respondents agreed with the statement that asked whether, as a teacher, they use tape recorder to play back sounds when teaching 81.3% of the respondents accepted to always use tape recorders to paly sounds when teaching.

To know the frequency of ICT usage in the teaching and learning process, School Improvement Support Officers (SISOs) were asked how often they see teachers use ICT in the process of instructions. Majority of School Improvement Support Officers (SISOs) admitted that about 95% of teachers mostly incorporate ICT tools in their teaching frequently. This was evident from some SISOs' response:

"About 90% teachers show videos in class to learners frequently, to explain concepts and make lesson lively at all times. I have personally observed something special about lessons delivered through ICT resources and it will surprise you that learners enjoy such lessons and give such teachers the needed attention they deserve" (Reported by Godswill and Grace).

Research Question 3: What ICT infrastructure exist in schools to support the inclusion of ICT in the new curriculum? Research question three sought to find out the availability of infrastructure to support the inclusion of ICT into the new educational curriculum in the Hohoe municipality. The results are presented in Table 7.

Table 7: The availability of infrastructure in the Hohoe Municipality

Statements on availability of infrastructure	M	SD
My school has a computer laboratory	2.61	1.347
My school has enough computer in the computer laboratory.	2.69	1.314
My school has enough computer in the computer laboratory	2.81	1.326
My school has a projector for usage during lesson delivery.	2.72	1.340
My school has a Wi-Fi for easy access to internet connectivity.	2.76	1.346
In general, my school provide support for ICT infrastructure	1.30	7.09

Source: Field Data, Adade (2022)

Table 7 presents data on **a**vailability of infrastructure in the Hohoe Municipality. The outcome of the analysis showed that teachers agreed that the school has a computer laboratory (M=2.61, SD=1.347). Additionally, the

respondents agreed that their school has enough computer in the computer laboratory (M=2.69, SD=1.314) and also accepted that the school has a source of reliable electricity (M=2.81, SD=1.326). A mean value of 2.72 and standard deviation value of 1.340 was recorded when respondents were asked whether they used projectors in lesson delivery.

Moreover, when asked whether the respondents were asked if the school has a Wi-Fi for easy access to internet connectivity, they agreed with the statement (M=2.76, SD=1.346).

In conclusion, the respondents disagreed with the statement that in general, their school provide support for ICT infrastructure (M=1.30, SD=7.09).

On the availability of ICT infrastructure and support, when SISOs where asked whether the schools' have the needed infrastructure to incorporate ICT into the new curriculum, most of them answered to the negative. This was shown in their responses:

> *"In fact, most of the schools in the municipality lack ICT infrastructure. Even the schools that have computer laboratory only have few computers in them. The learners to computer ration in school with ICT laboratory is about six learners to one computer" (Reported by Emmanuel).*

Research Question 4: Do teachers go through Continuous Professional Development to promotes Teachers' competencies? Research question four sought to find out whether teachers go through Continuous Profession Development to promotes Teachers' competencies. The results are presented in Table 8.

Table 8: Teachers' continuous professional development

Statements on Teachers' continuous professional development.	M	SD
GES has provided me with laptop in other for me to take part in Teachers' continuous professional development courses online.	3.64	.779
Teachers' continuous professional development gives the necessary skills and competence to be an effective teacher.	3.69	.714
GES organises continuous professional development for teacher termly.	3.12	.730
I am aware that National Teaching Council has an online continuous profession development portal.	3.47	.689
Teachers' continuous professional development provides ideas and strategies that are useful in classroom management.	3.24	.788
I am aware that GES will used the point gathered during Continuous professional development to promote me to the next professional rank.	3.17	.704
Continuous professional development is very important for teachers to update their knowledge	3.24	.685

Source: Field Data, Adade (2022)

Table 8 presents data on teachers' level of Teachers' continuous professional development in the Hohoe Municipality. The outcome of the analysis showed that teachers, who were the respondents of the study, have been provided with laptops in other to take part in Teachers' continuous professional development courses online (M=3.64, SD=.779). Additionally, the respondents agreed that teachers' continuous professional development gives the necessary skills and competence to be an effective teacher. (M=3.69, SD=.714).

Moreover, when asked whether GES organises continuous professional development for teacher termly, they agreed with the statement (M=3.12, SD=.730). Also, the respondents agreed of being aware that National Teaching Council has an online continuous profession development portal for teachers' professional development (M=3.47, SD=.689). In general, majority of the respondents believes that teachers' continuous professional development provides ideas and strategies that are useful in classroom management (M=3.24, SD=.788). In conclusion, the mean indicated awareness of the GES using the point gathered during Continuous professional development to promote me to the next professional rank and a mean value of 3.24 also believes that teachers' continuous professional development is very important for teachers to update their knowledge.

When the respondents were through interview asked if teachers go through Continuous Professional Development to promotes Teachers' competencies, majority of School Improvement Support Officers (SISOs) indicated that teachers in the municipality have embraced Continuous Professional Development. Their responses are quoted below:

> *"The Ministry of Education in collaboration with The National Teaching Council organize professional development courses for teacher at least twice in a term to equip teachers with the needed skills. Most of the courses are paid once but teachers still attend. Now instead of teaches wring promotion exams to be promoted to the next rank, NTC gives points on all Continuous Professional Development courses teachers attend and use the accumulated point to promote teachers. Now teachers do more of such courses*

online in other to build their points for promotion" (Reported by Grace and Emmanuel).

This study identified two major hindrances to teachers' and Schools' capacity to integrate ICT into the new education curriculum– (i) lack of ICT infrastructure in Schools, and (ii) lack of ICT support. The article continues by stating that the community at large or guardians' effort helps schools expand their infrastructure (Chapelle, 2011). These barriers have been reported by Chapelle (2011) as the major barriers instructors face when it comes to the use of ICT tools for instructions and education. According to him lack of appropriate ICT support, particularly in rural areas, is one of the biggest problems that institutions are currently facing. Moreover, Oguoma (2013) and Osakwe (2012), and Boateng (2012) have argued that the major constraints faced by teachers in using ICT tools for lesson delivery in Nigeria and Ghana, respectively; include poor electricity supply and lack of Internet connectivity.

Jamieson-Proctor (2013) also is of the view that technical issues have become more prevalent in most schools, frustrating students and teachers and interfering with the teaching and learning process. If there isn't any technical help or repair, teachers can't use the computers for a while.

OECD (2009) also indicates that little number of computers for teachers to use for teaching, difficulty in integrating ICT tools use into their curricular and lack of ICT support make the inclusion of ICT into lessons a challenge. The current findings mostly corroborated research conducted recently with F@tih instructors and learners (Çakiroglu, 2017).

Chapter Summary

The acquired data were examined and interpreted in this chapter in line with the research goals. The data obtained shows that instructors have the skills required to incorporate ICT into the new curriculum. The findings showed that most teachers had knowledge in basic computer and internet kills. Again, it was observed that teachers in the Hohoe Municipality, are equipped with the competencies of using projectors, laptops, YouTube videos, mobile phones and even tape recorders that makes lesson delivery a success.

Moreover, it came to light that, many schools in the Municipality lacked ICT tools to serve as teaching and learning materials to make lessons loving and lively and also foster the integration of ICT into the new educational curriculum.

Similarly, inadequate rates of teacher education in the utilization of computers as instructional media were discovered to be high due to the awareness created by the National Teaching Council to used points gathered through professional development courses to promote teachers. The findings of the study on instructor engagement in courses for professional development linked to ICT integration into the new educational reform, 98.6% of teachers responded have taken professional development courses and also took part in any ICT courses. If relevant grounds are to be covered in this element of education, teachers must be provided with the necessary skills and knowledge regarding Technology adoption. Norris et al. (2003) emphasizes the need of proper access to technological infrastructure and education in efficient technology integration processes.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The findings of the study are summarized in this chapter. It offers a concise summary of the key findings of the E-capacity model approach, which looked at how well instructors and schools could incorporate technology into the new curriculum. This chapter also offers findings and suggestions for further study and practice.

Summary

The study's main goal was to assess teachers' and schools' ability to incorporate ICT into the new curriculum by using the E-capacity model approach. The study's specific goals were to: ascertain the level of teachers' preparedness to incorporate ICT into the new curriculum in the Hohoe Municipality; ascertain how frequently teachers in the Hohoe Municipality use ICT in the classroom; ascertain the availability of ICT infrastructure in Hohoe Municipality schools; and ascertain whether there is ongoing professional development for teachers that fosters their ICT competencies.

In order to accomplish the study's goals, the following research questions were developed:

1. What competences do teachers possess to integrate ICT into the new curriculum in the Hohoe Municipality?
2. How frequently do instructors in the Hohoe Municipality use ICT in the classroom?
3. What ICT infrastructure exist in schools in the Hohoe Municipality to support the inclusion of ICT in the new curriculum?

4. Do teachers go through Continuous Profession Development to promotes Teachers' competencies.

The study used the descriptive survey design to address these research topics. Teachers from the Hohoe Municipality's basic schools made up the study's population. 722 teachers were selected as the study's sample size out of a total population of 1,322 teachers. According to the sampling table developed by Krejcie & Morgan in 1970, the sample size was used. Additionally, all of the study participants were chosen using the simple random sampling technique.

Key Findings

The main findings of the study were as follows:

In response to the study's question one, which aimed to determine if teachers in the Hohoe Municipality hold the necessary competencies to incorporate ICT into the new curriculum, it was discovered that instructors were capable of doing so.

It was discovered that teachers in the Hohoe Municipality regularly use ICT in the classroom in response to study question two, which looked at the frequency of ICT usage by instructors in the classroom setting in the Hohoe Municipality. These findings on the teachers' actual use of ICT in their classes revealed that, out of all the case schools, teachers in Hohoe Municipality utilize ICT the most frequently, as can be seen in the summary data on Table 6. These results also provided some support for earlier research findings (Afshari et al., 2009; Yildirim, 2007).

Regarding research question three, which evaluated the availability of ICT infrastructure in schools in the Hohoe Municipality to support the

inclusion of ICT in the new curriculum, the study found that the majority of Hohoe Municipality schools lack the necessary infrastructure and support for ICT infrastructure to integrate ICT in the Hohoe. This showed that schools lack ICT peripherals, software, and hardware as well as adequate possibilities to integrate ICT into their educational environments. This result mostly corroborated research conducted recently with F@tih instructors and learners (Çakiroglu, 2017).

Regarding research question four, which assessed teachers' continuous professional development most respondents have attended professional development courses organised by the GES and NTC. Again, almost all teachers have received a laptop to enable them do professional development courses online. For that matter, respondent see profession development as a means of improving their knowledge and skills in teaching.

Conclusions

The following conclusions could be deduced from the findings of this study:

Firstly, the study led to the realization that that teachers in the Hohoe municipality have the necessary competencies to incorporate ICT in the new educational curriculum.

And also use ICT regularly in their classroom, but it does not necessarily translate to the proper use.

Additionally, concerning the findings that ICT infrastructure exist in schools in the Hohoe Municipality to support the inclusion of ICT in the new curriculum the study concluded the schools in the Municipality lacks infrastructure and infrastructural support to integrate technology in to the new curriculum. Moreover, the study also shows that most of the schools in the

Hohoe Municipality has to access to WIFI (internet) to help the integration of ICT into the new educational reform.

Furthermore, on these findings that revealed that teachers go through continuous profession development to promotes teachers' competencies, it is concluded teachers are much aware of the importance of continuous professional development. Again, GES has given teachers laptops to undertake professional development online not forgetting that NTC has an online portal for all teacher to build CDP points.

Recommendations

The study makes recommendations based on the conclusions drawn from the respective findings:

1. The study recommended that government of Ghana in connection with GES should provide ICT infrastructure and infrastructure support for all schools, to equip teachers and the schools with the needed hardware and software to promote a smooth ICT integration into the new educational reform.
2. It is recommended that teachers should adopt frequent usage of ICT in the classroom setting to aid effective instructions and education at schools in Ghana to help cater for all learner.
3. The study also recommended that management of Ghana education service take into cognizance the awareness level and attitude of teachers when implementing ICT into education.

Suggestions for Further Studies

Although using a purposive sample technique afforded exceptional research directions and offered insights for future research, it also had

significant drawbacks, such as restricting the generalizing of the results. The dependability of the study's results is dependent on the responses provided by the participating teachers, which is another study drawback. In addition, the current study's scope only applies to schools in the Hohoe municipality.

Contrarily, the current work has greatly added to the body of literature on ICT integration theory and practice. Theoretically, the e-capacity model proved its validity and effectiveness in assessing the integration of ICT in new curricula for education on the basis that its findings mostly concurred with those of earlier studies. The e-capacity model, however, has a limitation in that it does not take into account factors that are common among teachers, such as their level of commitment, self-efficacy, or feelings of uncertainty. The e-capacity model may be given an additional layer relating to more widespread and teacher-related psychological variables impacting the implementation of innovations, similar to the requirements for overall school improvement. The e-capacity model can also be strengthened by integrating student-related variables like general computing-attitudes or learners' ICT capabilities. Future studies must examine the factors that influence how the new educational curriculum is implemented using the tackled as far as the e-capacity model is concerned.

REFERENCES

Abbitt, J. T., (2011). An investigation of the relationship between self-efficacy beliefs about technology integration and technological pedagogical content knowledge (TPACK) among preservice teachers. *Journal of Digital Learning in Teacher Education. 27*(4), 134- 143

Abedalaziz, N., Jamaluddin, S., & Leng, C. H. (2013). Measuring attitudes toward computer and internet usage among postgraduate students in Malaysia. *Turkish Online Journal of Educational Technology-TOJET, 12*(2), 200-216

Achimugu, P., Oluwagbemi, O., & Oluwaranti, A. (2010). An evaluation of the impact of ICT diffusion in Nigeria's higher educational institutions. *Journal of Information Technology Impact, 10(1),* 25-34.

Akbulut, Y. (2010). A structural model proposal for Turkish faculties of education regarding ICT integration indicators. *Contemporary Educational Technology, 1*(4), 322–334.

Akuegwu, B. A., Ntukidem, E. P., Ntukidem, P. J., & Jaja, G. (2011). Information and communications technology (ICT) facilities utilization for quality instructional service delivery among university lecturers in Nigeria. *Review of Higher Education in Africa, 3*(1), 33-53.

Al Mulhim, E., (2014). The barriers to the use of ICT in teaching in Saudi Arabia: A review of literature. *Universal Journal of Educational Research. 2*(6), 487-493.

Alkahtani, A., (2017). The Challenges Facing the Integration of ICT in Teaching in Saudi Secondary Schools. *International Journal of Education and Development using ICT. 13*(1), 32-51.

Almadhour, B. (2010). The integration of information and communication technology into secondary technology teachers' pedagogy in New Zealand (Unpublished Master Thesis). Auckland University of Technology, New Zealand.

Almekhlafi, A. G., & Almeqdadi, F. A. (2010). Teachers' perceptions of technology integration in the United Arab Emirates school classrooms. *Educational Technology & Society, 13*(1), 165–175.

Alshenqeeti, H. (2014). Interviewing as a data collection method: a critical review. *English Linguistics Research, 3*(1), 39-45.

Alsied, S. M., & Pathan, M. M. (2013). The use of computer technology in EFL classroom: Advantages and implications. *International Journal of English Language & Translation Studies, 1*(1), 44-51.

Al-Zaidiyeen, N. J., Mei, L. L., & Fook, F. S. (2010). Teachers' attitudes and levels of technology use in classrooms: *The case of Jordan schools. International Education Studies, 3*(2), 211-218. http://dx.doi.org/10.5539/ies.v3n2p211

Arnold, D., & Sangrà, A. (2018). Dawn or dusk of the 5th age of research in educational technology? A literature review on (e-) leadership for technology-enhanced learning in higher education (2013-2017). International Journal of Educational Technology in Higher Education, 15(1), 24. https://doi.org/10.1186/s41239-018-0104-3

Atieno, O. (2009). An analysis of the strengths and limitation of qualitative and quantitative research paradigms. Problems of Education in the 21st Century, 13, 13- 18. 5. Baxter, P., &

Awoniyi, S.A.; Aderanti, R.A. & Tayo, A.S. (2011). Introduction to Research Methods. Ibadan: Ababa Press Ltd.

Aydın, M. K., Güçlü, N., & Pisapia, J. (2015). The relationship between school principals' strategic leadership actions and organizational learning. *American Journal of Educational Studies*, *7*(1), 5-25.

Bajpai, S. R., & Bajpai, R. C. (2014). Goodness of Measurement: Reliability and Validity. *International Journal of Medical Science and Public Health, 3(2),* 112-115.

Bamigboye, O. B., Bankole, O. M., Ajiboye, B. A., & George, A. E. (2013). Teachers' attitude and competence towards the use of ICT resources: A case study of University of Agriculture lecturers, Abeokuta, Ogun State, Nigeria. *The Information Manager 13*(1&2), 10-15.

Baskin, C., & Williams, M. (2006). ICT integration in schools: Where are we now and what comes next? Australasian *Journal of Educational Technology*, *22*(4) https://doi.org/10.14742/ajet.1280

Bell, J., Waters, S., & Ebooks Corporation. (2014). *Doing your research project: A guide for first-time researchers* (Sixth ed.). Maidenhead, Berkshire: Open University Press.

Bielefeldt, T. (2012). Guidance for technology decisions from classroom observation. *Journal of research on Technology in Education*, *44*(3), 205-223. https://doi.org/10.1080/15391523.2012.10782587.

Birt L., Scott S., Cavers D., Campbell C., Walter F.,& Member Checking: A Tool to Enhance Trustworthiness or Merely a Nod to Validation? Qual Health Res. 2016 Nov;26(13):1802-1811. doi: 10.1177/1049732316654870. Epub 2016 Jul 10. PMID: 27340178.

Buabeng-Andoh, C. (2012). Factors influencing teachers' adoption and integration of information and communication technology into teaching: A review of the literature.

Butler, D., Hallissy, M., & Hurley, J. (2018). The digital learning framework: What digital learning can look like in practice, an Irish perspective. Paper presented at the Society for Information Technology & Teacher Education International Conference.

(Çakiroglu, 2017). Teachers' views on the use of interactive whiteboards in secondary schools. Eurasia Journal of Mathematics, Science & Technology Education, 11(2), 251– 259. doi:10.12973/eurasia.2015 .1335a

Cheung, A. C., & Slavin, R. E. (2012). How features of educational technology applications affect student reading outcomes: A metaanalysis. *Educational Research Review, 7*(3), 198-215. https://doi.org/10.1016/j.edur ev.2012.05 .002

Cohen, L., Manion, L., Morrison, K., & Ebooks Corporation. (2011; 2013; 1993). *Research methods in education* (7th ed.). Abingdon, Oxon; New York: Routledge. doi:10.4324/9780203720967.

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approach* (3rd ed.). Los Angeles: Sage.

Doyle L, McCabe C, Keogh B, Brady A, McCann M. An overview of the qualitative descriptive design within nursing research.

Ferrer, F., Belvís, E., & Pàmies, J. (2011). Tablet PCs, academic results and educational inequalities. Computers & Education, 56(1), 280–288. doi: 10.1016/j.compedu.2010.07.018

Ghavifekr, S., Afshari, M., & Amla Salleh. (2012). Management strategies for E-Learning system as the core component of systemic change: A qualitative analysis. *Life Science Journal, 9(3),* 2190-2196

Hennessy, S. et al., 2010. *Developing the Use of Information and Communication Technology to Enhance Teaching and Learning in East African Schools: Review of the Literature*, London: Department for International Development.

Hismanoglu, M. (2012). The impact of a curricular innovation on prospective EFL teachers' attitudes towards ICT integration into language instruction. *International Journal of Instruction, 5*(1), 183–202.

Hooker, M., Mwiyeria, E., & Verma, A. (2011). ICT Competency Framework for Teachers in Nigeria (pp. 1–93). World Bank and GESCI. International Journal of Education and Development using Information and Communication Technology, 8(1), 136–155.

Istanbul Directorate of National Education (IDNE). (2014). 2013-2014 statistics year book. Istanbul: Istanbul Directorate of National Education. Retrieved from http://istanbul.meb.gov.tr/meb_iys_ dosyalar/2014_04/01104349_stanbulstatistikleri2 01302014.pdf

J Res Nurs. 2020 Aug;25(5):443-455. doi: 10.1177/1744987119880234. Epub 2019 Dec 18. PMID: 34394658; PMCID: PMC7932381.Education Reform Initiative (ERI). (2013). Turkey's FATIH Project: A plan to conquer the digital divide, or a technological leap of faith? Istanbul: ERI. Retrieved from http://erg.sabanciuniv.edu/sites/erg.sabanciuniv.edu /files/Fatih.rapor_.E G_.son_.pdf

Jack, S. (2008). Qualitative case study methodology: study design and implementation for novice researchers. The Qualitative Report, 13(4),544-559.

Kimanzi, P. R., Bwire, A., & Miima, F. (2018). Influence of Teacher Feedback Techniques on Students' Essay Writing Skills in English Language in Secondary Schools in Nairobi County, Kenya. School of Education. Department of Educational Communication and Technology.

Kopcha, T. J. (2012). Teachers' perceptions of the barriers to technology integration and practices with technology under situated professional development. Computers & Education, 59(4), 1109-1121. https://doi.org/10.1016/j.compedu.2012.05.014

Kvale, S., & SAGE Research Methods Online. (2008). *Doing interviews*. Thousand Oaks; London: SAGE Publications, Limited.

McNamara, C. (1999). General Guidelines for Conducting Interviews, Authenticity Consulting, LLC, Retrieved from: http://www.managem enthelp.org/evaluatn/intrview.htm

Modebelu, M. N., & Azu, J. O. (2014). Academic staff challenges to effective utilization of information and communication technology (ICT) in teaching/learning of agricultural education. *International Letters of Social and Humanistic Sciences, 13*, 88-96

NCCA (2019) Strategic Plan 2019-2021. Available at: https://www.ncca.ie/en/ about/corporateinformation/strategic-plan

O'Leary, Z. (2014). *The essential guide to doing your research project* (2nd ed.). London: SAGE.

Papaioannou, P., & Charalambous, K. (2011). Principals' attitudes toward ICT and their perceptions about the factors that facilitate or inhibit ICT integration in primary schools of Cyprus. *Journal of Information Education, 10,* 333-347.

Polikoff, M. S., & Porter, A. C. (2014). Instructional alignment as a measure of teacher quality. *Educational Evaluation and Policy Analysis*, *36*(4), 399-416. doi:10.3102/016237314531851

Popoola, S.O. (2011). Research Methodologies in Library and Information Science. A paper presented at a training workshop on building research capacity for Library and Information Science professionals. Organized by the Nigerian Library Association, Ogun State Chapter, held at Covenant University, Ota, Nigeria on 18th – 22nd September, 2011.

Sahin, S., Aktürk, A. O., & Çelik, İ. (2013). A study on teachers', students' and their parents' views on the FATIH Project. World Academy of Science, Engineering and Technology, 7(12), 1889–1895.

Şahin-Kizil, A. (2011). EFL teachers' attitudes towards information and communication technologies (ICT). In *Proceedings of the 5th International Computer & Instructional Technologies Symposium*, Firat University, Laziğ Turkey.

Sang, G. Y., Valcke M., van Braak, J., & Tondeur, J. (2010). Student teachers' thinking processes and ICT integration: Predictors of prospective teaching behaviors with educational technology. *Computers & Education, 54,* 103–112. http://dx.doi.org/10.1016/j.compedu.2009.07.010

Tezci, E. (2011). Turkish primary school teachers' perceptions of school culture regarding ICT integration. Educational Technology Research and Development, 59(3), 429–443. doi:10.1007/s11423-011-9205-6

Tondeur, J., Krug, D., Bill, M., Smulders, M., & Zhu, C. (2015). Integrating ICT in Kenyan secondary schools: an exploratory case study of a professional development programme. Technology, Pedagogy and Education, 24(5), 565-584. https://doi.org/10.1080/ 1475939X.2015.1091786

Tondeur, J., Van Keer, H., Van Braak, J., & Valcke, M. (2008). ICT integration in the classroom: Challenging the potential of a school policy. Computers & Education, 51(1), 212-223. https://doi.org/10.1016/j.compedu.2007.05.003

Vanderlinde, R., & Van Braak, J. (2010). The e-capacity of primary schools: Development of a conceptual model and scale construction from a school improvement perspective. Computers & Education, 55(2), 541–553. doi:10.1016/j.compedu.2010.02.016.

Vanderlinde, R., Van Braak, J., & Dexter, S. (2012). ICT policy planning in a context of curriculum reform: Disentanglement of ICT policy domains and artifacts. Computers & Education, 58(4), 1339–1350. doi:10.1016/j. compedu.2011.12.007.

Yucel, C., Acun, I., Tarman, B., & Mete, T. (2010). A model to explore Turkish teachers' ICT integration stages. *The Turkish Online Journal of Educational Technology*, *9*(4), 1–9.

Yusuf, M. O. & Balogun, M. R. (2011). Student-teachers' competence and attitude towards information and communication technology: A case study in a Nigerian university. *Contemporary Educational Technology*, *2*(1), 18-36.

Ziden, A. A., Ismail, I., Spian, R., & Kumutha, K. (2011). The effects of ICT use in teaching and learning on students' achievement in science subject in a primary school in Malaysia. *Malaysia Journal of Distance Education*, *13*(2), 19-32.

APPENDIX A

UNIVERSITY OF CAPE COAST

QUESTIONNAIRE

Dear Respondent, this study seeks to utilise the E-capacity Model to evaluate teachers' and schools' capacity to integrate technology into the New Educational Curriculum in the Hohoe Municipality" I will therefore solicit your cooperation and consent to participate in this study. The confidentiality of your response is assured. Thank you.

SECTION A: Demographic Information

1. **Gender**: Male ☐ Female ☐

2. **Age:** Below 25years ☐ 26-35 years ☐ 36 – 45years ☐
   46-55years ☐ Above 55 years ☐

3. **Teaching experience:** 1-5 years ☐
   6-10 years ☐
   11-15 years ☐
   16-20 years ☐
   21-25 years ☐
   26-30 years ☐
   31-35 years ☐
   Above 36 years ☐

SECTION B: Teachers' level of competence in integrating ICT in new curriculum

Please indicate whether you are Very-Much Competent (VC), Competent (C), Somehow Competent (SC) Not Competent (NC) in the following:

Teachers Level of competence in integrating ICT in new curriculum	VC	C	SC	NC
4. Use of you tube to search for videos				
5. Use of Microsoft word				
6. Use of Microsoft excel				
7. Basic internet skill				
8. Use of social media in lesson delivery				
9. Basic computer skills				
10. Use of e-textbooks in teaching				
11. Use of online assessment				
12. Digitization of learners' records such as report cards				
13. Use of teachers' online portfolio				
14. Online downloading of lesson notes.				

SECTION C: Frequency of ICT usage in classroom

Please indicate the extent to which you agree or disagree to the following statements: Always (A), Sometimes (S), Rarely (R), and Never (N).

Frequency of use of ICT in classroom	A	S	R	N
15. I take learners to the computer lab.				
16. I use projector in lesson delivery.				
17. I use laptop in class during lessons to explain concepts				
18. I use mobile phone to facilitate teaching in the classroom.				
19. I use you tube videos to enhance my lessons				
20. I use devices like printers, keyboards, mouse, speakers, monitors, hard disks, pen drives etc. as TLMs during lesson delivery				
21. I use television to show short videos when teaching				
22. I use tape recorder to play back sounds when teaching				

SECTION D: Availability of infrastructure in schools in the Hohoe Municipality to help ICT integration in the new curriculum.

Please indicate whether the following infrastructure is Very-Much Available (VA), Available (A), Somehow Available (SA) Not Available (NA)

Availability of infrastructure	VA	A	SA	NA
23. My school has a computer laboratory				
24. My school has enough computer in the computer laboratory.				
25. My school has ICT tools are available in the school for teachers to use in their lessons				
26. My school has a projector for usage during lesson delivery.				
27. My school has a Wi-Fi for easy access to internet connectivity.				
28. In general, my school provide support for ICT infrastructure				

SECTION E: Teachers' continuous professional development.

Please indicate the extent to which you agree or disagree to the following statements: Strongly Agree (SA), Agree (A), Undecided (U) Disagree (D), and Strongly Disagree (SD).

Teachers' Continuous Professional Development.	**SA**	**A**	**D**	**SD**
29. GES has provided me with laptop in other for me to take part in Teachers' continuous professional development courses online.				
30. Teachers' continuous professional development gives the necessary skills and competence to be an effective teacher.				
31. GES organizes continuous professional development for teacher termly.				
32. I am aware that National Teaching Council has an online continuous profession development portal.				
33. Teachers' continuous professional development provides ideas and strategies that are useful in classroom management.				
34. I am aware that GES will used the point gathered during Continuous professional development to promote me to the next professional rank.				
35. Continuous professional development is very important for teachers to update their knowledge.				

Thank You

APPENDIX B

UNIVERSITY OF CAPE COAST

INTERVIEW GUIDE

SECTION A: Introduction

- Greet
- Do a self-introduction (state your name and you place of work)
- Enlighten to the respondents' the motive behind the interview.
  (I would like to evaluate schools' and teachers' capacity to integrate ICT into the new educational curriculum in the Hohoe Municipality.)

Confidentiality:

- Findings of this interview will be will be kept safe and secretly.

Study Identifiers:

- Make respondents' aware that you will not use your name or any other identifying information and everything that you say will only be used for research purposes

Interview questions

SECTION B: Teachers Level of competence in integrating ICT in new curriculum.

1. Do teacher possess the competencies to integrate ICT curriculum?
   [……]
2. What are some the ICT competencies you observe them integrate in their lessons?
   [……]
   [……...]
   [……]
   [……]
   [……]
   [……]

SECTION B: Frequency of use of ICT in classroom

3. Do integrate ICT in the lessons on daily basis?

   [……]

4. What are some of the ICT tools you observe teachers use in their lesson delivery?

   [……]

   [……]

   [……]

   [……]

   [……]

   [……]

SECTION C: Availability of infrastructure

5. Are schools having the needed ICT infrastructure to integrate ICT into the new educational curriculum?

   [……]

6. How many schools under your supervision have computer laboratories?

   [……]

   How many schools under your supervision have protectors?

   [……]

7. In general does the school and GES provide support for the available ICT infrastructure?

   [……]

SECTION D: Teachers' Continuous Professional Development.

8. Does GES organize professional development for teachers?

   [……]

9. If yes, how often do they organize such professional development courses for teachers in a term?

   [……]

10. Do you think professional development is important for teachers' pedagogical development?

    [……]

11. Has teachers in you circuit received laptops from GES to help them under take professional development courses?

    [……]

12. Any other information?

    [……]

Thank You.