UNIVERSITY OF EDUCATION, WINNEBA

CHALLENGES OF USING ICT TOOLS IN TEACHING SOCIAL STUDIES IN NAKOLO JUNIOR HIGH SCHOOL IN THE PAGA EAST CIRCUIT OF THE KASSENA NANKANA WEST DISTRICT

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DECEMBER, 2020

DECLARATION

STUDENT'S DECLARATION

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

SIGNATURE.....

DATE.....

SUPERVISOR'S DECLARATION

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

NAME OF SUPERVISOR: SR. DR. MARY ASSUMPTA AYIKUE

SIGNATURE.....

DATE.....

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DEDICATION

To my late parents Mr. Wombayara John Kapuru and Mma Cynthia Kuyommah Mboba.

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ABSTRACT

The purpose of the study was to assess the benefits and challenges of using ICT tools in teaching Social Studies in Nakolo Junior High School in the Paga East Circuit of the Kassena Nankana West District in the Upper East Region of Ghana. This study used a case study design. Quantitative research approach was used. The population for the study was eighty five (85) teachers in the Nakolo Junior High School in the Paga East Circuit of the Kassena Nankana West District in the Upper East Region of Ghana. Census method was used to select eighty five (85) respondents for the study. Questionnaire was the main instrument used to gather primary data. Descriptive statistics was used to analyse data. The study results indicate that 84.3% of the respondents agreed that they find it easy to adapt to changes that the introduction of new ICT software use to bring in their teaching and learning. Also, 84.3% of the respondents agreed that teachers are able to use new ICT introductions in their teaching of the subjects without much difficulty. The study findings indicate that, 86.8% of the respondents agreed that the use of practical teaching methods can improve students skills in ICT subject. The study findings highlighted 95.1% of the respondents agreed that inadequate teaching and learning materials or computers and accessories for practical demonstration ICT lessons is a challenge teachers face in implementing ICT curricula. The study concluded that, inadequate ICT teachers' competencies and necessary skills in ICT subjects affected students' academic performance. The study recommended that the government through the GES should procure the necessary ICT infrastructure for their schools to enable the teachers and students benefit maximally in the ongoing technological development and ICT contribution in educational advancement.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Information Communication Technology according to Unagha (2016) encompasses computer and telecommunication. It is concerned with the technology used in handling, acquiring, processing, storing and dissemination of information. In recent times, there has been intense advocacy both nationally and internationally for the application of ICT in teaching and learning process. Udo (2010) observed that the application of ICT in the school subjects is to make learners learn better and teacher to teach well, it is not a hindrances to teacher–student (pupils) relationship. It rather ensures transactional instructional communication where the teacher manages the human materials, time and space to make sure that instructional events (game attention stimulation recall present stimulus thinking elicit performance provide feedback provide generalizing experiences, assess performance) occur leading to change in behaviour of pupils.

It has been noted that Information and Communication Technology (ICT) is an effective medium in contributing towards education in general and Social Studies in particular. The inherent cross-curricular nature of Information Communication Technology makes it ideal medium that can be used not only during Information Technology lessons but also in other subjects. ICT can be an excellent medium for training young people in learning about and appreciating the cultural heritage in its diversity.

Computers and internet facilities are now in place in many state owned and private schools. It is envisaged that educators will see ICT as a major teaching and learning device across all educational institution. With its power of interactivity, multimedia and

communication, the computer proves an excellent tool for Social Studies education. The idea is that students will be active —participants rather than —spectators in teaching and learning process.

Social studies, the focus of this research, is one of the most widely used subjects in the provision of citizenship education. Social studies in the broadest sense, that is, the preparation of young people so that they possess the knowledge, skills, and values necessary for active participation in society. There are two views of social studies. The first sees it as an amalgam of different subjects selected for teaching in schools and is typified by Wesley's definition of the subject as "the social sciences simplified for pedagogic purposes" (Wesley & Wronski, 2018, p. 3). It is however a distinct subject on the school timetable. The second also sees it as an integrated subject, but includes separate subjects as long as they have an interdisciplinary perspective.

This view is typified by Merlinger's definition as "courses of study at the primary and secondary levels of schooling presenting components of history, geography, economics and moral and civic education, prescribed and taught either as an integrated discipline or separate curriculum subjects with an interdisciplinary emphasis" (Mehlinger, 2011, p. 4). There may not be a subject specifically called social studies on the school timetable, but various citizenship-related subjects corresponding to specific disciplines. According to the research conducted by Amer (2017), the impact of educational technology on teaching and learning necessitates research about options in teaching and learning that requires educational institutions to develop efficient and effective systems that can meet the needs of communities driven to absorb tremendous scientific and technological progress.

Therefore, educational communities must remain viable for growth in the midst of global market competition and must benefit from the educational technology

revolution by employing it to respond to contemporary pressures. Accordingly, new ways of teaching and learning have begun to emerge globally, the most important of which is e-learning. E-learning has become a reality of which it is impossible to ignore, especially for workers in the educational sector. The need to know about its concerns, related concepts, skills, tools and so forth, drive this development forward. It also seems reasonable to expect, that researchers will rate the computer as the greatest invention in human history in terms of facilitating global communication.

New Information and Communication Technology (ICT) terminology now dominates the world, including e-commerce, e-government and e-learning. Widespread use of ICT has led to new communication channels and accessible information, while the internet has changed our learning methods (Ryder and Wilson, 2016). Indeed, the revolutionary thrust of educational technology (ICT) is derived from the alliance of the two types of rapidly developing technology, the first being personal computer (PC) technology, making small, affordable computers, including devices such as iPads and Smartphone's; and the second being directly wired and wireless networks, providing exchange between devices whether nearby or afar (Alfahad & Almosa, 2012). Thus, the internet offers new and interesting opportunities for learning Alsalem (2014), supported by the delivery and use of multimedia elements through new kinds of connected devices.

According to Abdulaziz (2018), these multimedia and interactive modes of use make ICT the most important means of communication in teaching and learning (Abdulaziz, 2018). According to Almoberek (2011), computers' large capacity for storage, rapid retrieval of information, ease of access, and interactivity for learners provide inspiration and feedback. Immediate benefits include high motivation and learning that is more enjoyable, with a choice of place and time, conveying the idea of

continuity and lifelong learning (Almoberek, 2011). Significant changes in education follow from these features and benefits of ICT, initiating a gradual shift in the educational paradigm, from traditional delivery to more student-centered and autonomous learning, with the teacher as facilitator and guide amongst a range of sources of knowledge. According to the research conducted by Hamdi (2013), the theory and application of ICT attracts systematic methods through inter-related theories in technology, psychology and education to develop its bases, principles, and applications for higher education.

So now universities can be open, virtual, and electronic by using the internet to facilitate teaching and learning and can consider it as the main tool for communication with learners (Hamdi, 2013). E-learning is not only a technological issue but also a philosophical one. How ICT can serve teaching and learning is a significant and timely issue. E-learning was rated the fastest growing industry in the field of educational resource production (Alkateeb, 2013). According to the research conducted by Alhajeri (2015), the production of materials and software for e-learning in education and training by schools and universities now increases daily. The internet is acceptable in workplaces for both learning and training, justifying the assumption that e-learning is a key part of the future of learning.

This trend is evidenced in Saudi Arabia, one of the countries that adopted the internet for university and college use in the 1990s (Alhajeri, 2015). The use of ICT has expanded, culminating in the publication of the National Plan for ICT in 2006, which cited the fourth goal of optimizing the use of ICT in education and training at all educational levels Ministry of Communications and Information Technology (MOCIT, 2019). The research conducted by Abdulaziz (2018) also recognizes the far-reaching effects of ICT in education. By analyzing the required changes in the

traditional roles of the most important stakeholders in the educational process, he suggests the impact of this innovation. Learner's roles change from passive to active. Their autonomous learning, involves information retrieval, being interactive and able to evaluate and interpret content.

Their instructor's roles vary from pedagogy to mentoring. He predicts that their role will remain important and essential because e-learning does not mean to surf the internet openly, but by specific ways and under guidance and this is a crucial part of the teacher's role (Clark, 2013; Kozma, 2014). Nevertheless, it is evident that ICT is impacting all aspects of education. The major impact of the network is not about the ease of getting information, nor the ease of access, nor the increasing use of educational software, but in its ability to support the social construction of new knowledge and develop it by global participation.

So ICT is concerned with quality. This promotes, as the goal of contemporary education, the importance of giving learners the required capabilities and strategies to deal with large amounts of information and preparing them to learn continuously. Such are the distinctive characteristics of education in the knowledge era. ICT also creates an environment in which effective autonomous learning is basic to each learner s success, as is developing critical thinking skills and continuing into life long, self-directed learning (Garrison and Anderson, 2013). Therefore, this study would assess the benefits and challenges of using ICT tools in teaching Social Studies in Nakolo Junior High School in the Paga East Circuit of the Kassena Nankana West District in the Upper East Region of Ghana.

1.2 Statement of the Problem

In this 21st century, many factors bringing to bear on the adoption of ICT in education and contemporary trend suggest large scale changes in the way education is planned and delivered as a consequence of the opportunities and availability of ICT. The job demands of our present era require individuals who are knowledgeable in their fields and who are technologically savvy. Since technology is a powerful and flexible tool for learning, it is needed and desired to meet globalization challenges, to advance our country's economical status, and to motivate and aid students to learn better. In fact, technology is being integrated in educational institutions all around the country to make sure that Ghanaian citizens meet global technological criteria.

The knowledge and communication breakthroughs that the world can achieve using information communication technologies (ICT) are so numerous that educational institutions are striving to invest in ICT tools in an attempt to help raise citizens who are ready to face the challenges of the 21st century where media, manufacturing industries as well as commerce have become increasingly technology-oriented. ICT tools integration is becoming a *sine qua non* in schools. The primary goal of educational technology as applied to pedagogical contexts is to facilitate the teaching/learning process. Accompanying this evolution has been ongoing research into the relative effectiveness and efficiency of educational technology to enhance learning and achievement.

The concern has been hinged on whether or not Information Communication and Technology (ICT) facilities are readily available in the SHSs institutions. Many SHSs in Ghana do not have adequate educational technology equipment to facilitate teaching and learning. A close look at the Nakolo Junior High School in the Paga East Circuit in teaching and learning reveals that, inadequate educational technologies,

instructional materials, poor Wi-Fi access at the schools and lack of up to date ICT instructional materials could have serious consequences on the effective teaching and learning in the institution. To this effect, this study would assess the benefits and challenges of using ICT tools in teaching Social Studies in Nakolo Junior High School in the Paga East Circuit of the Kassena Nankana West District in the Upper East Region of Ghana.

1.3 Purpose of the Study

The main purpose of the study is to assess the benefits and challenges of using ICT tools in teaching Social Studies in Nakolo Junior High School in the Paga East Circuit of the Kassena Nankana West District in the Upper East Region of Ghana.

1.4 Objectives of the Study

The study is guided by the following research objectives:

1. To evaluate the benefits of using ICT to facilitate teaching and learning process in Social studies at Nakolo Junior High School in the Paga East Circuit.
2. To assess the barriers of using ICT to facilitate teaching process in Nakolo Junior High School in the Paga East Circuit.
3. To identify factors determining the use of ICT to facilitate teaching at Nakolo Junior High School in the Paga East Circuit.

1.5 Research Questions

The following research questions would be used for the study:

1. What are the benefits of using ICT to facilitate teaching and learning process in Social studies at Nakolo Junior High School in the Paga East Circuit?

2. What are the barriers of using ICT to facilitate teaching process in Nakolo Junior High School in the Paga East Circuit?

3. What are the factors determining the use of ICT to facilitate teaching at Nakolo Junior High School in the Paga East Circuit?

1.6 Scope of the Study

This research would be focused on assessing the benefits and challenges of using ICT tools in teaching Social Studies in Nakolo Junior High School in the Paga East Circuit of the Kassena Nankana West District in the Upper East Region of Ghana. Thus the study is geographically limited in scope to Kassena Nankana West District in the Upper East Region of Ghana.

1.7 Significance of the Study

This study focuses on identifying how ICT can be used to facilitate the teaching process to enhance students understanding. The conclusion of the study will provide an insight on the benefits, barriers and measures needed to address ICT in teaching social studies. The research study will also be used as guide for policy-makers, decision-makers and educational investors and other stakeholders to make well-informed decisions about ICT policies and investment in ICT facilities and infrastructures in regards to education at the Junior High School level by understanding the perceptions of teachers in line with the utilization of ICT in facilitating teaching of social studies.

The findings of the study will inform the government and other interested party on the hindrances to the use of ICT to facilitate teaching, the information will enable

the government to identify mechanisms that will ensure successful use of ICT to facilitate teaching in JHSs.

Additionally, the study will be beneficial in building a knowledge base of perceptions of teachers on the use of ICT to facilitate teaching. The knowledge may serve as a guide for overcoming challenges that teachers' face while using ICT to facilitate teaching in JHSs. The study also will contribute to the existing literature on the use of ICT to facilitate teaching process in JHSs.

The study would provide useful information for the policy makers in the Ministry of Education, School administrators, teachers, students and other stakeholders in the Junior High Schools in Ghana. This study will help teachers to continuously upgrade themselves in order to meet the global trends with regards to the usage of ICT in effective teaching and learning in JHSs to boost student's academic performances.

1.8 Organization of the Chapters

This dissertation would consists of five Chapters, Chapter one would deal with the background to the study, the statement of the problem, purpose of the study, research questions and objectives of the study, significance and organization of the study.

In Chapter two the researcher would review related literature whiles chapter three would deal with the research methodology used in the study. Chapter three would describe the research design, the population sample and sample procedures, data gathering instruments and data collection procedures of the study, methods of data analysis.

Chapter four would describe the research findings and the discussion of the main findings and chapter five would present the summary of the findings, conclusions and recommendations and suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Concept Review

2.1.1 Technology Interventions in the Classroom

Many countries have tried, through various technology interventions, to provide technology-rich learning environments by equipping the schools with the latest technology. The technology interventions come in various forms, including interactive whiteboards (IWBs), one-to- one laptop computing, and computer laboratories, among others. In recent years, the use of technology to enhance teaching and learning processes had increased tremendously, even in developing countries. However, the effective usage of technology interventions is highly dependent on several factors such as teachers' attitude, beliefs, and perceptions; school adoption rate; pedagogical aspects; students' perception and acceptance; and sustainability (Berry, 2011; Gurevich & Gorev, 2012).

2.2 Technology Integration

Attaining a high level of achievement has been attributed to many factors inclusive of a technology-enabled learning environment. The rapid evolution of varied technology tools has created a need for users to keep abreast of the emerging technologies. However, the success of the technology-based environment has many challenges, both at the teacher and school level. This section will review literature on the impact of technology on students' achievement and the effectiveness of technology usage in the classroom to enhance teaching and learning process.

2.2.1 Effective use of technology in the classroom.

Research (Cakir et al., 2019; Groff & Mouza, 2018) has supported teaching and learning with technology across the curriculum in order to transform the learning environments. But integrating technology into classroom instruction goes beyond teaching basic computer skills; it must happen across the curriculum and include the major components of learning such as active engagement of students, teamwork, collaboration, evaluation of impact, and connection to real-life situations. The use of technology tool is not a one-time event but must be consistent, transparent, and support curricular goals.

Researchers have developed frameworks for technology integration in their studies (Annetta, Murray, Laird, Bohr, & Park, 2018; Groff & Mouza, 2018). In their study on investigating student attitudes toward a synchronous online graduate course in a multiuser virtual environment (MUVE), Annetta et al. (2018) shared their findings on the effective use of technology. The MUVE environment was designed to evoke in the user a sense of virtual "presence," that is, a sensation the participant has of being in another place while visiting a virtual environment.

Surveys and observations carried out with a sample class centered on student products, instructor-student interaction, plans to implement course features, and perceived difficulties in implementation. The students benefitted from using the MUVE by moving from a state of virtually no knowledge to one in which they acquired skills in virtual environments and were able to create a functional and engaging learning activity. In addition, the students gained a wide range of comfort and proficiency with the use of technology.

Creating an effective learning environment with technology is still a challenge, and there is a struggle to find consistent success with technology-based instruction. Groff

and Mouza (2018) indicated that amongst the barriers of effective use of technology is the lack of access to technological resources. The teachers' lack of technology–based skills, along with their attitudes and beliefs, was not favorable to a technology-based learning environment. Groff and Mouza (2018) developed a coherent framework titled "Individualized Inventory for Integrating Instructional Innovations" (i5), which can provide practical assistance to teachers as they navigate the process of technology integration.

They found that i5 helped teachers identify and address potential challenges associated with the implementation of technology-based projects in the classroom, thereby increasing the likelihood of achieving success in technology integration. Although most researchers believed that technology can change the teaching process, making it more flexible, engaging, and challenging for students, little actual evidence exists to support these claims.

In past years teacher education programs have been criticized for not training preservice teachers how to integrate technology into their classroom instruction. Thieman (2018) analyzed how K-12 preservice teachers used technology as a tool for student learning, given technology standards for teachers and students from the International Society for Technology in Education (ISTE, 2017) and considered how those experiences relate to 21st-century citizenship skills. The key findings indicated that 85% of preservice teachers integrated technology skills and knowledge in instructional practice with their K-12 students.

About half of the sample works suggested that students benefit with the use of technology in the classroom especially in the areas of creativity, innovation, communication, collaboration, research, and information fluency. Thieman (2018) believed there was little evidence that K-12 students used technology to support critical

thinking, problem solving, and decision making. However, the author suggested a followup study to evaluate the extent to which teachers and their students are meeting current expectations for digital citizenship skills through the use of various technology tools.

Other studies (Annetta et al., 2018; Inan & Lowther, 2010; Levin & Wadmany, 2018) explored factors affecting the use of technology. In their 2010 study on factorsaffecting technology integration in K-12 classrooms, Inan and Lowther (2010) established that barriers such as teachers' demographic characteristics hindered the successful use of technology. However, teachers' computer proficiency, beliefs, and readiness positively influenced the use of technology in the classroom. Other factors such as the school factors also positively influenced teachers' belief and readiness. In essence, teachers' beliefs and readiness may mediate the indirect effects of school and teacher level factors on the use of technology by the teacher in the classroom.

Levin and Wadmany (2018) explored teacher views on factors affecting their use of information and communication technologies (ICT) in the classroom and how those views reflect changes in teachers' beliefs and actual classroom practice. The findings revealed the positive influence on teachers' use of technology. Levin and Wadmany (2018) believed it was important to understand teachers' view, experience and educational practices when technology was introduced into their classroom. Teachers' practices and belief may determine to which extent technology will be integrated into their classroom practice.

Palak and Walls (2019) studied teachers' beliefs and technology practice rationale because of the ongoing contradictions in findings between teachers' beliefs and technology usage. The fundamental goal was to determine if teachers who often integrate technologies, and work at technology-rich schools, change their beliefs and

consequently their instructional practices toward a student-centered paradigm. The methodology involved mixed-methods design using multiple variables and sampling techniques in selecting technology. Teachers from collaborative professional development schools participated.

The findings in the quantitative analysis revealed no shift in teacher practice. In the qualitative phase the results of both methods were integrated. The results showed that teachers' positive attitudes toward technology did not necessarily have the same influence on student instructional strategies. Palak and Walls (2019) stated that the focus of technology integration should be on student-centered pedagogy and future professional development may need to model a theory of change toward a student-centered paradigm. The findings further corroborated results from prior research that indicate teacher technology use in a technology-rich environment did not transform teaching into more student-centered practice (Judson, 2016).

Hammond, Reynolds, and Ingram (2011) explored the nature and scope of student teachers' use of ICT, the factors that led them to use ICT, and the constraints on usage. The study employed a mixed-methods design involving a survey with a sample population of 340 teachers and a semistructured interview with a sample of 21 teachers. Personnel, access, and other environmental factors were identified as factors that affect the use of ICT while factors that influenced the use of ICT were mentoring, training, and support. The findings revealed that innovative student teachers used ICT in a greater range of contexts and made more effort to overcome barriers, such as access. ICT use was seen as emerging from a mix of factors: chiefly student teachers' access to ICT; their feeling of "self-efficacy" when using ICT; and their belief that ICT had a positive impact on learning, and can help promote behavioral and effective engagement.

Almekhlafi and Almeqdadi (2010) investigated teachers' perceptions of their technology integration competencies, barriers obstructing such integration, and incentives to increase it, in addition to other related issues. The authors sought to determine how teachers perceived their competencies with technology integration; how teachers perceived obstacles and incentives related to successful classroom technology integration; and how teachers perceived their students' classroom usage of technology.

Using a mixed-methods approach with focus group interviews and questionnaires as data collection instruments, the sample population included 40 female and 60 male teachers from two schools. Findings showed that both male and female teachers at Schools had high self-perception of their abilities and competencies to integrate technology successfully in their teaching. In addition, teachers integrated technology in their classes to varying degrees and with different levels of effectiveness, in spite of the barriers that hindered such integration. Essentially, teachers at both schools integrated technology in their classroom activities, and used various technologies to promote students' learning, though male and female teachers differed in some cases on methods of integration.

Cifuentes, Maxwell, and Bulu (2011) focused on technology integration through professional learning community (PLC) in order to support technology integration in three rural school districts, and the contributions of various program strategies toward teacher growth. The fundamental question was how effective technology integration was encouraged in classroom teaching and learning through a shared learning community comprised of teachers, faculty, and administrators. A longitudinal study that evolved over the 2-year span employed concurrent mixed-methods approach. Quantitative methods were used to determine the increase in technology adoption as

perceived by the participating teachers, and qualitative case study methods were used to describe the process and impacts of the learning community.

There was an indirect positive effect on student achievement and an improvement in teachers' stages of technology adoption. Additionally, teachers' practice of technology integration enhanced student learning. However, effective technology integration might be encouraged in classrooms through the strategies applied in shared learning community (Cifuentes et al., 2011).

2.3 Theoretical Literature Review

2.3.1 Behaviourism and Constructivism Theories

Mannerist and knowledge directions placed little emphasis on students‟ input and their contributions in the teaching and learning process. Accordingly, students could be deemed by these theories to be passive participants in the learning process (Woolfolk, 2016). In contrast to knowledge and mannerist theories which emphasised the important role played by the teacher and the organised transfer of content, the constructionist theory emphasised the students‟ central role in the learning process and acknowledged the students‟ ability to construct meaning through their learning (Kanuka & Anderson, 2019).

In the 20th and 21st centuries, many scholars attempted to define practical teaching and learning. These definitions became theories of teaching and learning, created to try and clarify the meaning of both. Learning theories provide us with conceptual frameworks of interpretation for the act of learning, and show us where to look for solutions to practical problems. Teaching methods are in the main based on theories of learning. The most important learning theories are Behaviourism and

Constructivism. These two approaches are based on two main schools of psychology that have influenced learning theory.

They have different perspectives on learning, different perspectives on teaching styles, and different approaches to pedagogy and evaluation. Constructivist learning theory has been used to study the impact of ICT on teaching and learning. This learning theory contributes to understanding both the construction of and relationship between curricula and events (Gredler, 2000; Woolfolk, 2016).

It also provides direction for research and implementation. Because of the influence of the constructivist learning movement, the theory of constructive learning emphasises the teachers' central role in academic curricula and suggests improvement according to the teachers' needs and interests (Gredler, 2010; Woolfolk, 2016). This theory supports the individual's growth and enables the students to explore their learning potential. Despite the theorists' different definitions of learning, a majority are agreed that learning happens when experience leads to a constant change in the individual's knowledge or manner (Weiten, 2012). What is meant by „experience" in this definition is „the practical interaction of the person with his or her environment' (Woolfolk, 2016: 196).

2.3.2 Constructivism and Constructionism Theories

According to the research conducted by Hamdi (2013), the theory and application of ICT attracts systematic methods through inter-related theories in technology, psychology and education to develop its bases, principles, and applications for higher education. The influence of technology on almost all aspects of contemporary life is profound, and the field of education is no exception. In fact, the notion of using machines to provide individually paced learning and instant feedback in order to

improve education was widely explored at a time when a single electronic computer still filled an entire room (Casas, 2012). Today's students are the first generation of young people to have lived their entire lives in a society shaped by computer technology, and unlike previous generations, they will never experience a world without it (Niles, 2016).

Partly in reaction to didactic approaches such as behaviourism and programmed instruction, constructivists have argued that learning is an active, contextualized process of constructing knowledge rather than acquiring it. This theoretical stance actively opposes traditionalist, didactic, transmissions of knowledge. Seymour Papert and Idit Harel in their book Situating Constructionism (2011) use the terms constructivism and construction almost interchangeably, but use 'Constructionism' as it applies to Learning Theory. 'Constructionism' the N word as opposed to the V word--shares constructivism's connotation of learning as "building knowledge structures" irrespective of the circumstances of the learning. It then adds the idea that this happens especially felicitously in a context where the learner is consciously engaged in constructing a public entity, whether it's a sand castle on the beach or a theory of the universe.‟ (Papert and Harel, 2011, p. 1).

Theorists like Ackerman (2011), also see a smooth transition between constructivism and constructionism, between Piaget (2009) and Papert, seeing constructionism largely as a more situated learning theory, especially valuable in cybernetics and more socially contexted than Piaget's earlier work. She states:

'Papert's constructionism, in other words, is both more situated more pragmatic than Piaget's constructivism [or Vygotsky's socio constructivism asserts that learning is an active, constructive process. The learner is an information constructor. The learner actively constructs or creates his/her own subjective representations of objective

reality. New information is linked to prior knowledge, existing schemata always activated (Ackerman, 2011, p.5).

2.3.3 The Importance of Experience and Learning based on Practical Experiments.

Constructivist theory emphasises the importance of experience and learning based on experiments. Students play a pivotal role in the learning process. The teacher's role appears in directing and supporting students to construct meaning and understand situations. Practitioners and scientists have claimed that constructionism cannot be implemented in a traditional knowledge environment. They suppose that constructionism goes beyond formal learning which relates to students‟ previous experiences. Howe and Berv (2010) acknowledged the 'pointlessness' of avoiding direct teaching, especially when teaching children, with the conclusion that it is ineffective to depend solely on constructionist teaching patterns. Constructionism differs from other educational practices in that most other types of learning emphasise the importance of acquisition of knowledge and information. The essence of constructionism appears in the individual's personal experience of learning and reflection (Jonassen, Peck & Wilson, 2019; Kafai & Resnick, 2012).

During the learning process, students‟ activities are considered important and basic for constructing knowledge. Meaningful learning occurs when there is collaboration among learners, teachers, and specialists in this domain. Activities are not organised officially inside constructionist classrooms through timetables or plans that students are required to follow. Students actively help in planning and organising the activities within the classroom. This contributes to stimulating and encouraging them to think. The methods of teaching and learning are characterised by flexibility

and comprehending students‟ viewpoints and thoughts (Gould, 2016; Peck & Wilson, 2009). Classrooms and constructionist programmers exhibit the following characteristics (Gould, 2016; Peck & Wilson, 2019): learning focuses on thoughts instead of facts; the learning process implies interaction between students and teachers; focus on the construction of knowledge instead of repetition; encouraging and supporting dialogue and discourse within a complicated world which involves various representations of knowledge; students‟ interests define learning; and learning experiences emphasise the prominence of realistic activities.

Despite its progressive ideas about the nature of learning, constructionism evokes a number of criticisms. Fears surrounding its principles and applications are centred on the following (Roblyer & Edwards, 2010: 68):

Permitting learning skill – Despite constructionist's condemnation of formal tests and objective assessments, schools need sometimes to authenticate the basic skills which the students have learnt. Previous knowledge – a lot of students lack the previous skills which enable them to deal with the complicated problems and solving them according to what constructionist strategies require. Selecting the most effective teaching – it is difficult for students to choose for themselves the methods through which they will learn to solve problems. Specifying suitable topics for constructionist methods – sometimes tension occurs when choosing appropriate topics for a particular event and when covering one topic deeply is preferred to talking in elaboration on many topics. Skill transfer to practical situations – fears also arise over the ease of transferring problem solving skills that were learnt in practical situations inside the school to problems which students have to solve in real life.

As is the case with any change, constructionist directions in learning pose risks for students, parents, teachers and administrators (Jonassen, Peck & Wilson,

2009). Some may suppose that constructionism burdens students and exempts teachers from the responsibility of their teaching capabilities. Nevertheless, contrary to this conception, teachers in the constructivist learning environment do not give up their responsibility, but play different roles as facilitators for students' learning (Brooks & Brooks, 2019).

2.4 The Application of Educational Technology in a Constructivist Approach to Learning

Constructivism argues that learning is interactive and argues for the autonomy and active participation of the student. The learner is an information constructor and actively builds his/her own subjective representations of reality. New information is related to previous knowledge in terms of schema development. Followers of constructivism include such names as Vygotsky, Piaget, Dewey, Vico, Rorty, and Bruner (Learning Theories Knowledgebase, 2019). Constructivism as a term covers a huge theoretical area. Constructivist learning theorists range from the individual cognitive and personal constructivism of Piaget, to the social constructivism of Vygotsky. There are many other types of constructivism but there are certain ideas that all constructivists have in common. Taber (2016) describes them as being:

1. The active construction of knowledge by the learner - knowledge is not passively received from the outside. Here the theory is vastly different from behaviourism, which defines learning as an externally modified behaviour. Learning according to constructivists is therefore something the learner does, not something that the learner is compelled to do.

2. Learners have prior knowledge so they come to the learning situation with ideas about many things. These ideas are called schemas and teachers have to take them into consideration and make teaching relevant to these conceptual structures.

3. Learners have their own individual ideas about reality and generate their own meaning structures to cope with everyday living.

4. Their ideas often contradict or clash with accepted scientific ideas or with school curricula and are culturally or socially conditioned.

5. Knowledge is described by these theorists as conceptual structures in the brain and it is possible to describe and to model them.

6. Instructional Design and teaching has to take the learner's prior knowledge into account if the educators want to achieve their educational aims and objectives.

7. Knowledge is both personal and individual and at the same time has a social dimension. Learners construct their conceptual schemas by interacting with the social world, in social settings and within cultural and linguistic contexts.

2.5 Technology (ICT) and the Constructionist Theory of Learning

The use of ICT enables opportunities for learning environments and practices that require interaction among individuals, co-operation with chances to experiencing learning, and the principles which constructionism supports. Many educational establishments, work on supporting integrating technology into teaching and learning. Kanuka and Anderson (2019) provide an example of the use of the internet for learning, as learners use the internet and explore it in different ways and explore it in different directions. Their research used small group discussions and their presentations after the research produced various interpretations of the subject matter.

Moreover, according to Gance (2012), it is not always true to suppose that because technology facilitates student focused learning, constructionist strategies centred on learners are used to play a central role in their learning when ICT is utilised. At most times the use of software and the internet do not agree with the constructionist philosophy. For example, it could be argued that "a course about the internet individually directed towards learners does not emphasise cooperation, interaction or the software which is meant for training and which in practice can implement the constructionist pattern" Gance (2012, p. 14).

Additionally, Gance (2012) points out the flaws associated with some aspects of using ICT, notably in areas such as e-learning or subject-specific software. These methods are associated with short-answer or multiple choice testing. Constructionism invites students to show their understanding in more profound ways, to explain or confirm their knowledge through assembling the information extracted previously in the manner of a new conclusion or solution design.

Such short answers do not allow this. The present short tests based on technology, despite being a great improvement in programming technology, are not considered an improvement in the teaching process. Technology may represent an important tool for facilitating and enhancing the implementation of the constructionist pattern; however, it is not the only method to be used as an example for constructionism. The use of only ICT to create a teaching environment that draws on constructionist principles will not give the required effect. Indeed, it may have a reverse effect through weakening constructionist practices (Gance, 2012).

2.6 Empirical Literature Review

2.6.1 Technology/Media Use in the Social Studies lessons

First and foremost, it is important to understand how we arrived at this topic and why it is significant. The truth of the matter is the youth of this culture are inundated with technology in almost all capacities of their lives. A study conducted by Roberts, Foehr and Rideout in 2015 suggested that the average youth spends almost 6 ½ hours a day using media, which includes most defined technologies (Roberts, Foehr & Rideout 2015). This fact alone remains alarming enough without even accounting for the amount of media and technology that children are experiencing in the school environment. This being said, one question that emerges is: to what degree can we justify promoting more media and technology use within the classroom if our youth are already so overly exposed?

Recognizing the amounts of technology that any given individual uses on a daily basis can be subjectively difficult to determine; however, another 2005 study found that 87% of teens aged 12-17 used the Internet, which demonstrates how significant new technologies have become with our youth generation and how this generation is defined by the "technological environment" within which they live (Lenhart, Madden, Hitlin 2015). While the functions and applications of most adolescent use may vary between social interaction, educational searching and just simple curiosity, there is a definite concern among many that socially we have not done enough in terms of standards and regulations for technology use and media content.

Ironically, there is an attitude among many parents that any computer use is beneficial regardless of the context. There is an assumption that their children will need to use computers later in life so developing those skills now is a plus (Rideout & Hamel 2016). This issue will be later discussed in the chapter on pressures, which

specifically examines social attitudes and pressures that are influencing our changing educational system. Many in this society perceive technology as being the medium that leads to future professional success. This view is rationalized by recognizing what a mediated and technologically inundated society we live in. This is simply the reality.

With their engaging, interactive properties, the new digital media are likely to have a more profound impact on how children grow and learn, what they value, and ultimately who they become than any medium that has come before. 'Generation Y,' the nearly 60 million youth born after 1979, represents the largest generation of young people in the nation's history and the first to grow up in a world saturated with networks of information, digital devices, and the promise of perpetual connectivity (Neuborne & Kerwin, 2019: 80).

For these reasons, it seems logical that there be some critique and analysis of the educational media that are being employed by our schools as well as in the larger society. Culturally, we are putting such an emphasis on how our children are using new media and technology outside of the classroom that it is crucial to understand the forms of media and technology in which they are engaging.

In a study conducted by Beauchamp (2018), apparently, teachers' acceptance for new technologies seems to be controversial. Whilst some have effectively integrated ICT tools into the classroom, others have been cautious in their acceptance, and some have simply rejected these technologies. Of course, the role of the teacher in terms of using effective practical methods to teach ICT must change so as to enable them cope with the recent developments. Literature reviews in this field are important not only to teachers but also to policy makers who undertake supporting teachers in implementing ICT inside the classrooms.

In this respect, Beauchamp (2018) found that teachers need to draw upon large volumes of suitable practical resources that they can draw on for specific targets and adjust to meet the requirements of the students. However, students need to have a level of practical ICT skills in order to deal with technology, and teachers should help the students with important tasks rather than waiting for the students to 'push computer buttons in response to easy questions from the teachers'. Accordingly, this means that the teacher has to be pro-active and confident with the technology themselves. In order to clarify the teacher's role in implementing ICT in the classroom, some researchers considered the teacher's competencies related to ICT, for example, Nico, Ruttena and Wouter (2012) demonstrated that the use of computer simulations while teaching in the classroom will not be successful unless teachers have the necessary skills and information to implement them effectively.

In addition, they reported that if teachers don't have the skills, the potential learning from computer simulations will remain out of reach. As an alternative, they may be used as demonstration experiments or be totally controlled by the teacher. In other words, the role of the teacher should focus on founding a pedagogical framework necessary for implementing computer simulations during teaching science.

Some researchers investigated the difficulties that teachers may encounter while implementing ICT. They revealed that the difficulties in the use of ICT are related to the weakness of a teacher's knowledge about what technologies are available and how they can be used in the educational process in the classroom. In addition, teachers should know how to use ICT in relevant ways to help them in the delivery of the curriculum (Morrisa, 2011).

As solution for this problem, it is necessary that teachers need to feel confident in their skills to practically assist student learning with ICT, to incorporate practical

ICT teaching and learning into their classrooms. Therefore this needs to become a more qualified development to increase a teacher's practical ICT skill (Ward and Parr, 2010). Other research has focused on the advantages that teachers gain from implementing ICT. For example, Hennessy et al., (2017) argues that teachers will benefit from the available technology in supporting students to build links between scientific theory and empirical evidence.

By adopting different approach, Greene (2018) found that there is lack of curriculum- specific ICT resources. He asserts that teachers and students have good general ICT skills, although they do not get the same advantage from using online resources. Moreover, Greene found that teachers need to have the appropriate training on how to use ICT in teaching and learning. Nevertheless, teachers need to make the shift from traditional to the interactive pedagogies in a non-ICT context before being able to be familiar with the benefits offered by ICT (Tanner et al., 2015).

Interestingly, such research would recognise the positive effects and identify any negative influences. In this way we could determine how best to promote the teacher's role so that outcomes are improved. With respect to ICT environment, Chen and Wu (2012) note that the teachers should provide opportune help which should focus on how the students can learn and explain to them that making mistakes in the lessons is part of the learning process. Furthermore, the ICT environment should focus upon how erudite the material is in relation to reality so that the students learn how to improve their skills and achieve the knowledge. Similarly, Mukama & Andersson (2008) point out that learning in ICT environments is similar to a journey and teachers newly entered into the profession often provide new visions.

Likewise, a recent study by Su (2011) suggested that practical ICT-integrated environmental learning can support students to achieve a greater understanding of

ICT education. However, these studies emphasise the importance of providing effective ICT environment for students by teachers. Another major viewpoint perceives that most orchestration of the learning is led by the teacher or by software, and that students should have a more important role in orchestration of resources (Beauchamp and Kennewell, 2010). Furthermore, it is very significant to teachers to teach the students how to use ICT with relevant tasks while the students are away from the ICT resource, and in a lot of different settings, for example when the students examine the results of learning actions with another student in the classroom, or perhaps in their leisure time (Cox and Marshall, 2017).

Obviously, such perspectives call for engaging students in their own learning while implementing practical ICT teaching and learning methods. The effectiveness of practical ICT on the roles of teachers may be projected clearly through the study of Hennessy et al. (2017), who carried out investigations into how experienced classroom practitioners are beginning to harness the functionality of practical ICT to support learning. Wherein, the methods they utilised focused upon group interviews with four secondary science sections, with lesson observations and interviews with two teachers and their students. Ultimately, they noted that the use of ICT supported shared cognition, articulation, collective evaluation and reframing of students‟ ideas, and the structuring of new facts for students.

In the research article by Kennewell (2015), he found in his study of schools in Wales that teachers have evolved considerably and successfully in both course content and pedagogy through both individual and cooperative integration of practical ICT into their teaching methods. His findings support the idea that the teacher is the leader of the learning process in the classroom. More studies continued on addressing the effect of teacher’s attitudes towards ICT on students' learning. For example,

Sangràa and Mercedes (2010) investigated four different schools and they noted that there is a favourable opinion from a large group of teachers regarding the use of practical ICT demonstrations in education.

Furthermore, they suggested that it is very useful for students and has helped in the development of learning processes such as attention- visualisation and response mechanism-application learning and also the understanding and transmission of information to facilitate knowledge. However, they have also found some negatives such as interaction skills of expression and communication skills that suggest that not all teachers are wholly embracing ICT. As conclusion, the teacher's attitude is vital in the educational process and the lack of interest shown by some teachers has an adverse effect upon the educational process in the classroom.

2.6.2 Teacher Uses of Technology to Facilitate the Teaching and Learning of Social Studies

The job of the teacher is to present subject material in a manner that is organized and offers the students a sense of structured familiarity for learning in order to achieve better retention. While at times there has been a social perception that teachers avoid or rebel against the use of technology in the classroom, this stubbornness is often due to the perception of power and authority being lost (Cuban 2016). In fact, teachers embrace change when it is required to be more effective, yet typically these changes are in ways that support their knowledge and authority in the classroom rather than undermine it (Cuban 2016).

Teachers will judiciously modify their classroom procedures in order to solve problems and overcome teaching obstacles, and more frequently, it becomes a question of maintaining student interest. But the incorporation of technology into a

course or lesson is not as easy as simply turning on a computer. As Ashburn and Floden suggest, there are six important elements that teachers must recognize in effectively teaching with technology: allowances (or available tools), integration, content, appropriateness, effort, and time (Ashburn & Floden 2016). Taking into account all of these factors can be an arduous undertaking for some, especially those that are more comfortable and familiar with more traditional forms of teaching.

Interestingly though, it has been found that those teachers who do attempt to engage with technology tend to do so more during the school day than do the students themselves. However, the reasons for this differentiation lies with teachers using technology more commonly for administrative purposes, i.e. taking attendance, submitting grades, etc., than for necessarily incorporating technology into their lessons (Harwood & Asal 2017). In general, at the high school level, teachers were still engaging with their traditional approaches to instructive teaching and simply using technology as an effective supplement for conveying information to their students (Harwood & Asal, 2017).

2.6.3 Educational Technology and Students' Motivation to Learn

Gorder, (2018). researched on three factors that increase students' motivation in the technologically enhanced setting. The factors included communication, learning, and empowerment as students appreciated how they interact with others in real time by using technologies such as computers. Connecting with others is made possible by the internet enabling real-time communication. The learners were empowered in a technology surrounding, as they were secluded from teachers and were less scared of relating to others. Learners believed that computer enables them to have control over their learning by promoting independence (Gorder, 2018).

Previous research has also shown that attitudes towards ICT do not significantly depend on gender. Teachers' attitudes toward ICT are multifaceted although with continued training positive results can be achieved (Ibieta et al., 2017). Anxiety decreases very quickly due to constant exposure to technology. However, the evolution of ICT is quite slow regarding productivity and can be prolonged. Usefulness of applying ICT in high schools is of great importance in different countries. Various nations have different connectivity and access to ICT resources and the current state of technological advancement. Complete integration of technology in the classrooms helps in improving the cognitive functions and meeting the needs of high school learners.

Introduction of modern technology in high schools has also had a significant impact on teaching by a generalization of teachers' schedules (Ibieta et al., 2017). For instance, lesson preparation has been supported by emerging inventions, especially computers. Teachers can plan interactive and creative lessons as well as set assignments using various technologies in a class setting. Instructors can use technology for assessing learners in various forms although overall technology is capable of enhancing tests through the provision of flexible designs. Learners' skills and competencies can be established, and teachers can utilize real-time feedback.

Therefore, technology enhances student-teacher interactions improving understanding of the critical content. The tutor can explain concepts severally for students to comprehend what is being taught. The adoption of technology in this area leads to overall improvement in reporting and student grades (Abboud & Rogalski, 2017). The use of technology in high school can help break down boundaries, as it does not limit the lesson period. Therefore, there is the creation of an authentic learning continuum between home and school due to empowerment in the latter.

Students and their instructors can take more control in the learning process and harness the capabilities of gaining new experiences thus encouraging quality studies outside libraries and classroom (Kennewell et al., 2018).

Learners can utilize technology to facilitate the meeting, collaborating, and creating content virtually. Collaboration is also possible through technology due to the flexibility that helps students to work in an environment considered as more collaborative. Technology is vital for mutual learning enabling interaction between teachers and learners. Students can always contribute to lesson content and engage with their colleagues in solving problems during lesson time. Use of mobile devices and laptops is the best for remote and online learning. Students are continually generating new approaches to problem-solving as well as learning ways of working alongside their peers.

Future careers of high school students are enhanced when technology is used to support teaching. Textbooks are still crucial in the classroom for references and extensive research. However, students use laptops and tablet while others use Smartphone for classroom-related work. Homework and assignments can be downloaded easily by learners and be submitted to the tutors via email or other platforms. Technological advancements have led to significant changes in education, especially the utilization of the internet. Sharma and colleagues did research analyzing the web-based learning and its effect on the motivation of students by the internet. Use of documentaries together with movies helps learners to understand classroom content better.

Flexibility ensures collaborative learning in a classroom environment. The study findings encourage researchers willing to actualize the notion of technology used during lessons (Sharma, 2019). Recently, the evolution of portable gadgets, wireless

devices, and network inventions has been highly developed. The incorporation is expected to use technologies in a high school environment for teachers together with learners in using modern innovations (Singh, 2018). Mobile devices facilitate the connection between tutors and learners to use computing capabilities anywhere.

The internet and wireless technology promote interlink amidst mobile gadgets with other computing devices such as computers, tablets, and other items (Hinostroza et al., 2016). Recently empirical research has revealed the benefits of using wireless technology and portable gadgets in high school learning surrounding to enhance accessibility and convenience of information interconnection (Shernoff et al., 2017). Helping students to participate in learning-related activities regardless of where they are, offering support to groups working on a plan, and improving communication and joint education in the classroom is essential.

2.7 The Negative Impact of Using Technology in Schools

Smith et al. (2018), study found that technology in high school could have an adverse effect such as cyberbullying. The findings indicate that such crimes are less frequent compared to the traditional bullying (Smith et al., 2018). However, many cases have been reported within the schools compared to other places. Misuse of school technological gadgets is linked to the existence of cases of cyber-bullying of colleagues. Bingimlas in his work claimed that teachers were willing to integrate technology in teaching but faced many obstacles. Some of the barriers encountered include the lack of confidence, inadequate competences, scarce resources, and time (Bingimlas, 2019).

ICT resources include hardware, software, technical support, and professional development, which need to be availed to teachers. Incorporating all the components

can make it easier for high school teachers to integrate technology in schools and achieve active learning in the school environment (Zheng & Warschauer, 2015). Lack of confidence hinders utilization of modern technology in the learning process, and the leading cause of lacking confidence is fear of failure and anxiety concerning usage of new methods during classes. Instructors fear attending classrooms with inadequate resources since some learners have more computer skills compared to them. Lack of competence by tutors also hinders the incorporation of ICT during class time in pedagogical practice (Brown, 2015).

However, this barrier differs from one country to the other since in other nations especially the developing ones; the level of incompetence in technology is quite high. Resistance to change is one of the significant problems that are to be solved to make sure that a comprehensive combination of the computer technology in secondary schools. Teachers' attitudes limit the extent of technology use since most tutors are not willing to change their old ways (Darling-Aduana & Heinrich, 2017). Some issues are caused by school levels such as the lack of adequate time allocation for incorporating new technologies. The limitation is quite common, as it requires the use of extra time for students to work with technological gadgets. Also, inadequate training of teachers has become a significant barrier.

The recent study in Turkey pointed out that the primary issue with the adoption of information technology in science in schools is the lack of adequate in-service training for teachers. Without knowledge on ways of using contemporary inventions, it is unfeasible to apply them in high schools and other educational institutions.

2.8 The Positive impact of Educational Technology

The practical use ICT effectively can lead to a more positive educational ethos in the classroom and in effect a more communicative classroom. Effective use of ICT by the teacher can offer greater interactivity at both a deep and surface level. We will explore the general use of ICT, but also its impact on interactivity within the classroom. Cox et al. (2013) undertook a review of the research and then concluded that ICT had indeed had a positive effect on attainment in National Curriculum subject areas. They qualified this assertion by stating that it was not just the everyday use of ICT as a tool, but the practical and skilful use of ICT by the teacher, when linked to careful pedagogical strategies enhancing classroom communication.

In order to get the best use of ICT teachers have to be aware of ICT's range and features as a resource and should be deeply versed in practical ICT techniques. This conclusion was confirmed by Somekh and Davies (2019) and Sutherland (2015). They assert that the skilful use of ICT by trained practitioners is absolutely key to higher attainment. ICT offers a range of key features including speed, automation, capacity, range, provisionality and interactivity (Beauchamp (2012: 3).

By considering the features related to teacher's skills in ICT, Figg and Jaipal-Jamani (2011) found that practical ICT pedagogical skills are important for teaching with ICT, across all topic areas. Particular features of teacher actions linked to the planning of ICT enhanced lessons across topics were recognised. Hence, features of good planning included: (a) Content- centric goals for lessons, (b) Choice of practical technology-enhanced activity, (c) Differentiation strategies, and (d) Sequencing of activities. While implementation features included: (a) The fact that teachers need to become confident in using practical ICT in their daily teaching, (b)

Knowledge of specific classroom management techniques for teaching with technology, and (c) Modelling strategies.

In other words, all these features are unique in how they are expressed by the teacher's actions in the classroom during ICT supported lessons. For example, all teachers should include margins for varied student learning when they propose their lessons plans. Teachers also need to have effective practical experience with ICT to support teaching – if the teacher has greater practical technical skills, it will be reflected on students. In order to examine the usefulness of ICT in education, evidence needs to be examined from across the globe. However, there is diversity of opinion; some studies suggest that instruction in ICT is useful, with Liao (2004) suggesting "it is positive over traditional instruction in Taiwan". This Taiwanese study was supported by a Chinese study (Zhou, Hu, & Gao, 2010) from Shaanxi Normal University.

Nevertheless, the second study examined only chemistry teaching, whereas Liao's subject area is not defined. This could indicate that ICT is less suitable, in some subject areas. This approach raises questions as to what precisely ICT suits the various subject areas, if such problem ambiguities are resolved by a fixed, global scale of optimal answers. The studies of integrated holistic school curriculum have shown that, unlike the studies concerned with some subject areas, the question of ICT use across the whole school curriculum is very important (Ward and Parr, 2010). The study of Ward and Parr, situated in New Zealand, suggested two hypotheses. Firstly, the core academic subjects and their teaching are often sacrosanct in schools. Furthermore, the subjects are often qualification focused which reflects upon the school, therefore, they suggest that schools are unwilling to innovate with change of practice or the use of computers.

Secondly, they suggest that even where there is an “overall school policy” that this may be interpreted differently at departmental level and with each individual teacher: According to this view, “This would seem to support the view that schools are complex, adaptive systems within which the adoption of any innovation is likely to follow unpredictable diffusion trajectories” (Ward and Parr, 2010, p. 586).

Some studies addressed that the teacher is a key to the organisation and orchestration of practical ICT in the classroom since both components have an enormous impact upon how a student learns (Sang et al., 2010) and can influence the students‟ perception of ICT in the classroom. Furthermore, this source raises the argument that teachers‟ attitudes should be challenged (Livingston & Rae 2016). Similarly, Condie (2015) supports the view of Sang et al. by using the analogy of either paddling at the water’s edge or actually swimming. Hence, this evidence seems to suggest that the teacher’s input is essential when examining the use of ICT in the classroom. Sang et al. (2010) take this a step further by suggesting that wading at the edge is not enough and reflects upon teaching competency.

However, one specific pattern of practical ICT-based studies has recently received a tremendous amount of attention from educational professionals and researchers. For example, the study of Al Khateeb (2010) was conducted to identify the attitudes of teachers in Jordan, towards instructional technology in relation to some independent variables such as gender, specialisation and years of experience. The study sample consisted of 139 teachers (male and female) in public schools located in Irbid Governorate. The researcher used a questionnaire comprising 40 items, allocated equally into positive and negative attitudes, during the academic year 1998/1999.

The results indicated the presence of positive attitudes among teachers within the study population regarding practical instructional technology. The results also showed that there are significant differences between teachers' trends toward instructional technology and the scientific qualification, in favour of those who are holding an undergraduate degree (BA) over those holding a College diploma (two years of study). Furthermore, the results indicated that there are no significant differences regarding the attitudes of teachers towards instructional technology between gender, specialisation and experience. To sum up, the findings in this study provide a new understanding of how teachers perceive practical instructional technology and what factors influence their views toward such technology.

Hargreaves et al. (2010, p. 224) defined nine different features of interactive learning based on teachers' own interpretations of how to promote practical interactive learning:

1. Students' practice.
2. Students' practical and effective participation.
3. Students' expanded participation.
4. Cooperative activity.
5. The transfer of knowledge and „deep" work patterns.
6. Assessing and enlarging knowledge.
7. Meaning exchange and formation.
8. Paying attention to thinking and learning skills.
9. Paying attention to students" social and emotional needs / skills.

Moreover, Burns and Myhill (2014), have suggested some important features that interactive lessons offer; Mutual opportunities for discussion, which help children to develop independent voices during discussion; appropriate direction and

'patternisation' when the teacher organises language and skills to think collectively; Environments that stimulate students' participation, and; raising students" level of independence. Many studies in interactive learning emphasise the shift from high levels of teachers' control to greater self-centred learning on the students' part. It may be useful for future researchers to imagine interaction in teaching regarding interaction and scaffolding nature through dialogue. Kennewell, Tanner, and Beauchamp (2017) for example, expect interactive teaching to include several levels of interaction in order to cope with teaching objectives.

2.9 The Concept of Technology in Education

Wenglinsky studied the relationship between different applications of education and its outcomes. The research involved the collection of statistics from the National Assessment of Education advancement in mathematics. The sample consisted of 6,227 learners in the fourth grade and 7,146 from eighth grade. The information sought was related to the frequency of computer use in studying mathematics in school set up, the availability of computers at homes, the use of computers by teachers as well as technology to give instructions. According to the findings, there are inequities in the manner in which computer are used. Schools in poor urban and rural areas may lack opportunities to develop computers effusively (Wenglinsky, 2018).

Therefore, teachers from regions that have not embraced the utilization of information technology have less technical skills compared to those in developed urban centers. The study concluded that computers are not the solution to all problems schools might be experiencing, although they present a comprehensive tool for proficiency in mathematics. In the study by Clotfelter et al. (2010), they employed statewide end-of-course tests that were carried out in Carolina to establish the

connection among tutors qualifications and learners achievement in high schools.

According to the findings, there was compelling proof that tutors qualifications, especially the license and credited ones, have significant impacts on learner success of high magnitude. The results mean that the uneven division of tutor testimonial brought about by racial profiling and economic condition of school learners influenced student achievement (Clotfelter et al., 2010). Teachers with certified computer education performed better in ensuring learners utilize modern technology in attaining their goals of being successful in learning (Van den Beemt & Diepstraten, 2016). The existence of technologies in the class set up learning has been effective particularly in ensuring the improvement of in-service teacher education and preparation for pre-service instructors to make sure successful alignment of educational technology in the learning activities.

Recently teacher-learning establishment is making an effort to prepare for pre-service tutors to make sure there is an integration of technology into the future teaching practices mainly in high school (Anderson, 2016). Some strategies include the introduction of technology to pre-service teaching professionals, delivering of technology courses, giving mini-workshops, integration of technology in all learning units, and modeling on the usage of technology among others. For instance, in countries such as China, the government pays considerable attention to the preparation of learners-tutors to align ICT in the future learning practices, by giving ICT educational coursework. Incorporation of computer systems into the learning system has become a primary objective of many countries since it improves performance after the student attends post-secondary levels (Borokhovski et al., 2016).

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

CHAPTER THREE

RESEARCH METHODS

3.0 Introduction

This chapter deals with the overall approach to the collection, measurement and analysis of data that suits the study objectives. It covers discussions on the approaches to the research followed by the study.

3.1 Research Design

Research design is putting together conditions to specify relationships among variables. A process of controlling effects of inapplicable variables, plan for selecting the resources and types of information to be used in answering the research questions (Ndunguru, 2007). This study would use a case study design. A case study is an empirical investigation that finds out a contemporary event within its real-life context especially when the line between event and context are not clearly observed (Yin 2009).

Yin added that for the *case study,* it is when a "how" or "why" question is being asked about a contemporary set of events and the researcher has little or no control over the investigation. The unique advantage of the case study inquiry is an ability to deal with a full variety of evidence documents, interviews, artifacts, and observations. The case study allows an inquiry to hold the integrated and meaningful characteristics of real-life phenomena such as individual life cycles, management and leadership processes, and accommodation of change, international relations, and the organisation development.

3.2 Research Approach

Research approach is divided into two groups namely deductive (quantitative) and inductive (qualitative). The relevance of assumptions to the study is the main distinctive point between these two approaches. Deductive approach tests the validity of theories or hypotheses in hand, whereas inductive approach contributes to the development of new theories and generalizations (Dudovskiy, 2016).

Quantitative research is generally related with the positivist paradigm. It involves collection and conversion of data into numerical form for statistical computations in which conclusions is drawn (Alzheimer Europe, 2009). The quantitative research insists on deductive reasoning which moves from the general to the specific. This approach sometimes is known as a top down approach. The validity of conclusions is shown to be dependent on one or more other premises being valid.

The case study research design is used. Case study research, also called case study, is a method of intensively studying a phenomenon over time within its natural setting in one or a few sites. Quantitative research approach was used. Researchers should bear in mind that methods used to conduct the research need to align with the research questions (Punch 2008). In other words, data which need to be collected should be enough in answering the research question. Amaratunga et al. (2012) maintained that quantitative research can help a researcher to gather strong evidence through statistical analysis on the relationship between dependent and independent variables.

3.2 Population of the study

A research population can be defined as the totality of a well-defined collection of individuals or objects that have a common, binding characteristics or traits (Polit

et al., 2006). Burns et al., (2013) added that a population is defined as all elements (individuals, objects and events) that meet the sample criteria for inclusion in a study. The population for the study was eighty five (85) teachers in the Nakolo Junior High School in the Paga East Circuit of the Kassena Nankana West District in the Upper East Region of Ghana.

3.3 Sampling Procedure

Census method would be used to select eighty five (85) respondents out of the population for the study. This method was used because this method gives equal chance for all members to have an equal chance of being selected. Since the number of population of the selected institution was large this was selected to give equal chance for respondents to be selected for the study. Moreover, the ever increasing need for a representative statistical sample in empirical research has created the demand for an effective method of determining sample size.

The Census Method is also called as a Complete Enumeration Survey Method wherein each and every item in the universe is selected for the data collection. The universe might constitute a particular place, a group of people or any specific locality which is the complete set of items and which are of interest in any particular situation. The census method is most commonly used by the government in connection with the national population, housing census, agriculture census, etc. where the vast knowledge about these fields is required.

Whenever the entire population is studied to collect the detailed data about every unit, then the census method is applied. One of the major advantages of census method is the accuracy as each and every unit of the population is studied before drawing any conclusions of the research. When more and more data are collected the

degree of correctness of the information also increases. Also, the results based on this method are less biased.

The census method can be applied in a situation where the separate data for every unit in the population is to be collected, such that the separate actions for each is taken. For example, the preparation of the voter's list for election purposes, income tax assessment, recruitment of personnel, etc. are some of the areas where the census method is adopted. This method can be used where the population is comprised of heterogeneous items, i.e. different characteristics.

Though the census method provides a complete data of the population under study, it is very costly and time-consuming. Often, this method is dropped down because of these constraints and the sampling method, where certain items representative of the larger group, is selected to draw the conclusions.

3.4 Data Collection Instrument

A questionnaire was developed by the researcher to obtain relevant information on the topic from the selected respondents at selected school. The instrument was divided into sections that covered the research objectives and research questions. The questionnaire had four main sections, which were designed in line with the research questions. The first section contained socio-demographic characteristics of the respondents and included their age, gender, working experience and level of education.

This was primarily to enable the researcher to have background information of respondents. Section Two would evaluate the benefits of using ICT to facilitate teaching and learning process in Social studies at Nakolo Junior High School in the Paga East Circuit. Section three would assess the barriers of using ICT to facilitate

teaching process in Nakolo Junior High School in the Paga East Circuit. Section four would identify factors determining the use of ICT to facilitate teaching at Nakolo Junior High School in the Paga East Circuit. The analysis of the study was based on these research objectives of the study.

3.5 Data Collection Procedure

The researcher would personally administer the questionnaire which required the respondent to choose based on the Likert scale from questions designed by the researcher for easy purposes. All the respondents would be informed of the objectives and design of the study. Emphasis would be placed on the fact that the findings are primarily for academic purposes. Respondents were familiar with answering of questionnaires. All the respondents had some experience in completing questionnaires and were generally not apprehensive.

There was uniform question presentation and no middle-man bias. The researcher's own opinions did not influence the respondent to answer questions in a certain manner. There were no verbal or visual clues to influence the respondent. Three days were used to distribute and receive the answered questionnaires from the respondents.

3.6 Ethics

There are several reasons for the adhering to ethical norms in research. Norms promote the aims of research, such as knowledge, falsifying or misrepresenting research data, promote the truth and avoid error. Moreover, since research often involves a great deal of cooperation and coordination among many different people in different discipline and institutions, ethical standards promote the value that are

essential to collaborative work, such as trust, accountability, mutual respect and fairness.

For instance, many ethical norms in research, such as guidelines for relationships, copyright, and patency policies, data sharing policies and confidentiality and peer reviews are designed to protect intellectual property interest while encouraging collaborations. Many of the ethical norms help to ensure that researcher can be held accountable to the public.

William (2016) lists some of the ethical issues as informed consent, confidentiality and anonymity. Given the importance of ethical issues in several ways, the researcher would avoid taking any ones work and where someone's work was included, such were acknowledged. In the process of data collection, respondent's identities were concealed and any information obtained was handled with utmost confidence. No harm of any nature was meted out on any respondent, aspects of privacy was observed and any cruelty avoided.

3.7 Data analysis

The data would be organized into tables and figures based on the questionnaire given to respondents. The results would be analyzed and converted into percentages. Quantitative method would be employed in the analysis of the data. The results would be subsequently computed into percentages. Percentage (%) values, which were not round figures, would be approximated to the nearest whole numbers. Diagrammatic representations of the statistical summaries of the result would be presented in the form of frequency tables.

3.8 Validity of the Instrument

Validity is a measure of the degree to which differences found with a measuring instrument depict true differences among the items being measured, Kothari (2014). In

the perspective of Mugenda and Mugenda (2013), an instrument is validated by providing that its items are representative of the skills and characteristics to be measured. Validity of the research instruments was reinforced by ensuring that the questionnaire items sufficiently covered the research objectives and this was subsequently confirmed by the pilot study.

Other measures put in place to address issues of instrument validity took the form of exposing the questionnaire to the experts and peers for judgment and review, respectively. Validity of the instrument was also assured through randomization that proved helpful in checking the influence of extraneous variables. Randomization is considered crucial for it is the best technique of ensuring the representatives of the sample to the target population.

3.9 Reliability of the Instruments

According to Mugenda and Mugenda (2013), reliability is a measure of the degree to which a measuring instrument yields consistent results or data after repeated trials. In Kothari (2015), reliability of a test instrument is a measure of the consistency with which a test instrument produces the same results when administered to the group over time intervals. In this study, split-half reliability measure was employed by diving the questionnaire items into two equal parts on the bases of odd and even appearances.

The first part of the research instrument having been administered and the result obtained, the second part was subsequently administered and the results noted. Pearson's product moment coefficient of correlation (r) was then used to compare the two scores obtained and by giving an alpha value of 0.8, indicating that the data collection instrument was reliable.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

Introduction

The purpose of the study was to assess the benefits and challenges of using ICT tools in teaching Social Studies in Nakolo Junior High School in the Paga East Circuit of the Kassena Nankana West District in the Upper East Region of Ghana. The study was guided by the following research objectives including to evaluate the benefits of using ICT to facilitate teaching and learning process in Social studies at Nakolo Junior High School in the Paga East Circuit. Secondly, to assess the barriers of using ICT to facilitate teaching process in Nakolo Junior High School in the Paga East Circuit and thirdly, to identify factors determining the use of ICT to facilitate teaching at Nakolo Junior High School in the Paga East Circuit.

Response rate of the Questionnaires

The researcher administered 85 questionnaires to the teachers of Nakolo Junior High School in the Paga East Circuit, out of which 83 questionnaires were properly answered and returned/received, while 2 questionnaires were not returned. Therefore, the analyses of the employee's questionnaires were based on 98% response rate as shown in Figure 4.1.

Figure 4.1: Response rate of the questionnaires

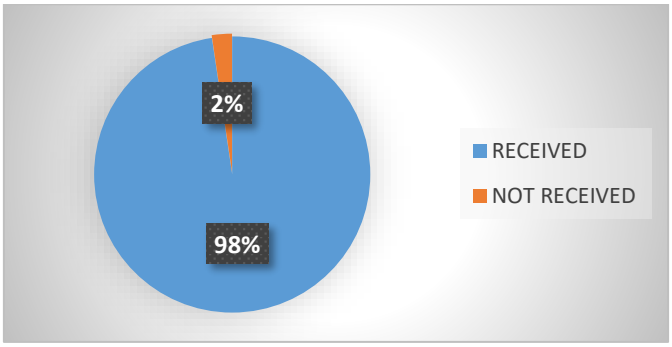

Table 4.1: Demographic Information of the Respondents

BIO DATA	*Frequency*	*Percentage*
Gender of respondents		
Male	42	50.6
Female	41	49.4
Total		100
Age category of respondents		
Below 25 years	7	8.4
26-35 years	15	18.1
36- 45 years	36	43.4
Above 46 years	25	30.1
Total	83	100
Willingness to teach Information and communication technology (ICT) course		
Yes	76	91.6
No	7	8.4
Total	83	100
Interest in ICT subject		
Yes	69	83.1
A little	14	16.9
No	0	0
Total	83	100
Educational qualification		
Certificates	15	18.1
Diploma	15	18.1
Bachelor's degrees	35	42.2
Masters degrees	18	21.7
Total	83	100

Source: Field survey, 2021, n=83

Table 4.1 shows that, majority 42(50.6%) of the respondents were males while 41(49.4%) were females. Previous research has also shown that attitudes towards ICT do not significantly depend on gender. Teachers' attitudes toward ICT are

multifaceted although with continued training positive results can be achieved (Ibieta et al., 2017). Also, 36(43.4%) of the respondents were between the age ranges 36-45 years, 25 (30.1%) of the respondents were above 46 years, 15(18.1%) were between the age category 26-35 years while 7(8.4%) were below 25 years. Furthermore, 76(91.6%) 0f the respondents were willing to teach Information and communication technology (ICT) course while 7(8.4%) were not willing to teach ICT due to insufficient teaching and learning materials (TLMs). Moreover, 69(83.1%) of the respondents were interested in ICT subject while 14(16.9%) were a little interested in ICT subject. The study results reveal that 35(42.2%) of the respondents were holding Bachelor's degrees, 18(21.7%) had Masters degrees, while 15(18.1%) were possessing certificates and Diplomas. However, one specific pattern of practical ICT-based studies has recently received a tremendous amount of attention from educational professionals and researchers. For example, the study of Al Khateeb (2010) was conducted to identify the attitudes of teachers in Jordan, towards instructional technology in relation to some independent variables such as gender, specialisation and years of experience.

Research Question 1: What are the benefits of using ICT to facilitate teaching and learning process in Social studies at Nakolo Junior High School in the Paga East Circuit?

Table 4.2: The benefits of using ICT to facilitate teaching and learning process in Social studies at Nakolo Junior High School in the Paga East Circuit.

S/N	*ITEMS*	*SD* *n(%)*	*D* *n(%)*	*N* *n(%)*	*A* *n(%)*	*SA* *n(%)*	*Mean* *X*	*SD*
1	I find it easy to adapt to changes that the introduction of new ICT software use bring in my study		7 (8.4)	6 (7.2)	23 (27.7)	47 (56.6)	3.78	0.78
2	Teachers are able to use new ICT introductions in their teaching of the subjects without much difficulty	5 (6)	4 (4.8)	4 (4.8)	38 (45.8)	32 (38.6)	3.65	0.83
3	Teachers who apply ICT and computer based programs in teaching are well trained and competent on the software	8 (9.6)	4 (4.8)	5 (6)	39 (47)	27 (32.5)	3.24	0.85
4	The use of practical teaching methods can improve students skills in ICT subject.	4 (4.8)	4 (4.8)	3 (3.6)	53 (63.9)	19 (22.9)	3.21	0.88
5	ICT develop students interest in practical lessons	6 (7.2)	4 (4.8)	4 (4.8)	43 (51.8)	26 (31.3)	2.98	0.92
6	ICT enhances students practical expertise	5 (6)	7 (8.4)	2 (2.4)	39 (47)	30 (36.1)	2.73	0.95
7	ICT improves interactivity during lessons			5 (6)	56 (67.5)	22 (26.5)	2.61	0.97
8	ICT motivates students to contribute during lessons			3 (3.6)	59 (71.1)	21 (25.3)	2.53	0.99

SA-Strongly agree, **A**-Agree, N-Neutral, D-Disagree, **SD**-Strongly disagree

Source: Field survey, 2021, n=83

Table 4.2 reveals that 70(84.3%) of the respondents agreed that they find it easy to adapt to changes that the introduction of new ICT software use bring in their teaching and learning, 7(8.4%) of the respondents disagreed while 6(7.2%) were neutral (mean score of 3.78, SD - 0.78). The results indicated the presence of positive attitudes among teachers within the study population regarding practical instructional technology. The results also showed that there are significant differences between teachers' trends toward instructional technology and the scientific qualification, in favour of those who are holding an undergraduate degree (BA) over those holding a College diploma (two years of study).

To add more, 70(84.3%) of the respondents agreed that teachers are able to use new ICT introductions in their teaching of the subjects without much difficulty, 9(10.8%) of the respondents disagreed, while 4(4.8%) were not sure (mean score of 3.65, SD - 0.83). Furthermore, 66(79.5%) of the respondents agreed that teachers who apply ICT and computer based programs in teaching are well trained and competent on the software, 12(14.4%) of the respondents disagreed, while 5(6%) were neutral (mean score of 3.24, SD - 0.85). Furthermore, the results indicated that there are no significant differences regarding the attitudes of teachers towards instructional technology between gender, specialisation and experience. To sum up, the findings in this study provide a new understanding of how teachers perceive practical instructional technology and what factors influence their views toward such technology.

The study findings indicate that, 72(86.8%) of the respondents agreed that the use of practical teaching methods can improve students skills in ICT subject, 8(9.6%) of the respondents disagreed, while 3(3.6%) were not sure (mean score of 3.21, SD - 0.88). Moreover, 69(83.1%) of the respondents agreed that ICT develop students

interest in practical lessons, 10(12%) of the respondents disagreed, while 4(4.8%) were not sure (mean score of 2.98, SD - 0.92). Some studies addressed that the teacher is a key to the organisation and orchestration of practical ICT in the classroom since both components have an enormous impact upon how a student learns (Sang et al., 2010) and can influence the students‟ perception of ICT in the classroom. Furthermore, this source raises the argument that teachers‟ attitudes should be challenged (Livingston & Rae 2016).

Also, 69(83.1%) of the respondents agreed that ICT enhances students practical expertise, 12(14.4%) of the respondents disagreed, while 2(2.4%) were not sure (mean score of 2.73, SD - 0.95). Furthermore, 78(94%) of the respondents agreed that ICT improves interactivity during lessons, while 5 (6%) of the respondents were not sure (mean score of 2.61, SD - 0.97). The studies of integrated holistic school curriculum have shown that, unlike the studies concerned with some subject areas, the question of ICT use across the whole school curriculum is very important (Ward and Parr, 2010). The study of Ward and Parr, situated in New Zealand, suggested two hypotheses. Firstly, the core academic subjects and their teaching are often sacrosanct in schools. Furthermore, the subjects are often qualification focused which reflects upon the school, therefore, they suggest that schools are unwilling to innovate with change of practice or the use of computers.

Moreover, 80(96.4%) of the respondents agreed that ICT motivates students to contribute during lessons, while 3(3.6%) were not sure (mean score of 2.53, SD - 0.99). Teachers also need to have effective practical experience with ICT to support teaching – if the teacher has greater practical technical skills, it will be reflected on students. In order to examine the usefulness of ICT in education, evidence needs to be examined from across the globe.

Research Question 2: What are the barriers of using ICT to facilitate teaching process in Nakolo Junior High School in the Paga East Circuit?

Table 4.3: The barriers of using ICT to facilitate teaching process in Nakolo Junior High School in the Paga East Circuit.

S/N	ITEMS	SD n(%)	D n(%)	N n(%)	A n(%)	SA n(%)	Mean X	SD
1	Inadequate teaching and learning materials or computers and accessories for practical demonstration ICT lessons	0	0	4 (4.8)	48 (57.8)	31 (37.3)	3.21	0.63
2	Students score low in ICT subject because of inadequate practical tuition			5 (6)	62 (74.7)	16 (19.3)	3.28	0.65
3	Students score low in ICT subject because ICT teachers do not use variety of teaching and learning methods			4 (4.8)	59 (71.1)	20 (24.1)	3.37	0.69
4	Inadequate ICT teachers competencies and necessary skills in ICT subjects			6 (7.2)	56 (67.5)	21 (25.3)	3.49	0.72
5	I still prefer the manual way the subjects are taught rather than introducing new ICT models and software	7 (8.4)	73 (88)	3 (3.6)			3.52	0.76
6	The lack or inadequate training of teachers is considered a major barrier for the integration of ICTs in TVET in my school			5 (6)	63 (75.9)	15 (18.1)	3.61	0.79

SA-Strongly agree, **A**-Agree, N-Neutral, **D**-Disagree, **SD**-Strongly disagree

Source: Field survey, 2021, n=83

Table 4.3 shows that, 79(95.1%) of the respondents agreed that inadequate teaching and learning materials or computers and accessories for practical demonstration ICT lessons is a challenge teachers face in implementing ICT curricula, while 4 (4.8%) were not sure (mean score of 3.21, SD - 0.63). ICT resources include hardware, software, technical support, and professional development, which need to be availed to teachers. Incorporating all the components can make it easier for high school teachers to integrate technology in schools and achieve active learning in the school environment (Zheng & Warschauer, 2015).

The study results held that 62(74.7%) of the respondents agreed that students score low in ICT subject because of inadequate practical tuition, 16(19.3%) of the respondents 19.3% strongly agreed, while 5(6%) were not sure (mean score of 3.28, SD - 0.65). Also, 59(71.1%) of the respondents agreed that students score low in ICT subject because ICT teachers do not use variety of teaching and learning methods, 20(24.1%) strongly agreed, while 4(4.8%) were not sure (mean score of 3.37, SD - 0.69). Lack of confidence hinders utilization of modern technology in the learning process, and the leading cause of lacking confidence is fear of failure and anxiety concerning usage of new methods during classes. Instructors fear attending classrooms with inadequate resources since some learners have more computer skills compared to them. Lack of competence by tutors also hinders the incorporation of ICT during class time in pedagogical practice (Brown, 2015).

The study results indicate that, 56(67.5%) of the respondents agreed that inadequate ICT teachers competencies and necessary skills in ICT subjects are barriers to ICT education, 21 (25.3%) strongly agreed, while 6(7.2%) were not sure (mean score of 3.49, SD - 0.72). In addition, 80(96.4%) of the respondents disagreed that they still prefer the manual way the subjects are taught rather than introducing new ICT models and software, while 3(3.6%) were not sure (mean score of 3.52, SD - 0.76). Smith et al. (2018), study found that technology in high school could have an adverse effect such as cyberbullying. The findings indicate that such crimes are less frequent compared to the traditional bullying (Smith et al., 2018). However, many cases have been reported within the schools compared to other places. Misuse of school technological gadgets is linked to the existence of cases of cyber-bullying of colleagues. Bingimlas in his work claimed that teachers were willing to integrate technology in teaching but faced many obstacles. Some of the barriers encountered

include the lack of confidence, inadequate competences, scarce resources, and time (Bingimlas, 2019).

Moreover, 63(75.9%) of the respondents agreed that the lack or inadequate training of teachers is considered a major barrier for the integration of ICTs in TVET in my school, 15(18.1%) strongly agreed, while 5(6%) were not sure (mean score of 3.61, SD - 0.79). As conclusion, the teacher's attitude is vital in the educational process and the lack of interest shown by some teachers has an adverse effect upon the educational process in the classroom.

Research Question 3: What are the factors determining the use of ICT to facilitate teaching at Nakolo Junior High School in the Paga East Circuit?

Table 4.4: The factors determining the use of ICT to facilitate teaching at Nakolo Junior High School in the Paga East Circuit.

S/N	*ITEMS*	*SD* *n(%)*	*D* *n(%)*	*N* *n(%)*	*A* *n(%)*	*SA* *n(%)*	*Mean* *X*	*SD*
1	ICT facilities needed for the teaching and learning of my program are not available in my school.eg ICT Lab, engineering Softwares etc.			6 (7.2)	60 (72.3)	17 (20.5)	4.49	0.68
2	I am introduced to the use of ICT in my program from the beginning of my study			4 (4.8)	65 (78.3)	14 (16.9)	4.44	0.69
3	My school holds special training sessions and capacity building on the use of modern ICT software in my program of study			6 (7.2)	67 (80.7)	10 (12)	4.41	0.72
4	Social students need to have a level of practical ICT skills in order to deal with technology			6 (7.2)	56 (67.5)	21 (25.3)	4.39	0.75
5	ICT teachers have to be pro-active and confident with the technology themselves			3 (3.6)	73 (88)	7 (8.4)	4.35	0.79
6	ICT teachers must feel confident in their skills to practically assist social students' learning in ICT.			5 (6)	63 (75.9)	15 (18.1)	4.33	0.81
7	ICT teachers must incorporate practical			6	60	17	4.31	0.86

	ICT teaching and learning into their classrooms	(7.2)	(72.3)	(20.5)		
8	Social studies teachers need appropriate training on how to use ICT in teaching and learning.	4 (4.8)	65 (78.3)	14 (16.9)	4.28	0.88
9	Practical ICT integrated environmental learning can support social students to achieve a greater understanding of ICT education.	6 (7.2)	67 (80.7)	10 (12)	4.23	0.95
10	School authorities must provide adequate computers and accessories to improve practical ICT teaching and learning	6 (7.2)	56 (67.5)	21 (25.3)	4.21	0.97

SA-Strongly agree, **A-**Agree, N-Neutral, **D**-Disagree, **SD**-Strongly disagree,

Source: Field survey, 2021, n=83

Table 4.4 reveals that, 60(72.3%) of the respondents agreed that ICT facilities needed for the teaching and learning of their program are not available in their school.eg ICT Lab, engineering Softwares etc are inadequate, 17(20.5%) strongly agreed, while 6(7.2%) were not sure (mean score of 4.49, SD - 0.68). Future careers of high school students are enhanced when technology is used to support teaching. Textbooks are still crucial in the classroom for references and extensive research. However, students use laptops and tablet while others use Smartphone for classroom-related work. Homework and assignments can be downloaded easily by learners and be submitted to the tutors via email or other platforms. Technological advancements have led to significant changes in education, especially the utilization of the internet. Sharma and colleagues did research analyzing the web-based learning and its effect on the motivation of students by the internet. Use of documentaries together with movies helps learners to understand classroom content better.

Moreover, 65(78.3%) of the respondents agreed that they are introduced to the use of ICT in their program from the beginning of their study, 14(16.9%) of the respondents strongly agreed, while 4(4.8%) were not sure (mean score of 4.44, SD - 0.69).

Also, 67(80.7%) of the respondents agreed that their school holds special training sessions and capacity building on the use of modern ICT software in their program of study, 10(12%) of the respondents strongly agreed, while 6(7.2%) were not sure (mean score of 4.41, SD - 0.72). Teachers will judiciously modify their classroom procedures in order to solve problems and overcome teaching obstacles, and more frequently, it becomes a question of maintaining student interest.

Furthermore, 56(67.5%) of the respondents agreed that social students need to have a level of practical ICT skills in order to deal with technology, 21(25.3%) of the respondents strongly agreed, while 6(7.2%) were not sure (mean score of 4.39, SD - 0.75). To add more, 73(88%) of the respondents agreed that ICT teachers have to be pro-active and confident with the technology themselves, 7(8.4%) strongly agreed, while 3(3.6%) were not sure (mean score of 4.35, SD - 0.79). The job of the teacher is to present subject material in a manner that is organized and offers the students a sense of structured familiarity for learning in order to achieve better retention. While at times there has been a social perception that teachers avoid or rebel against the use of technology in the classroom, this stubbornness is often due to the perception of power and authority being lost (Cuban 2016). In fact, teachers embrace change when it is required to be more effective, yet typically these changes are in ways that support their knowledge and authority in the classroom rather than undermine it (Cuban 2016).

Moreover, 63(75.9%) of the respondents agreed that ICT teachers must feel confident in their skills to practically assist social students' learning in ICT,

15(18.1%) strongly agreed, while 5 (6%) were neutral (mean score of 4.33, SD - 0.81). The study results indicate that, 60(72.3%) of the respondents agreed that ICT teachers must incorporate practical ICT teaching and learning into their classrooms, 17(20.5%) strongly agreed, while 6(7.2%) were not sure (mean score of 4.31, SD - 0.86). Furthermore, they suggested that it is very useful for students and has helped in the development of learning processes such as attention- visualisation and response mechanism-application learning and also the understanding and transmission of information to facilitate knowledge. However, they have also found some negatives such as interaction skills of expression and communication skills that suggest that not all teachers are wholly embracing ICT.

Moreover, 65(78.3%) of the respondents agreed that social studies teachers need appropriate training on how to use ICT in teaching and learning, 14(16.9%) strongly agreed, while 4(4.8%) were not sure (mean score of 4.28, SD - 0.88). In this 21st century, many factors bringing to bear on the adoption of ICT in education and contemporary trend suggest large scale changes in the way education is planned and delivered as a consequence of the opportunities and availability of ICT.

Also, 67(80.7%) of the respondents agreed that practical ICT integrated environmental learning can support social students to achieve a greater understanding of ICT education, 10(12%) strongly agreed, while 6(7.2%) were not sure (mean score of 4.23, SD - 0.95).

To add more, 56(67.5%) of the respondents agreed that school authorities must provide adequate computers and accessories to improve practical ICT teaching and learning, 21(25.3%) strongly agreed, while 6(7.2%) were neutral (mean score of 4.21, SD - 0.97). Likewise, a recent study by Su (2011) suggested that practical ICT-integrated environmental learning can support students to achieve a greater

understanding of ICT education. However, these studies emphasise the importance of providing effective ICT environment for students by teachers.

Table 4.5: Factors that influence the attitudes of teachers and students towards embracing ICT and its related software

Factors	*Frequency*	*Percentage*	*P- Value*
Enhancing basic technology knowledge and skills	16	19.3	0.671
Adequate computer training	18	21.7	0.596
Motivating them to utilize ICT and computer	12	14.5	0.604
Support from government, schools in concern and other authorities demographics (age and gender)	17	20.5	0.607
Computer experience (training, years of using computer, ownership of computer, access to a computer, intensity of computer use)	15	18	0.792
Improving learning content	5	6	0.004*
Total	83	100	

P-value (Pearson 's Chi-square for categorical variables) Statistical significance at P< 0.05 P-values with * are significantly different
Source: Field survey, 2021, n=83

Table 4.5 shows that, with regards to the the factors that influence the attitudes of teachers and students towards embracing ICT and its related software the highlights were adequate computer training, (p < 0.596), Support from government, schools in concern and other authorities demographics (age and gender) (p < 0.604), Enhancing basic technology knowledge and skills (p < 0.671), Computer experience (training, years of using computer, ownership of computer, access to a computer, intensity of computer use) (p < 0.792), Motivating them to utilize ICT and computer (p < 0.604), and Improving learning content (p < 0.004*). The use of ICT enables opportunities for learning environments and practices that require interaction among individuals, co-operation with chances to experiencing learning, and the principles which constructionism supports. Many educational establishments, work on supporting integrating technology into teaching and learning.

Table 4.6: Barriers to the Integration of ICTs in TVET, both on the part of teachers and students

ITEM(S)	*Frequency*	*Percentage*	*P-Value*
Barriers of equipment and support	5	6	0.742
Difficulty of using ICTs	9	10.8	0.612
High cost of programme development	13	15.7	0.526
Resistance to change	14	16.9	0.621
Difficulties in recruiting qualified instructors	8	9.6	0.529
Lack of planning	6	7.2	0.517
Instructional difficulties	11	13.3	0.543
Learner resistance	6	7.2	<0.001*
Difficulties in maintaining reliable technical assistance and support	11	13.3	0.842
Total	83	100	

P-value (Pearson 's Chi-square for categorical variables) Statistical significance at P< 0.05 P-values with * are significantly different

The barriers to the integration of ICTs in TVET, both on the part of teachers and students were barriers of equipment and support (p = 0.742), difficulty of using ICTs (p < 0.612), high cost of programme development (p < 0.526), resistance to change (p = 0.621), difficulties in recruiting qualified instructors (p < 0.529), lack of planning (p = 0.517), instructional difficulties (p < 0.543), learner resistance (p = <0.001*), and difficulties in maintaining reliable technical assistance and support (p = 0.842). As solution for this problem, it is necessary that teachers need to feel confident in their skills to practically assist student learning with ICT, to incorporate practical ICT teaching and learning into their classrooms.

Therefore this needs to become a more qualified development to increase a teacher's practical ICT skill (Ward and Parr, 2010). Other research has focused on the advantages that teachers gain from implementing ICT. For example, Hennessy et al., (2017) argues that teachers will benefit from the available technology in supporting students to build links between scientific theory and empirical evidence.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The purpose of the study was to assess the benefits and challenges of using ICT tools in teaching Social Studies in Nakolo Junior High School in the Paga East Circuit of the Kassena Nankana West District in the Upper East Region of Ghana. This study used a case study design. Quantitative research approach was used. The population for the study was eighty five (85) teachers in the Nakolo Junior High School in the Paga East Circuit of the Kassena Nankana West District in the Upper East Region of Ghana. Census method was used to select eighty five (85) respondents for the study. Questionnaire was the main instrument used to gather primary data. Descriptive statistics was used to analyse data.

5.2 Summary of Major Findings

The benefits of using ICT to facilitate teaching and learning process in Social studies at Nakolo Junior High School in the Paga East Circuit.

The study results indicate that 84.3% of the respondents agreed that they find it easy to adapt to changes that the introduction of new ICT software use to bring in their teaching and learning (mean score of 3.78, SD - 0.78). Also, 84.3% of the respondents agreed that teachers are able to use new ICT introductions in their teaching of the subjects without much difficulty (mean score of 3.65, SD - 0.83).

Furthermore, 79.5% of the respondents agreed that teachers who apply ICT and computer based programs in teaching are well trained and competent on the software (mean score of 3.24, SD - 0.85). The study findings indicate that, 86.8% of the

respondents agreed that the use of practical teaching methods can improve student's skills in ICT subject (mean score of 3.21, SD - 0.88).

Moreover, 83.1% of the respondents agreed that ICT develop students interest in practical lessons (mean score of 2.98, SD - 0.92). Also, 83.1% of the respondents agreed that ICT enhances student's practical expertise (mean score of 2.73, SD - 0.95).

Furthermore, 94% of the respondents agreed that ICT improves interactivity during lessons (mean score of 2.61, SD - 0.97). Moreover, 96.4% of the respondents agreed that ICT motivates students to contribute during lessons (mean score of 2.53, SD - 0.99).

The barriers of using ICT to facilitate teaching process in Nakolo Junior High School in the Paga East Circuit.

The study findings highlighted 95.1% of the respondents agreed that inadequate teaching and learning materials or computers and accessories for practical demonstration ICT lessons is a challenge teachers face in implementing ICT curricula (mean score of 3.21, SD - 0.63).

The study results held that 74.7% of the respondents agreed that students score low in ICT subject because of inadequate practical tuition (mean score of 3.28, SD - 0.65).

Also, 71.1% of the respondents agreed that students score low in ICT subject because ICT teachers do not use variety of teaching and learning methods (mean score of 3.37, SD - 0.69).

The study results indicate that, 67.5% of the respondents agreed that inadequate ICT teachers competencies and necessary skills in ICT subjects are barriers to ICT education (mean score of 3.49, SD - 0.72).

In addition, 96.4% of the respondents disagreed that they still prefer the manual way the subjects are taught rather than introducing new ICT models and software (mean score of 3.52, SD - 0.76).

Moreover, 75.9% of the respondents agreed that the lack or inadequate training of teachers is considered a major barrier for the integration of ICTs in TVET in their school (mean score of 3.61, SD - 0.79).

The factors determining the use of ICT to facilitate teaching at Nakolo Junior High School in the Paga East Circuit.

The study results reveals that, 72.3% of the respondents agreed that ICT facilities needed for the teaching and learning of their program are not available in their school.eg ICT Lab, engineering Softwares etc are inadequate (mean score of 4.49, SD - 0.68). Moreover, 78.3% of the respondents agreed that they are introduced to the use of ICT in their program from the beginning of their study (mean score of 4.44, SD - 0.69).

Also, 80.7% of the respondents agreed that their school holds special training sessions and capacity building on the use of modern ICT software in their program of study (mean score of 4.41, SD - 0.72). Furthermore, 67.5% of the respondents agreed that social students need to have a level of practical ICT skills in order to deal with technology (mean score of 4.39, SD - 0.75).

To add more, 88% of the respondents agreed that ICT teachers have to be pro-active and confident with the technology themselves (mean score of 4.35, SD -

0.79). Moreover, 75.9% of the respondents agreed that ICT teachers must feel confident in their skills to practically assist social students' learning in ICT (mean score of 4.33, SD - 0.81).

The study results indicate that, 72.3% of the respondents agreed that ICT teachers must incorporate practical ICT teaching and learning into their classrooms (mean score of 4.31, SD - 0.86). Moreover, 78.3% of the respondents agreed that social studies teachers need appropriate training on how to use ICT in teaching and learning (mean score of 4.28, SD - 0.88).

Also, 80.7% of the respondents agreed that practical ICT integrated environmental learning can support social students to achieve a greater understanding of ICT education (mean score of 4.23, SD - 0.95). To add more, 67.5% of the respondents agreed that school authorities must provide adequate computers and accessories to improve practical ICT teaching and learning (mean score of 4.21, SD - 0.97).

Factors that influence the attitudes of teachers and students towards embracing ICT and its related software

The factors that influence the attitudes of teachers and students towards embracing ICT and its related software the highlights were adequate computer training, (p < 0.596), support from government, schools in concern and other authorities demographics (age and gender) (p < 0.604), enhancing basic technology knowledge and skills (p < 0.671), computer experience (training, years of using computer, ownership of computer, access to a computer, intensity of computer use) (p < 0.792), motivating them to utilize ICT and computer (p < 0.604), and improving learning content (p < 0.004*).

The barriers to the integration of ICTs in TVET, both on the part of teachers and students were barriers of equipment and support ($p = 0.742$), difficulty of using ICTs ($p < 0.612$), high cost of programme development ($p < 0.526$), resistance to change ($p = 0.621$), difficulties in recruiting qualified instructors ($p < 0.529$), lack of planning ($p = 0.517$), instructional difficulties ($p < 0.543$), learner resistance ($p = <0.001*$), and difficulties in maintaining reliable technical assistance and support ($p = 0.842$).

5.3 Conclusions

The study concluded that teachers are able to use new ICT introductions in their teaching of the subjects without much difficulty. Furthermore, teachers who apply ICT and computer based programs in teaching are well trained and competent on the software. The use of practical teaching methods improved student's skills in ICT subject. Moreover, ICT developed students interest in practical lessons. Also, ICT enhances student's practical expertise.

The study concluded that social studies students score low in ICT subject because of inadequate practical tuition. Therefore, there is the need to inculcate practical tuition into the ICT lessons. Moreover, inadequate teaching and learning materials or computers and accessories for practical demonstration ICT lessons affected students' academic performance. The study concluded that Students score low in ICT subject because ICT teachers do not use variety of teaching and learning methods. Moreover, inadequate ICT teachers' competencies and necessary skills in ICT subjects affected students' academic performance. The study results concluded that students need to have a level of practical ICT skills in order to deal with technology.

5.4 Recommendations

Based on the findings of the study and conclusion thereof, the following recommendations are made:

1. The government through the GES should procure the necessary ICT infrastructure for their schools to enable the teachers and students benefit maximally in the ongoing technological development and ICT contribution in educational advancement.

2. The Social studies teachers should use ICT and practical teaching methods to improve students' skills in ICT subject.

3. ICT teachers must use practical ICT expertise and improve students understanding of the ICT subject.

4. The ICT teachers must use variety of teaching and learning methods to improve students understanding of the ICT subject.

5. There is the need to organise periodic in-service training workshops to build ICT teachers competencies and necessary skills in ICT subjects and improve students' academic performance.

6. Students need to have a level of practical ICT skills in order to deal with technology.

7. ICT teachers have to be pro-active and confident with the technology themselves

8. ICT teachers must feel confident in their skills to practically assist students' learning in ICT.

9. ICT teachers must incorporate practical ICT teaching and learning into their classrooms

10. ICT teachers need appropriate training on how to use ICT in teaching and learning social studies.

11. School authorities must provide adequate computers and accessories to improve practical ICT teaching and learning.

12. Government can give soft-loan to teachers who want to acquire personal ICT. On the other hand the government can procure computers and supply to the teacher at a subsidized cost or at hire purchase. This will help the teachers of different subjects procure and use ICT appropriately.

5.4 Suggestions for Further Research

According to the conclusions and recommendations made, the study recommended that a similar study must be undertaken to evaluate the impact of in-service training on teachers' performance at work. The education system in Ghana needs an in-service training strategy that is functional and sustainable. The few in-service training programmes organised by the G.E.S are mostly general in nature and fails to adequately address the special needs of students in various subject areas.

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APPENDIX

APPENDIX A

QUESTIONNAIRE FOR TEACHERS

This questionnaire is designed mainly to assess the benefits and challenges of using ICT tools in teaching Social Studies in Nakolo Junior High School in the Paga East Circuit of the Kassena Nankana West District in the Upper East Region of Ghana. Please answer the questions with honestly and sincerity, your responses to the questionnaire will be treated confidentially. Your cooperation is needed in order to achieve the objectives of the study. Thanks for your co-operation.

Section A: Demographic Information of the Respondents

PLEASE TICK [√] THE MOST APPROPRIATE RESPONSE WHEN ANSWERING THE QUESTIONS BELOW.

What is your gender?

[ ] Male[ ] Female

Which of the age do you fall under?

Below 25 years [ ] 26-35 [ ] 36- 45 [ ] above 46 years

Did you choose to teach Information and communication technology (ICT) course yourself?

[ ] Yes [ ] No

Do you have interest in ICT subject?

[ ] Yes [ ] A little [ ] No

What is your perception about ICT lessons all these while?

[ ] It is very difficult [ ] It is not active [ ] It is not interesting [ ] It is difficult

Section B: The benefits of using ICT to facilitate teaching and learning process in Social studies at Nakolo Junior High School in the Paga East Circuit.

PLEASE TICK [√] THE MOST APPROPRIATE RESPONSE WHEN ANSWERING THE QUESTIONS BELOW.

	ITEMS	**SA**	**A**	**N**	**D**	**SD**
6	I find it easy to adapt to changes that the introduction of new ICT software use bring in my study					
7	Teachers are able to use new ICT introductions in their teaching of the subjects without much difficulty					
8	Teachers who apply ICT and computer based programs in teaching are well trained and competent on the software					
9	The use of practical teaching methods can improve students skills in ICT subject.					
10	ICT develop students interest in practical lessons					
11	ICT enhances students practical expertise					
12	ICT improves interactivity during lessons					
13	ICT motivates students to contribute during lessons					

Section C: The barriers of using ICT to facilitate teaching process in Nakolo Junior High School in the Paga East Circuit.

PLEASE TICK [√] THE MOST APPROPRIATE RESPONSE WHEN ANSWERING THE QUESTIONS BELOW.

Please use the following Likert scale to assess the barriers of using ICT to facilitate teaching process in Nakolo Junior High School in the Paga East Circuit.

	ITEMS	**SA**	**A**	**N**	**D**	**SD**
14	Inadequate teaching and learning materials or computers and accessories for practical demonstration ICT lessons					
15	Students score low in ICT subject because of inadequate practical tuition					
16	Students score low in ICT subject because ICT teachers do not use variety of teaching and learning methods					
17	Inadequate ICT teachers competencies and necessary skills in ICT subjects					
18	I still prefer the manual way the subjects are taught rather than introducing new ICT models and software					
19	The lack or inadequate training of teachers is considered a major barrier for the integration of ICTs in TVET in my school					

SA-Strongly agree, **A**-Agree, **D**-Disagree, **SD**-Strongly disagree

SECTION D: The factors determining the use of ICT to facilitate teaching at Nakolo Junior High School in the Paga East Circuit.

PLEASE TICK [√] THE MOST APPROPRIATE RESPONSE WHEN ANSWERING THE QUESTIONS BELOW.

Please use the following Likert scale to identify factors determining the use of ICT to facilitate teaching at Nakolo Junior High School in the Paga East Circuit.

	ITEMS	SA	A	N	D	SD
20	ICT facilities needed for the teaching and learning of my program are available in my school.eg ICT Lab, engineering Softwares etc.					
21	I am introduced to the use of ICT in my program from the beginning of my study					
22	My school holds special training sessions and capacity building on the use of modern ICT software in my program of study					
23	Social students need to have a level of practical ICT skills in order to deal with technology					
24	ICT teachers have to be pro-active and confident with the technology themselves					
25	ICT teachers must feel confident in their skills to practically assist social students' learning in ICT.					
26	ICT teachers must incorporate practical ICT teaching and learning into their classrooms					
27	Social studies teachers need appropriate training on how to use ICT in teaching and learning.					
28	Practical ICT integrated environmental learning can support social students to achieve a greater understanding of ICT education.					

29	School authorities must provide adequate computers and accessories to improve practical ICT teaching and learning					

SA-Strongly agree, A-Agree, **D**-Disagree, SD-Strongly disagree

30. Which of the following factors influence the attitudes of teachers and students towards embracing ICT and its related software?

A. Enhancing basic technology knowledge and skills [ ]

B. Adequate computer training [ ]

C. Motivating them to utilize ICT and computer [ ]

D. Support from government, schools in concern and other authorities demographics (age and gender) [ ]

E. Computer experience (training, years of using computer, ownership of computer, access to a computer, intensity of computer use) [ ]

F. Improving learning content [ ]

31. Which factors, according to your experience, are barriers to the Integration of ICTs in TVET, both on the part of teachers and students?

A. Barriers of equipment and support [ ] B. Difficulty of using ICTs [ ]

C. High cost of programme development [ ] D. Resistance to change [ ]

E. difficulties in recruiting qualified instructors [ ] F. Lack of planning [ ] G. Instructional difficulties [ ] H. Learner resistance [ ]

I. Difficulties in maintaining reliable technical assistance and support [ ]