UNIVERSITY OF EDUCATION, WINNEBA

EXPLORING TEACHERS' KNOWLEDGE AND PRACTICES IN INTEGRATING TECHNOLOGY INTO TEACHING OF SOCIAL STUDIES IN JUNIOR HIGH SCHOOLS IN THE EFFUTU MUNICIPALITY

FRANCISCA ANTWIWA-GYASI

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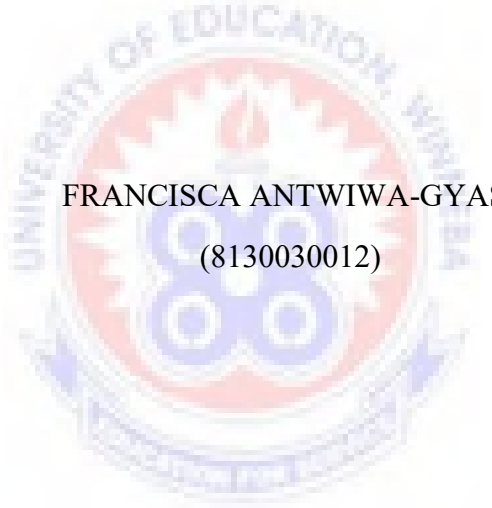

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A Thesis in the Department of Basic Education, Faculty of Educational Studies, submitted to the School of Research and Graduate Studies, University of Education, Winneba, in partial fulfilment of the requirements for award of the Master of Philosophy degree in Basic Education.

JULY, 2016

DECLARATION

Student's Declaration

I, FRANCISCA ANTWIWA-GYASI, declare that this Thesis, with exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own work, and it has not been submitted, either in part or whole, for another degree elsewhere.

Signature: ……..

Date: ……..

Supervisor's Declaration

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of Thesis as laid down by the University of Education, Winneba.

Name of Supervisor: AUGUSTINE YAO QUASHIGAH (ASSOC. PROF.)

Signature: …….

Date: …….

ACKNOWLEDGEMENTS

"Except the Lord build the house, they labour in vain that build it"

I am very grateful to God Almighty for his favour and his mercies, which took me through the hectic moments of completing this work.

My sincere thanks also go to my supervisor, Prof. Yao Quashigah, who accepted to supervise my work despite his tight schedule and encouraged me to persevere during moments of ill-health anf other challenges.

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DEDICATIION

This Thesis is dedicated to God Almighty for his help during the period of study.

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ABSTRACT

The study explored teachers' knowledge and practices in integrating technology into teaching of Social Studies in JHS class in Effutu Municipality. The study was modelled on descriptive survey design with sample size of 48 respondents, made up of 27 Social Studies teachers and 21 ICT teachers. The instruments used to collect data were the questionnaire and interview guide. Frequency count and percentages were used to analyze the data. Mann-Whitney test was used to test the hypothesis. The study found out that technologies like computers, projectors, internet and other audio-visuals could be used to teach Social Studies. Again, it was found out that teachers have positive perceptions of the use of technology in teaching Social Studies although they weren't sure of how technology positively affected students' learning. Also, it was found out that there was no significant difference in perception between male and female teachers with regard to integrating technology into the teaching of Social Studies. Finally, the study revealed that teachers face the challenge of unavailability of technology resources, technical support, reliable power supply, internet connectivity and motivation in their attempt to use technology in class. It is recommended that The Ghana Education Service (GES) should organize seminars for teachers to expose them to the various types of technology tools and materials available and how to use them. Again, Ministry of Education should not only make technology resources available in schools, but it should ensure that there are provision of constant electricity, internet connectivity and technical support for the schools. Finally, teachers should be innovative, creative and motivated by using a variety of technologies in their Social Studies lessons.

CHAPTER ONE

INTRODUCTION

1.0 Background to the Study

Information and Communication Technology (ICT) has become the most influential, dependable and cost effective means of enhancing corporate and organizational development across the globe. Its use and impact has become so imperative that no meaningful development could take place without this simple but complex tool. The advent of the digital age has dramatically transformed every aspect of human life – the way we work, the way we play, the way we live and the way we learn. The use of Information and Communication Technology (ICT) in and for education is rapidly expanding in many countries and is now seen worldwide as both a necessity and an opportunity for improving and enhancing the education offered to citizens across the globe (UNESCO, 2006). Thus, Information and Communication Technology is in fact, now regarded as "one of the building blocks of modern society" (UNESCO, 2002) and also considered as one of the indices that should be used to assess a society's development. In view of this, many countries globally now regard the acquisition of ICT skills as part of their "core education, alongside reading, writing and numeracy" (UNESCO, 2002).

The G8 Heads of State Conference acknowledged the role that ICT can play in supporting educational improvement globally. At the Hwa Chong Education Conference in March 2010, it was recognized that developments in ICT have opened up exciting new possibilities for teaching practices in order to better engage and excite learners.

Fu (2010), reiterated that ICT cannot only be used to expand students' learning horizons but could be a powerful aid to learning and stressed that harnessing the

power of ICT goes beyond simply investing in infrastructure but in achieving meaningful integration of ICT into educational practices. The International Conference on Teaching and Learning with Technology (2010) stressed the pivotal role that ICT can play in transforming teaching and learning. ICT has the potential to enable teachers and students to construct rich, multi-sensory, interactive environments with an almost unlimited teaching and learning potential (Balanskat, Blamire & Kefala, 2006).

In an attempt to meet the Millennium Development Goals adopted at Jomteim and Dakar, world countries have attempted to implement reforms aimed at embedding ICT in educational practice. For instance 'The Dakar Framework for Action' (2000), identified the use of ICT as one of the main strategies for achieving the world declaration of *Education for All* adopted at Jomtein in 1990 and called on all nations to harness new information and communication technologies to help achieve these goals (Rampersad, 2011).

All countries of the European Economic Union have made the integration of ICT in education a priority and have invested heavily in ICT in schools (Balanskat, et al., 2006). However, the degree of e-maturity between and within countries has varied with only a few schools having successfully embedded ICT in the curriculum (Rampersad, 2011).

In the Netherlands, government policy has been geared towards the "optimal integration of ICT in innovative learning processes" (Coskun & Kinnisnet, 2009). As a result of this and other initiatives, Dutch schools are making increasing use of digital learning environments. Like the Dutch, the Norwegian government, in its new national curriculum, has identified digital literacy as one of the five basic skills together with reading, writing, numeracy and oral proficiency and has created an

independent agency to implement the government's ICT policy and to oversee the integration of ICT in education. As a result, it has placed a strong emphasis on ICT as an integrated part of the learning activities in all schools (Soby & Egeberg, 2009).

In the United Kingdom, the official view of ICT as potentially transformative of education has placed it at the center of the national agenda for school reform (Deaney, Ruthven & Hennessy, 2006). As a result, the promotion of ICT in education has been a significant part of the UK government's policy in education since the 1980s with various programmes being implemented over the years. For instance, the 1998 *National Grid for learning* initiative witnessed 'unprecedented levels of government spending' on computer equipment, broadband Internet access and online resources for schools (Department for Education and Skills, 2003). In addition, in 2005, the *Division for Children, Schools and Families* (DCSF), launched its "e-strategy" aimed at harnessing technology to transform learning and achieve a more personalized approach within all areas of education. This plan was eventually upgraded to the 2009-12 strategic plan, "*Harnessing Technology for Next Generation Learning"* which was aimed at ensuring that every child develops the skills to use technology effectively and responsibly and which required that the curriculum be restructured to reflect the role of technology in society and the future of work (Pittard, Brown & Dykes, 2009).

The United Nations in 2013 in a statement to mark the International Day of Girls in ICT, noted that ninety-five percent of current global jobs were in the domain of ICT and therefore urged many girls across the world to get themselves involved in ICT to bridge the gender gap (UNPAN, 2014).

The Government of Ghana in 2003 produced a policy document dubbed, 'The Ghana ICT For Accelerated Development (ICT4AD) Policy' which has part of its mission to:

'transform the educational system to provide the requisite educational, and training services and environment capable of producing the right types of skills and human resources required for developing and driving Ghana's information and knowledge-based economy and society and that the Government is committed to a comprehensive programme of rapid deployment, utilization and exploitation of ICTs within the educational system from primary school upwards'. The policy has its effort directed at using ICTs to facilitate education and learning within the educational system and to promote e-learning and education as well as life-long learning. Some of the twenty-one strategies that the Government intends to use to achieve the objectives of the policy include, to:

- Modernize Ghana's educational system using ICTs to improve and expand access to educational, training and research resources and facilities;
- Transform Ghana into an information and knowledge-driven ICT literate nation;
- Introduce computers into all primary, secondary, vocational and technical schools;
- Promote electronic distance education and training and virtual learning systems to complement and supplement face-to-face campus based education and training systems;
- Mainstream ICTs throughout the entire educational system to promote life-long learning;
- Put in place special schemes to enable students, teachers and educational institutions to purchase computers through attractive financial packages;
- Develop educational intranet to provide educational materials and tools at all levels of the educational system;

- Promote Internet access to all educational institutions including the schools, universities and colleges, and;
- Promote e-learning in the schools and colleges (ICT4AD policy, 2003).

The Government of Ghana has therefore, placed a strong emphasis on the role of ICT in contributing to the country's economy. The country's medium-term development plan captured in the Ghana Poverty Reduction Strategy Paper (GPRS I & II) and the Education Strategic Plan 2003-2015 all suggest the use of ICT as a means of reaching out to the poor in Ghana (Mangesi, 2007).

Ghana has made appropriate policy intervention through the Ghana Education Service (GES) where ICT has been incorporated in the educational system and even making ICT an examinable subject at the Basic Education Certificate Examination (BECE). The policy was aimed at ensuring that every Ghanaian student has adequate knowledge and usage of the ICT device. In furtherance to the policy the Government of Ghana since 2008 through RLG, a telecommunication company, started distributing laptops to pupils dubbed "*one laptop per child project*". However, it seems not every pupil in Ghana – especially, those in the rural areas - have seen a computer let alone to get a laptop. However laudable the project was, it seems to have become a shadow of itself because many of the pupils who received the laptops cannot boast of it, defeating the objective of the project.

Final year pupils at the JHS level in Ghana, especially in the rural areas, are forced to answer questions on Information and Communication Technology (ICT) at the Basic Education Certificate Examination (BECE), even though they have not seen, touched or used computers during their school years or in their lives (Da Silver, 2014). It is therefore not surprising when CitiFMonLine on September 4, 2014 cited the World Economic Forum (WEF) as describing Ghana's educational system as below

international standards at all levels. The WEF in its Global Competiveness Report 2014-2015 assessing the competiveness of one hundred and forty-four countries, said the country – Ghana - is not sufficiently harnessing new technologies for productivity enhancements, since ICT adoption rates continue to be very low.

1.1 Statement of the Problem

Across the disciplines, technology offers unique opportunities to the teacher. Examples of these opportunities include the ability to research, create presentations, and communicate on discussion boards. For Social Studies, technology offers a new way to reach out for the world. Much of the Social Studies curriculum is built around the idea of learning about the world around us and the myriad ways that people across the globe function and live differently but effectively. With technology, social studies teachers, have a chance to allow students to explore and experience the world in a new virtual way. Through technology, students can now see satellite or regular pictures of geographic locations of their choice, communicate instantly with international children through email, instant messenger, or skype, explore a historic tomb through the virtual world of the computer, listen to cultural music through I-tunes and CD players among other opportunities. The possibilities are enormous for showing students the world beyond.

Additionally, for many social studies teachers one of the best ways to challenge and teach the past is through the use of primary sources (Boughan & Kerwin, 2006). While books are wonderful, they are often expensive, and contain other sources we may not need - thus not justifying the cost of expensive books. The internet has provided a way for teachers to bring in more primary sources for our students to learn with more efficiency and ease through online databases like the Library of Congress, the National Archive's Database and Australia's Coombsweb. Computer technologies

and the internet have made the world much smaller than ever (Roybler, 2003). And since Social Studies is an area that focuses on the interconnections of people and the earth, it has been affected by the impact of technology more than any other content area because there is more to learn about the world than ever before and information is changing constantly and dramatically (Roybler, 2003). This means that technology is a new tool to be explored.

As the world moves fast with technology, the educational sector must catch up with it if it wants to produce students who are up to date and fit in the job market. The Government of Ghana, knowing this very well, initiated the "*one laptop per child project"* which started the distribution of laptops to pupils.

In the Effutu Municipality, where the study was carried out, most JHS teachers have been provided with laptop computers with the aim of encouraging them to research to get information to aid their teaching. In spite of these and other efforts by the Government and the educational sector to help improve the academic performance of pupils, pupils' performance at the BECE level continues to be low.

Table 1.1: Performance Trends of Students in Social Studies at the BECE from 2009 - 2014

Academic Year	No. of Students Registered	No. passed	Percentage (%) passed
2008/2009	1208	483	40
2009/2010	1015	530	52.2
2010/2011	899	515	57.3
2011/2012	983	499	50.8
2012/2013	1201	403	33.6
2013/2014	1271	572	45

Source: Municipal Education Office – Winneba (2016)

Table 1.2: Performance Trends of Students in ICT at the BECE from 2011 - 2014

Academic Year	No. of Students Registered	No. passed	Percentage (%) passed
2010/2011	899	491	54.6
2011/2012	983	338	34.4
2012/2013	1201	417	34.7
2013/2014	1271	429	31.5

Source: Municipal Education Office – Winneba (2016)

Researches have shown that technology integration can facilitate students' learning and help them find useful information on their own. Teachers are therefore encouraged to integrate technology into teaching, so as to assist pupils with a pool of information to help make them civic competent. Even though world organizations recognize the importance of integrating ICT into teaching and Ghana's ICT4AD supports ICT integration, the perception of teachers in integrating ICT into teaching is yet unknown, therefore the research.

1.2 Purpose of the Study

The purpose of the study was to explore Social Studies teachers' knowledge and practices in integrating technology into teaching at JHS level in the Effutu Educational Municipality.

1.3 Objectives of the Study

The objectives of the study were to:

1. Describe how teachers in the Effutu Municipality perceive 'technology integration' into teaching of Social Studies.

2. Examine the factors that affect technology integration.
3. Assess whether basic schools have basic facilities to enable teachers integrate technology in teaching.
4. Assess whether Social Studies teachers possess adequate knowledge and competences to integrate technology into teaching.

1.4 Research Questions

The following questions were formulated to guide the study:

1. How do Social Studies teachers in the Effutu Municipality perceive 'technology integration' into teaching of Social Studies?
2. What factors affect their technology integration practices?
3. What ICT facilities are available to help Social Studies teachers integrate technology into teaching?
4. What level of knowledge and competences do Social Studies teachers possess to integrate technology into teaching?

1.5 Hypothesis

Ho: There is no significant difference in the perception of male and female teachers . about ICT Integration into teaching of Social Studies

H_1: There is significant difference in the perception of male and female teachers about ICT integration.

1.6 Significance of the study

The finding of the study is supposed to make available adequate information for effective implementation of the Ghana ICT For Accelerated Development Policy. It is expected to unravel the limitations that go against the implementation of ICT4AD so as to find solutions for proper take off. It will also help the Ministry of Education

to be well prepared with the requisite facilities and to plan ahead to make the necessary training programmes to prepare the teachers in readiness for the integration of ICT in teaching. It will provide the GES and other stakeholders the opportunity of adopting workable models to facilitate a successful implementation.

1.7 Delimitation of the Study

The scope of the study was on exploring teachers' knowledge and practices in integrating technology into teaching at the JHS level and not on other aspects like perception of parents on integrating technology into teaching. The study confines itself to only JHS Social Studies and ICT teachers in the Effutu Educational Municipality.

1.8 Organization of the Study

The study is organized into five chapters. The present chapter is the introductory chapter, entailing the background to the study, statement of the problem, purpose of the study, objectives, research questions, hypothesis, significance of the study, delimitations of the study and definition of terms.

Chapter two contains a review of literature relevant to the study. Chapter three describes the methodology and procedures used in the study. This includes a description of the research design, the population, sample and sampling techniques, research instruments, data collection procedures and data analysis plan.

Chapter four contains the results of the study. It presents a detail description of the findings and discussions of the study. Finally, chapter five consists of a summary of findings and conclusions of the entire body of research and includes recommendations, limitations and suggestions for further/future research.

1.9 Operational Definitions of Terms

Anticipation guide: A series of statements to which students respond "Agree" or "Disagree".

Buzz Session: A technique in teaching Social Studies in which small groups are given a topic to discuss and record for few minutes after which the small groups report to the whole class.

Camcorder: A portable combined video camera and video recorder.

Circle learning: A technique in teaching Social Studies in which students learn from each other through repetition in circles of small groups.

CNN: The Cable News Network (CNN) is an American basic cable and satellite television news channel owned by the Turner Broadcasting System division of Time Warner. It was founded in 1980 by American media proprietor Ted Tumer as a 24-hour cable news channel.

EDTECH: Educational Technology (EdTech) is the study and practice of designing effective instruction using technology, media, and learning theory.

GES: Ghana Education Service

GIS: A Geographic Information System (GIS) is a system designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data.

GPS: Global Positioning System (GPS) is 'constellation' of appropriately 30 well-spaced satellites that orbit the Earth and make it possible for people with ground receivers to pinpoint

their geographic\locations. The location accuracy is anywhere from 100 to 10 meters for most equipment.

ICT: Information and Communication Technology

ISTE: International Society for Technology in Education (ISTE). Is a nonprofit membership association for educators focused on Educational Technology.

JHS: Junior High School

K-W-L: Know, Want to know, Learned (K-W-L) is a technique of teaching involving a three-step approach in which students indicate what they know about a particular topic and what they want to know prior to the lesson delivery, and indicate what they have learnt during lessons, at the end of the lesson.

MSNBC: MSNBC is an American basic cable and satellite television network that provides news coverage and political commentary from NBC News on current events.

URL: Uniform Resource Locator is an address that identifies a particular file on the Internet, usually consisting of the protocol, as http, followed by the domain name

.

VCR: Video Cassette Recorder.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The literature was reviewed under the following topics: perception and its influence on actions; methods of teaching Social Studies; issues and problems in Social Studies education; meaning of educational technology; meaning of integration; integrating technology into teaching; technology integration in Social Studies; basic facilities in technology integration; advantages of technology integration; barriers of technology integration; and some empirical Studies

2.1 Perception and Its Influence on Actions

Merriam-Webster Dictionary defines perception as the way one thinks about or understand someone or something; the ability to understand or notice something easily; the way that one notice or understand something using one of the senses.

Perception is one's ability to interpret a stimuli into something meaningful based on prior experiences (Pickens, 2004). It can be subdivided into visual perception, auditory perception, olfactory perception, haptic (touch) perception, and gustatory (taste) perception (Gregory, 1980). These are the inlets through which a person receives stimuli. To Gregory (1980), when one looks at an object, he or she acquires specific bits of information about it including its location, shape, texture, size and those who toe the line of Gibson (1979), its functions. According to him, objects we perceive are distal stimuli, the reception of information and its registration by a sense organ make up the proximal stimulus and the meaningful interpretation of the proximal stimulus is the percept.

However, Pickens (2004) puts the perception process into four stages: namely, stimulation, registration, organization and interpretation. Gibson's (1979) proximal

stimulus has been broken into registration and organization by Pickens (2004). This may be due to Pickens' (2004) view of perception as being solely based on the interpretation of a stimulus based on one's prior knowledge. Even though Gregory (1980) agrees partly with Pickens (2004), he opines that perception sometimes involves 'seeing' things that are not there or distorting things that are.

To him, perception involves both bottom-up processes, which combine small bits of information about the object and top-down processes, which are guided by the perceiver's expectations and theories about what the stimulus is. Bottom-up (data-driven) process means that the perceiver starts with small bits of information from the environment and combines them in various ways to form a percept. In Top-down (theory-driven or conceptually driven) processing, the perceiver's expectations, theories or concepts guide the selection and combination of the information in the pattern-recognition process.

Perceiving is one of the brain's two primary functions. The other is determining how one acts in response to what one perceives. One's perception of the environment is influenced by one's past experiences, beliefs and expectations. This explains why each person's perception of reality is different. By changing core beliefs, one can change the way one perceives the world around him or her. Cherry (2014), agreeing to the above states that, through the perception process, one gains information about properties and elements of the environment that are critical to one's survival. Perception not only creates our experience of the world around us, it also allows us to act within our environment. But to Witt and Proffitt (2008), perception is influenced by the perceiver's ability to perform intended actions. Witt (2011) in his article, '*Action's Effect on Perception'* states that according to action-specific perception account, people perceive the environment in terms of their ability to act in it. He

explained further that, factors that affect ability and thus influence perception include body size, body control and coordination, energetic potential, and the challenge of the task. However, it is not every perceiver who interprets stimuli meaningfully. Dretske (2005), states that when one sees a stimulus and does not really know what that stimulus is, it is perception without awareness.

2.2 Methods of Teaching Social Studies

Method of teaching, according to Ayaaba and Odumah (2013), refers to "everything that a teacher does in the classroom in the cause of a lesson delivery" (p. 14). Over the years, students and researchers have described Social Studies as a subject in which the teacher talks as students listen, where students are directed to read and answer questions in textbooks and are made to memorize facts and details (Doolittle & Hicks, 2003). 'The discipline Social Studies centers on systematic study of the principles and skills pertinent to all aspects of operations, resources and administration' (Dania & Enakrire, 2012). They reiterated that teachers are expected to facilitate learning and make it meaningful to individual learners and not just to provide knowledge since new concepts of learning have evolved. Citing Robinson and Latchem (2003), Dania and Enakrire (2012) point out that modern developments of innovative technologies have provided new possibilities for teaching professions, but at the same time have placed more demands on the teacher to learn how to use these new technologies in their teaching. Adding that these challenges ask teachers to continuously retrain themselves and acquire new knowledge and skills while maintaining their jobs (Charlson and Gadio, 2002).

Ayaaba and Odumah (2013), identify two methods or approaches to lesson delivery which are "teacher transmission or presentation method and discovery, inquiry or problem-solving. The teacher transmission or presentation method involves the

transmission of subject matter or content of the lesson to students" (p. 14). The teacher presents facts or information to students or learners as learners become recipients of information. Ayaaba and Odumah (2013), further opine that "the discovery, inquiry or problem-solving method of teaching Social Studies involves challenging students to examine, investigate and explore issues or problems. The teacher serves as a guide, facilitator, resource person and consultant" (p. 14).

Each of the methods of teaching Social Studies could involve one technique of teaching or the other. These techniques of teaching, which are the activities teachers involve their students in during a lesson delivery, include lecture, discussion, brainstorming, educational games/simulations, dramatization/role-play and circle learning. Others are demonstration, project, Concept mapping, Anticipation guide, Buzz session, Pre-reading activity for concept enhancement (PACE) and Know, want to know, learned (K-W-L) techniques (Ayaaba & Odumah, 2013).

Despite these varied techniques of teaching Social Studies, Doolittle and Hicks (2003), quote other researchers as criticizing the teaching of Social Studies as 'clinging to a specific pattern genre: a pedagogical genre in which the teacher talks and students listen, where students are directed to read and answer questions in textbooks and are then expected to memorize facts and details which for the most part are removed from their intrinsically human character'. This shows that traditional method of teaching Social Studies, that is, the lecture technique, where the teacher is the source of knowledge while the learners are the recipient of knowledge is not acceptable in this 21st century. This calls for alternative as well as better methods and strategies in teaching that calls for integration of technology into the subject.

Gorder (2008), cites Jaffee (1997) as outlining four pedagogical principles necessary for technology integration which are active learning, mediation, collaboration and

interactivity. Active learning, according to Jaffee (1997, as cited in Gorder, 2008), is using technology to involve students to interact with the content that allows knowledge building and construction. Mediation involves the interaction between the teacher and students in solving problems, respond to questions and discuss topics that relate to the subject. During collaboration, Jaffee (1997) states that students interact among themselves through questions and share information. The interactivity period is when students, teachers and resources participate in building understanding and knowledge in technology through interaction. To Rose and Fernlund (1997), when teachers use the right combination of hardware and software, they can develop lessons that promote student skills in retrieving information, presenting data, comparing and evaluating different perspectives, reflecting critically and making decision.

Angers (2004), opines that one strategy that naturally integrates technology in a number of ways is problem-based learning. Problem-based learning is learning organized around the investigation and resolution of an authentic problem. Technology is critical to such problem solving as a tool for locating and organizing information, means of delivering a problem, and a means for presenting a solution. Students work towards technology standards by using problem-based learning in content area classes such as Social Studies and technology classes. As teachers work towards encouraging students to become critical thinkers, problem solvers, collaborative colleagues and technology-literate citizens, they can use problem-based learning and technology as two means toward that end (Sage, 2000). These issues are related to the current study in the sense that learners learn best when the right methods and tools, such as problem solving, group work, interactive activities, educational games, and audio-visuals are used in teaching and learning and technology provides just that and many more.

2.3 Meaning of Educational Technology

The mention of educational technology immediately brings to mind the use of device or set of equipment, especially computer. But the picture was quite different some years back. Roblyer (2003), cites Cuban (1999) as saying that a history of technology in education placed emphasis on radio and television with computers as an afterthought, and that if such a description were written now, the central focus will be the Internet. He further states that in the near future, the focus might be intelligent Computer-Assisted Instruction (CAI) or virtual reality or whatever they may be called.

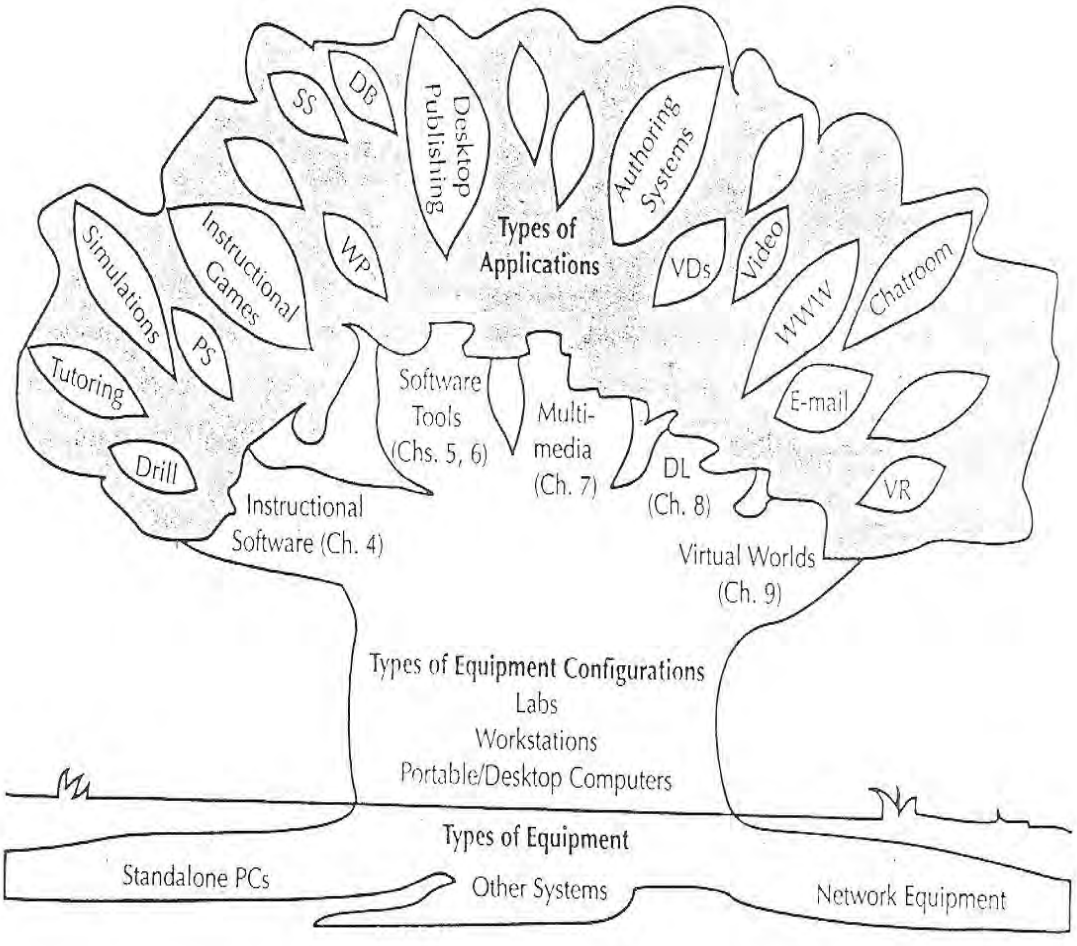
But Roblyer (2003) cites Saettler (1990) as urging those who seek correctness to note that the historical function of educational technology is a process rather than a product. To this end most writers, researchers and practitioners see educational technology as the process of applying tools for educational purposes as well as the tools and, materials used. Roblyer (2003) cites Muffoletto (1994) as opining that technology is "not a collection of machines and devices, but a way of acting" (p. 6).

Roblyer (2003), therefore sees educational technology as "a combination of the processes and tools involved in addressing educational needs and problems, with an emphasis on applying the most current tools: computers and their related technologies" (p.6). There are however four historical perspectives of educational technology which are media, instructional systems, vocational training, and computers. These are concerns to be considered in the current study since technology can be used for variety of purposes, and the study seeks to focus on educational technology systems.

2.4 Current Educational Technology Systems and their Applications

Wired Digital (2001) notes that many technology materials and devices that are available are in limited use in schools, may be too expensive, schools may lack the infrastructure to support them, or teachers may be unfamiliar with and untrained in their use (Roblyer, 2003). Yet it is very important for educators to see the potential of technology in education. The figure below shows technology resources that are currently used in education and how they relate to each other. This is so in the sense that whether systems like stand-alone computers or Network Equipment, they use software, multimedia or virtual world to produce the drills, tutorials, simulations, instructional games and others that assist in teaching and learning.

Figure 2.1 The Educational Technology "Tree of Knowledge"



Source: Adopted from Roybler (2003)

Equipment types: Basic equipment types that are used in education include stand-alone microcomputers, networks and computer-related devices and systems like reality and input/output devices.

Equipment Configurations: The various types of equipment may be configured as single units, workstations – that is, a classroom learning station that consists of two or three microcomputers with a scanner and printer – labs, and movable media-type carts. The table below shows current equipment and equipment configurations used in education adopted from Roblyer, (2003):

Table 2.1: Current Equipment and Equipment Configurations Used in Education

			TYPICAL CONFIGURATIONS				
Equipment Categories	Types of Equipment	Examples	Single Units	Workstations	Labs	Carts	Typical Uses
Stand-alone microcomputers	Portable units Laptop computers	Macintosh iMac	X	X	X		Instruction, productivity
	Handheld palm computers	Palm OS	X				Instruction, productivity
	Desktop microcomputers	IBM Pentium IV, Macintosh	X	X	X	X	Instruction, productivity, multimedia development

Networks	Local area networks (LANs)	Computers networked in a school		X	ILSs, multimedia development, Internet access, and administrative tasks
	Metropolitan area networks (MANs)	A city-wide network of connected computer			Connections among school computers in schools throughout a city
	Wide area networks (WANs)	Interconnected LANs or MANs			Connections among computers and networks for information exchange, e-mail, distance learning management, and delivery
Related devices and systems	Videodisc players: E-Books	Pioneer Laserdisc	X	X	Instruction, multimedia development
	Virtual reality systems	NASA training systems	X		Instruction, R&D projects; simulated activities (flight simulators)

	Graphing calculators	TI graphing calculator	X	X	
	Input devices	Scanners, video cameras, etc.			Used with various computer systems
	Output devices	Printers, plotters, projection panels, etc.			Used with various computer systems

X shows that equipment category is applicable.

Software and materials: These include instructional software, tool software, multimedia/hypermedia, distance applications, and emerging resources.

Instructional software or courseware is application software that is designed purposely to deliver or assist with student instruction on a topic. They are programmes that are developed purposely to deliver instruction or support learning activities. Names for the types of instructional software include: drill and practice, tutorial, simulation, instructional games, and problem solving. Drills or drill and practice allow learners to work problems or answer questions and get feedback on correctness. Tutorials act like human tutors by providing necessary information and instructional activities needed by a learner to master a topic. These include information summaries, explanation, practice routines, feedback, and assessment. Simulations model real or imagined systems to show how those systems or similar ones work. Instructional games are designed to motivate learners by adding game rules to learning activities which may involve drills or simulations. Problem-solving programmes teach directly

the steps involved in solving problems or help learners attain problem-solving skills by providing opportunities for them to solve problems (Roblyer, 2003).

Tool software: The most widely used software tools are word processing, spreadsheet, and database programmes. Word processing is simply typing on a computer. Common word processing features and capabilities include: storing documents for later use; erasing and inserting text; search and replace; moving or copying text; word wraparound; changing of style and appearance easily; justification; automatic headers, footers, and pagination; inserting text prepared on other word processors; checking and correcting spelling; suggesting words; reviewing style and grammar; allowing insertion of graphics; merging text with data files; tables; templates; and voice recognition. Spreadsheet programmes organize and manipulate numerical data. It can refer to the programme itself or the product it produces. Information is stored in rows and columns. Each row-column position is known as a cell, which may contain numerical values, words or character data, and formulas or calculation commands. Its general features and capabilities include: calculations and comparisons; automatic recalculation; copying cells; line up information in columns; create graphs that correspond to data; and use worksheets prepared on other programmes. Database software are programmes that allow learners to share, organize, and manipulate information; sorting information alphabetically or numerically; searching for information; automatically retrieving reports or information summaries; and merging with word processing document (Roblyer, 2003).

Multimedia/hypermedia: Multimedia means 'multiple media' or 'combination of media' which can be still pictures, sound, motion video, animation, and/or text items. Hypermedia refers to 'linked media'. It can be classified under interactive videodiscs (ICDs), CD-ROMs (Compact disc-read-only memory, digital versatile discs (DVDs),

and others including CD-I (Compact disc-interactive), DVI (digital video interactive), and photo CDs (photographic compact discs) (Roblyer, 2003).

Distance application: Distance learning has three key features: instructor and learner separated by time and/or geographic distance; and electronic, print resources, video communication, and combinations of them used to bridge the gap.

Emerging resources: Emerging developments in technology integration describe how hardware, software and applications development drive societal uses of technology and a vision for how these could be reflected in educational system in the near future (Roblyer, 2003).

Types of application: Computer applications in education may be categorized into Instructional, productivity, and administrative. Students use instructional application to learn information or skills through demonstrations, examples, explanation, or problem solving. Teachers and students use productivity application to support planning, materials development, and record keeping. Whereas administrators use administrative application to support record keeping and exchange of information among various agencies (Roblyer, 2003).

2.5 Meaning of Integration

Starr (2011) opines that even though technology has become part of the educational process, it is often separated and not integrated into the learning experience. Angers (2004) says that teachers and administrators are recognizing that computer skills should not be taught in isolation, and that separate computer classes do not really help students learn to apply computer skills in meaningful ways. This means that if a school has computer classes for its students, it does not really mean that the school has integrated technology into its educational system. Starr (2011) agreeing to this states that, technology should be integrated, not as a separate subject or as 'once-in-a-

while project' but should be a tool to promote and extend students learning on a daily basis. Earle (2002) as cited in Wang and Woo (2007), see integration as "having a sense of completeness or wholeness by which all elements of a system are seamlessly combined together to make a whole". This presupposes that to integrate something with something, there should be a kind of synthesizing of some aspects so as to get a workable whole that helps solve a problem. Integration also mean to make whole or to renew. This explains why Dockstader (1999) opines that true integration comes when students learn through computers, and not about them.

2.6 Integrating Technology into Teaching

Dockstader (1999) in his article, '*Teachers of the 21st Century know the what, why and how of Technology Integration'*, argues that to answer the question what technology integration is?, one needs to know what it is not. He argues further that technology integration is not putting computers in the classroom without training teachers who will use them to facilitate learning. He insists that it does not happen without training and that it is not substituting 30 minutes of reading for 30 minutes of computer skills development either. It is not providing computer software like electronic encyclopedias, spreadsheets, databases and the like without any purpose. This means that technology integration is not just acquiring computers and its accessories including softwares for schools without a plan of how they are going to be used to facilitate learning. Doing just that may turn the whole process into a white elephant.

Dockstader (1999), further contends that technology integration is not prepackaged programmes that are often unrelated activities clustered around a particular topic that address few higher concepts or goals, neither is it teacher-created programmes that cover special interests and/or technical expertise but do not fit content area curriculum

but technology integration is using computer effectively and efficiently in the general content area like Social Studies to allow students to learn how to apply computer skills in meaningful ways. This shows that learners may know some basic computer skills which teachers allow or guide them to use meaningfully and that these computer skills become meaningful when they are integrated within the curriculum. Technology integration is using software supported by the business world for real-world applications so students learn to use computers flexibly, purposefully and creatively. It is having the curriculum drive technology usage and not having technology drive the curriculum. This explains why acquisition of computers and softwares must be guided by a purpose, that is, curriculum goals. Without a clear purpose as to why particular tools must be procured and particular process must be followed, technology may be driving the curriculum which will not help achieve educational goals. Dockstader (1999), concludes that technology integration is organizing the goals of curriculum and technology into a coordinated harmonious whole. Rose and Fernlund (1997), agreeing with Dockstader (1999), say that to be successful in computer-based instruction, teachers need to plan carefully, make informed choices of hardware and software, and match educational programmes to curricular objectives and student abilities.

Roblyer (2003), see integrating educational technology as the process of determining which electronic tools and which methods for implementing those tools are appropriate for given classroom situations and problems. Gorder (2008) citing Sheingold (1990), opines that integrating technology in the classroom is not about teaching learners to operate computers, but integrating technology is about helping teachers use technology as a tool for learning. To Gorder (2008), teaching learners how to 'operate' computers is one aspect of learning and the curriculum of a subject

like Social Studies, is another aspect. Therefore to say that one is integrating technology into Social Studies, for instance, one has to infuse technology in the Social Studies curriculum in a way that both 'subjects' do not stand alone or are not easily identified but are now 'married' into one whole. When this does not happen, then Gorder (2008), cites Baurer and Kenton (2005) as saying that even though computer technology is an effective way in promoting education, teachers are not using technology in instruction. They found out that teachers were educated and skilled with using technology but were not integrating technology consistently in teaching and learning.

Gorder (2008) cites Ertmer, Conklin, Lewandowski, Osika, Selo and Wignall (2003) as saying that beginning teachers have technical skills in technology and wanted to use technology but lacked the knowledge on how to integrate technology in teaching and learning. One can therefore not put the blame solely on teachers for not integrating technology into their teaching practices. Jackson (2003), agreeing with Dockstader (1999) and Gorder (2008) plainly opines that, integrating technology simply means using computers within the existing curriculum. He further contends that technology should not supplant what teachers usually teach but should become a tool – just like a calculator, a pen, or a chalkboard – that helps teachers teach and helps students learn.

Angers (2004), in her study '*Integrating a Technology-Enriched Curriculum'*, opines that teachers require education in the use of technology as an instructional as well as a professional tool. She further argues that technology integration requires the highest level of expert teaching skill because it requires teacher selection of strategies. She contends further that a teacher must draw on a repertoire of curriculum knowledge, knowledge of student abilities and needs, and knowledge of technology resources in

deciding how to integrate technology into any given lesson (Painter, 2001 as cited in Angers, 2004).

Integration is making pedagogical and curriculum changes to include technology (Wetzel, 2002; as cited in Angers, 2004). Students must use the tools. Effective integration of technology is achieved when students are able to select technology tools to help them obtain information in a timely manner, analyze and synthesize the information, and to present it professionally (ISTE, 2000). It is therefore not surprising that Wepner, Tao and Ziomek (2006) point out that technology integration is not a "one size fits all" where teachers do the same thing for their students or where teachers possess the same specific skills to be competent technology users (Gorder, 2008). They add that teachers need to know how and why to use technology in meaningful ways in the learning process for technology integration to work.

To integrate technology into teaching, Dockstader (1999) cites Eisenberg as suggesting that there are two requirements for effective integration of technology skill: 1) the skills must directly relate to the content area and to the classroom assignments; 2) the skills themselves need to be tied together in a logical and systematic model of instruction. On their part, the Jerome school District found the following seven steps to be effective in tying the skills to the content: 1) choose a core area like Social Studies; 2) decide what technology skills you want to teach or could be best taught in this area; 3) choose one lesson or unit that could be enhanced or taught through the computer. Stick with an easy project in an area you are comfortable with; 4) develop that one lesson or unit in a software package or medium you know very well; 5) use it; 6) evaluate how it went (what went right or what went wrong); and 7) refine the lesson and /or start with the next lesson or unit.

This may be why Dockstader (1999), plainly contends that true integration comes when students learn through computers, not about them. He further indicates that integrating technology in the classroom is a complex process that includes: a) learning the technology; b) using technology in the teaching and learning process; and c) integrating technology to enhance student learning.

Jackson (2003), however suggests a broader approach to technology integration. He states that the first step in determining how to integrate technology into the curriculum is to take a quick assessment of where one is in terms of technology.

A) A four-point 'STAR' approach to technology assessment which are 1) student skills and attitudes: what can students already do with computers and what's their attitude toward technology? Do students have computers and internet access at home? 2) Teacher skills and attitudes: What can the teacher do on a computer and how does he or she feel about using computers in the classroom? 3) Access: How much computer time can teacher and students get each week? Do they have classroom computers or lab access only? How much lab time is available? How many computers? 4) Resources: What kinds of hardware, software and training are available? Are computers reliable? Is the available software education software (such as Math drills) or productivity software (such as a word processing programme)? What types of training (free or paid) are available through your school or community? Make an honest evaluation of what you have to work with. Even if you are a beginner with a single computer in your classroom, few training opportunities and students with no home computers, you can integrate technology into your classroom. This gives hope to both teachers and learners. This leads to the second step which is goal setting and planning.

B) Get set: Goals and planning. Consider what you want to accomplish. Take some time to get ready and get motivated. How? 1) Get wired: make sure you have internet access and a reliable computer at home. 2) Get inspired: visit a professional organization's web site regularly. Use your favorite search engine to look for the sites of your favorite organizations. 3) Get e-ducated: subscribe to an e-mail newsletter and access short and relevant articles on educating with technology. For instance, The Internet Tour Bus, and Computer Hope. 4) Get involved: sign up for a mail list or another online dialogue, and join teachers in discussions on technology in the classroom. Eg. EDTECH, Tapped in WWWEDU.5) Get trained: find out who does technology training in your school or district and get help if you need it. If you prefer learning at midnight, try one of these Websites: Visilearn, online Training Modules. The third step is to get going.

C) Go. Go. Go. Take it one step at a time. 1) Manage with technology: Use technology to manage your classes. Average grades with a spreadsheet, use mail merge to send parent letters, and surf the internet for lesson plans. Focus on using technology yourself before introducing it to your students. 2) Start small: set an initial goal of including technology in one content area or unit a month. Have students write a letter with a word processing programme, create a graph in a spreadsheet programme, or practice Math skills using content software. 3) Surf in shallow waters (Jackson, 2003).

South Dakota technology integration model known as Technology for Teaching and Learning Academies had these objectives: (a) assisting teachers to develop technology-supported activities that promote learning (b) use integration practices that

relate to instructional technology and (c) model life-long learning using technology (Schopp & Rothernel, 2001; as cited in Gorder, 2008).

2.6.1 Starr Approach

Such technology-supported activities that promote learning is what Starr (2011) proposes to all educators. Her approach is to assist educators to daily and consistently use technology in their teaching practices so as not to isolate computer skills but to infuse them in their daily activities. How to integrate technology on a daily and weekly basis.

1. Access an online weather forecast

   You can begin each school day with a discussion of the date and local weather. You can visit a site like UM Weather, The Weather Channel, or USA Today Weather to find out how the rest of the day will look like.

2. Include URLs in your monthly calendar

   You can distribute copies of calendar which may include URLs of few sites that will add to their understanding of the events in the month. The September calendar might include links to sites about Labour Day, Grandparents' Day and Hispanic Heritage Month.

3. Access online weather forecast in French, German or Spanish.

   Begin foreign language classes with a discussion of the day's weather. The Weather Channel provides weather information for Brazil, Germany, France and Latin America in the native language of each country.

4. Challenge students with online Mathematics Problem

   Include a daily or weekly mathematics challenge to seatwork assignments, lessons or extra credit activities. The Math Forums, Math Problem of the

Week provides word problems in five categories – Math fundamentals, pre-algebra, algebra, geometry and pre-calculus.

The AIMS Puzzle Corner gives more than 100 math-related puzzles that are good for students in upper primary and JHS most of which include printable worksheets. Aunty Math's Math Challenge for K-5 learners gives bi-weekly word problem to younger students while high school students have Math Counts. Abacus International Math Challenge provides students with online math experience.

5. Provide a URL in place of a quote

   Provide students with the URL and have them locate the days quote themselves instead of writing it on the chalkboard for them. Quote of the Day, Quotes of the Day and Quote A Day are good sources of inspirational thought-provoking and funny quotes.

6. Introduce a word of the Day

   Help students extend their vocabulary by including an online word of the day. The Daily Buzzword at 'Word Central' gives a word of the day and related activity that is good for upper primary students. 'Vocabulary Builder' gives words and definitions for grade 4-6 and 6-9 students. 'A Word a Day' and 'Word of the Day' provide word and their definitions for Middle and high school.

7. Keep them Spelling

   Teachers can find spelling lists from 'spellingcity.com' to help students improve their spelling.

8. Make History real

Personalize history lessons by beginning each history lesson with a quick visit to 'Today in History' or 'This Day in History'. This will help students who see history as a subject in a book that is unrelated to real people, real events or today's news to have a positive thought of the subject.

9. Utilize online work sheets

   Teachers can include online worksheets like 'scavenger Hunt' and 'a Writing Bug' from Education World which provide creative writing activity for students. 'TeAchnology' also offers lots of worksheets in a variety of curriculum areas.

10. Offer online SAT practice

    Teachers can introduce PSAT and SAT practice that will benefit students. SuperKids provides a PSAT and SAT 'Vocabulary Builder' in the form of a word of the day.

11. Beef up your History lessons

    Include primary source materials to make history lessons interesting. Thomas Jefferson's notes on the U.S. Constitution provides insights into U.S. history that mere reading it does not. Teachers can plan U.S. history lessons by visiting the Library of Congress' 'American Memory Collections Search Engine' for primary source material for any topic. Teachers should encourage students to also include primary source materials in their papers and projects.

12. Provide online Reading Comprehension Practice

    Teachers can make reading comprehension more fun to language art students with the Comenius Group's 'Fluency Through Fables' lessons. The lesson includes a brief fable and four categories of related activities which are

vocabulary matching exercises, vocabulary completion exercises, multiple choice comprehension exercises and written discussion exercises.

13. Incorporate online news sources into discussions of current events

    Teachers and educators should not limit students' current events contributions to print newspapers but should encourage them to search online media as well. CNN and MSNBC are excellent places to start looking for national and international news. Students should be encouraged to check out 'Online Newspapers' for local newspapers online. Ghana Web, Myjoyonline.com and others are sites full of local news. 'The Internet Public Library' also provides links to local news sources by country and for the United States by states.

14. Make the news a learning tool

    Teachers should assist students to better understand current events and connect the day's news to their lives by encouraging them to further explore the issues of the day. 'The Why Files' for example uses news and current events as the basis for science, social, health and technical lessons. Issues like 'what caused the tornado that hit Florida?' What vote counting technique is most accurate? How does war affect those living in battle zones? Are all explained by The Why Files.

    'How Stuff Works' is also a good site to visit to satisfy students curiosity as it provides information on how things work on a number of topics. Students might want to learn for instance 'How stinger Missiles Work, How Stem Cells Work or How Hybrid Cars Work. They can get all these information on How Stuff Works.

15. Spice up your grammar lessons

    Teachers can explore Daily Grammar's 'lesson Archive' to find new grammar lesson everyday. The site has nearly 450 lessons on topics ranging from objectives and apostrophes to prepositional phrases and verbs.

16. Make Science a daily event

    Teachers can take a minute to discuss NASAs 'Astronomy Picture of the Day' or Goddard Space Centers 'Earth Science Picture of the Day' both of which include a brief explanation of the day's photo. Teachers can also lead students to briefly discuss a scientist of a scientific event from 'Today in Science History'.

17. Sign up for a Science experiment of the Week

    Teachers can sign up for Steve Spangler's 'Science Experiment of the Week' for weekly science experiments to be e-mailed to them to assist their students find enough time to research and have a steady supply of really engaging science experiment.

18. Make Geography a daily event

    As many kids see geography as something to do with maps, and find maps as boring, teachers can help students overcome this problem by challenging them to answer the five daily questions posed at 'GeoBee Challenge'. The questions are taken from the 'National Geographic Geography Bee' and this may encourage them to compete in the year's event.

19. Keep them guessing!

    Teachers can try to keep lessons going with some stimulating online games on Fridays, if there are enough computers for individual students or small groups, since most students are eager to leave for weekends and may not be

concentrating. Solving the problems at 'Mystery Net' demands more logic than Math and features Get-a-Clue, a daily mystery that is appropriate for younger students, See-n-Solve, a weekly mystery featuring USA TV's Detective Monk, and 'Solve-it', a monthly mystery in which students read a mystery and solve the crime. Teachers can reward students for a week of hard work by allowing them a few minutes to play some online Logic Games at SuperKids. The games include Battleship, checkers, tic-tac-toe, BreakOut and many more.

2.7 Integrating Technology Into Teaching Social Studies

'The need to integrate ICT in teaching of Social Studies came as a burning need on how to improve on the physical, social, political, cultural, scientific and technological environment that we live in' (Dania & Enakrire, 2012). Social studies teachers should be more aware of changes technology has brought in society and try to reflect this change in their classrooms since Social Studies has a dual role of being an instructional tool and as objects that can significantly affect political, social, and economic functioning of society (Zhao, 2007). Zhao contends that Social Studies curricula has not been largely affected by technological change and its unique role in enhancing Social Studies education is not recognized widely (Martorella, 1997; White, 1997; Whitworth & Berson, 2002 as cited in Zhao, 2007). He further cites other researchers as lamenting that Social Studies teachers lag behind other content area teachers in adopting innovative teaching methods that technology provides (Anderson & Becker, 2001; Atkins & Vasu, 2000; Anderson & Ronnkvist, 1999; Becker, 2001; Dawson, Bull & Swain, 2000; Education Testing Service, 1997; Office of Technology Assessment, 1995 as cited in Zhao, 2007).

Zhao (2007) however admits that, there has been slight introduction of new and innovative use of technology in Social Studies and more Social Studies teachers have started using technology especially the Internet, but was quick to say that other researchers (Whitworth & Berson, 2003) indicate that computer technology in the Social Studies continue to serve the traditional role of providing content materials (Zhao, 2007). Doolittle and Hicks (2003) opine that few Social Studies teachers, especially the experienced ones, understand or used computers to engage students in their classrooms and cite Fontana (1997) as warning that if Social Studies educators do not rise immediately to integrate technology in their teaching, there is the risk of parents and policy makers concluding that the Social Studies are not relevant in the information age. If technology integration into Social Studies is so important and urgent, then what should Social Studies teachers do in order to satisfy the needs of the 21st century? Doolittle and Hicks (2003), however do not totally condemn the traditional way of teaching Social Studies but contend that where it is used, it clearly indicates that teachers are making active decisions as to the tools they regard as effective in the teaching of Social Studies. They say, if teachers have understanding of why and how current and emerging technological tools are effectively used in the teaching and learning of Social Studies, they will decide to integrate technology into their classrooms. They however warn that "if integrating technology means nothing more than enhancing the traditional delivery system of Social Studies content, where laptops replace notebooks for taking notes, where Power Point slides replace handwritten overheads, where e-textbooks replace hard copy textbooks, then we will be no closer to the NCSS's vision of transformative, powerful Social Studies teaching and learning". And advice that there should therefore be critical reflection to determine our intentions of technology integration (Doolittle & Hicks, 2003). To

Roybler (2003), technology integration in the Social Studies should be based on each of the ten strands in the National Council for the Social Studies (NCSS) national Social Studies standards which are Culture; Time, Continuity and Change; People, Places and Environment; Individual Development and Identity; Individuals, Groups and Institutions; Power, Authority and Government; and Production, Distribution and Consumption. The others are Science, Technology and Society; Global Connections; and Civic Ideals and Practices. He agrees with other researchers that Social Studies instruction traditionally has been 'fact driven' adding that the nature of the subject matter, plus its historic dates and geographic names has contributed to this approach. He is however optimistic that technology resources can help organize and present such information effectively so as to make learning more meaningful.

2.7.1 Using Technology to Learn About Culture

To Roybler (2003), understanding of and appreciation of the similarities and differences of culture can be found in History, Geography and State Studies in the lower grades as well as in Sociology, Anthropology and Civics at the higher grades. Teachers can assist learners explore cultures by letting them take virtual trips to Internet sites around the world and do WebQuests to get information about other places and cultures. This will enable them get rich opportunity to explore other cultures and compare them with their own. Teachers can also use technology to assist learners work with people of other cultures by engaging in distance projects such as keypals communications and social action projects with students in other places. Learners can compare each other's belief systems, such as religious and political ideals, as they work together.Teachers can also use videos, videodiscs and multimedia

encyclopedias to provide a rich array of visual examples of the products and traditions of other cultures which will serve as grounds for research projects that compare other cultures with their own. Learners may be asked to do research and gather information about other cultures and prepare art products such as drawings or models to reflect their findings. In this way even the Social Studies lessons will be differentiated to suit the learning styles of every learner. Roybler (2003) points out that this will allow even the 'artistically challenged' learner to create something artistic.

Useful Web Sites for Teaching About Cultures

Culture, Diversity, and Multiculturism

http://www.nche.gwu.edu/links/lancult/multi.htm This site provides resources relating to multicultural education and cultural diversity issues worldwide.

Equity and Cultural Diversity http://eric.web.tc.columbia.edu/equity/This site provides links to conference information, directories, digests, and other resources.

One World, Our World http://www.onewow.org Created by those who have served in the Peace Corps, this site is developed to the principles of tolerance, leadership, and conflict resolution.

Global Grocery List http://landmark-project.com/ggl/ This project generates real, peer-collected data for student computation, analysis, and conclusion building within the context of Social Studies, Science, Mathematics, and other disciplines. These websites will help students to learn more about their culture as well as the cultures of other people.

2.7.2 Using Technology to Learn About History

Roybler (2003) opines that learning history has moved from learning facts and dates to the meaning of event and their impact on the individual countries and the world.

Technology can help teach historical perspectives in so many ways which include researching events, examining time sequences and examining visual records. Teachers can assist learners to research events by letting them gather information on the Internet for discussion and research papers. This will show learners how different people can have different perspectives on the same events. Since students often have difficulty understanding and remembering sequences of events, teachers can assist them examine time sequences by using a programme such as Tom Snyder's Time-liner to develop time lines of events and make them more visual. Roybler (2003) contends that students no longer need to read about history but teachers can use videos, videodisc and multimedia encyclopedias to provide a wealth of actual pictures and film footage of people, events and places to provide additional information sources for research projects and make history come alive for them.

Useful Web Sites for Teaching History

The History Highway 2000: A Guide to Internet Resources is a comprehensive listing of Internet resources on history.

American Memory http://lcweb2.loc.gov:8081/ammem/ammemhome.html

Sponsored by the Library of Congress, this site consists of primary sources which exhibits are archived and updated regularly.

Creating Online Materials for Teaching United States History

http://etext.lib.virginia.edu/history/ This site includes historical documents which are arranged chronologically.

The History Channel http://historychannel.comthis site provides additional information on video programmes on the History Channel.

History Text Archive http://historicaltexrarchive.com/ This site provides abundant resources on data about U.S. history.

Horus Gateway to Historical Time and Space http://www.ucr.edu/hgig/horuslink.html This site is helpful for students of all ages. Nearly 4000 links are organized into multiple categories.

Teaching with History Planes http://www.cr.nps.gov/nr/twhp/descrip.html This site is sponsored by the National Park Service for both students and teachers to 'do' their own history about their city or community.

University of Oklahoma Law Center http://www.aw.ou.edu/ushish.html This site offers a full-text version of a chronology of U.S. historical documents. These websites will help students to learn about the history of so many countries as well as their own.

2.7.3 Using Technology to Learn About Time, Continuity, and Change

Roybler (2003) is of the view that technology has enhanced the study of Geography and its impact on people and civilizations and encourages teachers to make learners use mapping utilities to get more interactive, hand-on uses of existing maps as well as create new ones. Learners can use software such as Tom Snyder's Neighbourhood Map Machine, or web sites such as Map-Blast(www.mapblast.com/myblast/index.mb) to make maps, gather and attach information like local weather and download the outcome to Palm Pilots or similar devices.

Teachers can help learners learn more about locations by allowing them to use GIS sites on the Internet. The U. S. Census Bureau (http://www.census.gov) have built-in GIS viewers that allow users to overlay data about an area on top of a map. This makes data more visual and easy to use. In the same way, teachers can help learners connected via distance learning to use GPSs to locate each other and to study their geographic locations. They can as well let learners use e-mails and the Internet to

collaborate with others at different locations on travel brochures and other products about the region. This allows exchange of information and discussions of how life in two places is similar or different. Teachers can as well help learners use drill-and-practice software, test generators or web sites (http://www.interactivetest.com) to practice facts since some topics in the social studies curriculum, like states and capitals, still require memorization.

Useful Web Sites for Teaching About People, Places and Environments:

Environmental Defense Scorecard http://www.scorecard.org/ This site gives information about environmental conditions and pollution indexes for any area of the United States.

National Geographic Society http://www.nationalgeographic.com/kids/ This site from the NGS is just for kids and it's full of resources as well as fun.

Population Education http://www.zpg.org/education/library/ This site provides numerous curriculum items and information to kids about how to be responsible citizens of the world.

U.S. Census Bureau http://www.census.gov This site provides data and information on the U.S. population, along with a GIS viewer for using the data.

Nations of the World Atlas http://www.lineone.net/discovery/places/nations/ This site is a comprehensive atlas that provides up-to-date information and maps for every country in the world. You can find out about the geography, climate, economy, politics, and history, plus key facts and national statistics, for any country.

Perry-Castaneda Map Collection http://mahogany.lib.utexas.edu/Libs/PCL/Map-collection/Map-collection.html This site provides a comprehensive map collection.

Human Rights Web http://www.hrweb.org/ This site offers information about human rights and how individuals can make differences around the world.

EDSITEment http://edsitement.neh.gov/ This site, produced by the National Endowment for the Humanities, links to sites about every place in the world.

EduGreen http://edugreen.teri.res.in/ This site give information which helps researchers and communities in the developing world find solutions to their social, economic, and environmental problems.

Safety Knowledge: Facts About the United States http://www.ipl.org/youth/stateknow/ This site provides links to all 50 U.S. states. Students can find abundance of information about their part of the country. These websites will assist teachers to use technology to help their students to learn about environmental issues.

2.7.4 Using Technology to Learn About Individual Development and Identity

Roybler (2003) says that teachers can let learners use software like "Sunburst Multimedia: The Human Body" to see how the body's physical systems develop, how we become learning organisms and why we behave the way we do.

2.7.5 Using Technology to Learn About Individuals, Groups, and Institutions and Power, Authority, and Governance

Roybler (2003) says that students can use technology sources to learn about how institutions of various kinds developed, how they affect us and how we can help shape them. For instance, Roybler (2003) points out that some institutions affect our lives and to learn how to respond appropriately to these institutions, students need to learn through hands-on experience with real-life issues and problems and goes on to suggest that Tom Snyder's Decisions: The Constitution can be useful in providing these opportunities. He further contends that most students have difficulty understanding governance concepts like apportionment and the electoral vote versus

the popular vote and that teachers can help clarify abstract concepts about governance by using spreadsheet lessons to help students experience with different 'what if?' scenarios with simulated data. Students, according to Roybler (2003), also need to be assisted to know how to find and use web sites of their local and state agencies as well as national ones. This he said will help them learn where to go for up-to-date information.

***Useful Web Sites include*:**

Lives: The Biology Resource http://amillionlives.com/ This site is rich with biographies about famous and not so famous people. This will help students sharpen their own aspirations and dreams.

Multiculturalpedia http://swww.netlaputa.ne.jp/~tokyo3/e/ This site helps students to discover the customs and habits of groups of people worldwide. This information will help students to learn to respect others.

2.7.6 Using Technology to Learn About Production, Distribution, and Consumption

Technology resources, according to Roybler (2003), can help clarify economic principles by making them more visual and help show students their practical applications. He says that students for instance can use software simulations to explore fundamentals about the stock market. They can select some stock and use a spreadsheet to track their rise and fall. They can also find an interactive stock Market at http://www.ncsa.vivc.edu/edu/RSE/RSEyellow/gnb.html.

Roybler (2003) further says that students can use technology resources to compare prices of goods and services around the world by using Internet sites such as the currency converter at http://www.xe.net/ucc/ and train fare information at http://cnnfn.cnn.com/services/travelcenter/cityguide.html.

Useful Web Sites for Teaching About Production, Distribution, and Consumption

EcEdWeb http://www.ecedweb.unonaha.edu This web site is widely used in teaching economics.

Econlinks http://www.ncat.edu/~sinmkinss/econlinks.html This site contains a variety of economic and financial information that was designed primarily for college students but is very useful for teachers and high school students.

CNNfn: The Financial Network http://www.cnnfn.com/ Among other data, this site provides information on up-to-date stock quotes and exchange rates for any country in the world.

U.S. Department of Treasury http://www.ustreas.gov/ This site, according to Roybler (2003) is an excellent source of background information.

2.7.7 Using Technology to Teach About Science, Technology, and Society

Roybler (2003), says that students need not only know how to use technology tools but must learn how new tools come about as a result of needs in the society, their impact on our lives and our ethical responsibilities as we use these resources.

Useful Web Sites for Teaching About Science, Technology and Society

National Geographic Society

http://www.nationalgeographic.com/features/96/inventions/ This site provides information for families, teachers, and schools and is an interactive place on the Internet for kids to learn about inventions, inventors, and the "accidents" that often lead to discovery.

Blacks in Technology: Past and Present http://www.users.fast.net/blc/xlhome2.htm This site provides information on the inventions of several African Americans.

2.7.8 Using Technology to Teach About Global Connections

Roybler (2003) says that teachers can assist students to understand environmental and ecological issues by using WebQuests and Social action projects. These projects, he says, assist students to use web sites to locate background information and up-to-date developments and allow them to work collaboratively on issues of international concern like pollution and the environment, health care, and human rights. He goes further to say that students can use packages like SimCity (MAXIS/Electronic Arts) to simulate how to study economic and environmental issues. He assures teachers that a programme like this helps students with information in a just-in-time fashion, apply it immediately to a crisis problem-solving scenario, examine situations from various perspectives and work in teams to make complex decision.

Useful Web Sites for Teaching About Global Connections

The Global Schoolhouse http://www.gsh.org/ This site links kids around the world and has all sorts of sources for teachers and ideas for exciting shared experience.

Children's Games from Around the World

http://www.rice.edu/projects/topics/edition11/games-section.html This site is a great source for teachers and students to learn how people in other countries play games. This is very useful since all children play games.

Greatest Places http://www.greatestplaces.org/ This site allows visitors to explore many places in the world. It also provides interesting phenomena such as mirages.

The Smithsonian Institution http://www.si.edu This site provides a wealth of information on history, technology and culture.

Water in Africa http://www.peacecorps.gov/wws/water/africa/ This site can help students learn important knowledge and skills in Geography, Language Arts, and other disciplines by letting them study the use of water in 24 African countries. This

site which features online lessons developed by teachers and is built around 600 photos and anecdotes, and can be browsed by country, with basic country information and maps provided.

Asia in the Schools: Preparing Young Americans for Today's Interconnected World http://www.asiaintheschools.org/ This site addresses the status of teaching about Asia in the school, identifies problems, and proposes some solutions.

2.7.9 Using Technology to Teach About Civic Ideals and Practices

Roybler (2003) says teachers can use simulated activities to teach important concepts about voting. He says students can develop surveys, collect data and use databases and spreadsheets to analyze the result. Roybler (2003) suggests that teachers use simulation activities like Tom Snyder's Decision, Decisions: Lying, cheating, stealing and Decisions, Decisions: Prejudice to allow students hands-on practice in addressing ethical issues that are of concern to the community.

Useful Web Sites for Teaching About Civic Ideals and Character Education.

Association of Moral Education http://www.wittenberg.edu/ame/ This site supports self-reflective educational practices that value the worth and dignity of each individual as a moral agent in a pluralistic society.

Character Education Partnership http://www.character.org This is a coalition of organizations dedicated to developing moral character and civic virtue in the youth.

Seconds http://www.6seconds.org/home.html This nonprofit organization is dedicated to bringing emotional intelligence into practice in schools, families, organizations, and communities.

Civinet http://www.civnet.org/ This site is helpful to all those who are interested in teaching and learning about civics. It is also helpful to those who want to set up

communication between their class and a class abroad since it includes connections to teachers in the emerging democracies.

The American Bar Association (ABA) http://www.abanet.org/publiced/ The ABA provides for teachers that relate to teaching students about the law. It also provides lesson plans and information about celebrating Law Day.

Constitutional Rights Foundation http://www.crf-usa.org/ This site develops, produces and distributes programmes and materials to teachers, students, and public-minded citizens across USA.

The Center for Civic Education (CCE) http://www.civced.org/ This site work with the National Conference of State Legislatures to the Project Citizen programme to all 50 states, U.S. territories, and countries around the world.

Library of Congress http://www.lcweb.loc.gov This site provides a wealth of information on all topics.

The National Institute for Citizen Education in the Law (NICEL) http://www.indiana.edu/~ssdc/nicel.html NICEL is a nonprofit organization dedicated to strengthening democracy and justice through education about law and democratic values. It is best known for its work on the National Mock Trial.

Street Law http://www.streetlaw.org/program.html This site provides a combination of lessons and texts that have been used in classrooms for years.

2.8 Basic Facilities in Technology Integration

Kent State University designed a place for K-12 classes to work with the latest technology (Tiene & Luft, 2001). The classroom contains 12 computers that are networked and have Internet access, a scanner, a printer, videoconferencing cameras connected to several computers, digital still-frame cameras, camcorders, and a VCR. At the teacher's station, there is a computer, a VCR, and a Video Document camera,

all of which are connected to a video projector pointed at a screen that pulls down in the front of the class. The classroom is designed for researchers to observe and record how students work in a technology-rich classroom environment. Over a 10-week period, sixth, seventh, and eighth graders and 11 teachers were sent to use the classroom (Tiene & Luft, 2001).

Teachers reported on the following aspects of the educational experience: (1) development of skills with technology; (2) changes in classroom dynamics; (3) modification of teaching style; (4) satisfaction with the experience; and (5) achievement gains. Teachers and students were ill prepared at first to work with the technology, but by the end of the 10 weeks both made significant gains in their ability to work proficiently with the hardware and software. Individual pupils and teams of students were able to progress at their own pace, rather than working in unison on the same materials at a pace set by the teacher. Deadlines still existed, so students needed to plan their time wisely as they worked independently. Teachers tried to teach in more constructivist ways, which demanded greater flexibility and creativity in the way they worked with different students (Tiene & Luft, 2001).

Dania and Enakrire (2012), recommended that schools should make sure that they have a web page, provide different kinds of computers and Internet access to students, make provision for schools to purchase standard software package to manage the creation of course web pages, recruit staff with ICT skills to assist instructors with educational technology, make provision for classrooms designed for multimedia presentation, special funds of professional recognition for innovative uses of technology in teaching given to schools in order to have colleagues working on grants that support electronic teaching. They again recommended that institutions should

have a plan for on-line course materials, internet use made compulsory to staff and students and make on-line materials accessible to all staff and students.

2.9 Benefits of Integrating ICT into Teaching

Abreh (2010), citing Tohombe (2006), opines that the shift from textbook-based schooling to web-supported process of inquiry has implications for teaching and learning. And that the knowledge resources available in content textbooks and the limited libraries are unable to sustain inquiry-oriented pedagogies in this age of technological advancement. Doolittle and Hicks (2003) state that teachers hold positive perception towards the use of interactive technologies in the classroom. Teachers consider computers as having a positive impact on students enthusiasm, provides additional learning opportunities for gifted students as well as helping handicapped students. Sayparn (2012), in her article *"Effects of Technology on Classrooms and Students"*, opines that other researches validate the benefits of technology in the classroom. She further states that classrooms with the use of technology have students with positive attitudes and a greater inclination to learn, and as increase in student achievement too. To answer the question; 'Why use technology'? Developing a sound rationale, Roblyer (2003) puts it that the need to integrate technology into teaching has been based on two major beliefs, the first being that "technology is everywhere and therefore should be in education.Miller (2001) calls the "societal inevitability" rationale and the other being that research has shown how and where computer-based methods are effective. Roblyer (2003) says that although both are valid and provide rationales for using technology, there are more practical questions that need answers. Questions such as:

a) Should technology take over most or all of a teacher's role? If not, how should it fit in with what teachers already do?

b) Should schools rely on computers at all levels, for all students, or for all topics? If not, which levels, students, or topics are best suited to computer based methods?

c) Does some reliable information suggest specific benefits of using technology in certain ways?

To justify the expensive and time-consuming task of integrating technology into education, Roblyer (2003) admonishes that teachers must identify specific contributions that technology can and should make to an improved education system.

2.10 Problems with research-based justifications for educational technology

Yepes-Baraya (2002) in his work 'Integration' contends that although various researches suggest that technology can enhance and improve learning, there is no consensus as to how this can be achieved. He noted further that it is recognized that technology by itself is not sufficient to achieve the types of changes envisioned by reforms citing the US Department of Education (DOE) as recognizing that in addition to technological tools, educational reforms are needed to support improved teaching and learning. He cites the US DOE as indicating that the components that make learning technologies effective include: 1) curricular reform; 2) sophisticated and multiple assessments; 3) effective professional development; 4) well-maintained technology infrastructures and support systems; 5) attention to equity and 6) the restructuring of organizational practices, budget and policies. Adding that an exemplary technology-based programme will incorporate all of these dimensions, a promising one may incorporate some of them with plans to achieve the others.

Although some may not agree that all the above components are necessary to improve learning, Yepes-Baraya (2002), contends that the effectiveness of technology will clearly vary with situational variables, like the goals and resources for instruction, the cognitive demands on the learner, the extent to which all learners' needs are considered, the teachers' comfort and skills with technology, and the types of technology available. He therefore opines that 'integrated technology' is technology that supports and enhances the achievement of specific teaching and learning goals. He explains that if these goals include, for instance, the development of effective critical thinking skills, or the mastery of vocabulary, then the criteria used to assess the integration of the technology tools used should include the extent to which these tools contribute to the attainment of these goals in more effective and efficient ways than more traditional means.

Roblyer (2003) points out that many educators look to educational research for evidence of technology's benefits but argues that even though technology (especially computers) has been in use in education since the 1950s, research results have not been able to make a strong case for the impact on teaching and learning. And further cites Roblyer, Castine and King (1988) as saying that the number and quality of studies on the educational impact of technology have been disappointing. Sayparn (2012) however has a contrary view. To her technology integration is beneficial to both the educator as well as the learner.

Sayparn (2012), puts it right when she opines that,

> 'when technology is introduced into a classroom, things change. Instruction through computers give students more control over their learning environments and access to a wider range of materials to use in the learning process. For example, students are too confused or

embarrassed to ask questions because they don't want to show their ignorance but with individualized computer instruction, students can always immediately request help if something is unclear. Computers in classroom help to make it more interactive. They are extremely effective with the struggling learners because they have unlimited patience. The computer can also be used to educate the smarter students who easily get bored in a traditional classroom since they reach their goal faster. With computers, students that finish a unit can go to the next one immediately. For these bright students, the challenges that computers can offer encourage self-directed learning. Also, the use of technology fosters collaboration among student.

'The teacher's role changes as well. Teachers often find themselves acting more as coaches and less as lecturers. Teachers play the role of facilitator, setting project goals and spend more time individualizing their instruction. As a result, students are given much more individual attention due to the nature of some technologies'.

When students see their teacher incorporating new technology and trying new things, they become more engaged in the process. Technology allows students to see the whole world as a resource with themselves being in charge of their destiny. It also benefits students because they have choices and opportunities to explore and share information to a greater extent than available in a traditional classroom.

This may imply that Roblyer, Castine and King's (1988) research is far too old and perhaps new researches have been able to discover what they could not discover due to the limited nature of technology sources at that time. For instance, when their

study was conducted, the most advanced technology resource that was available was the Integrated Learning Systems (ILS) which had only few local computers networked. The Internet had not yet been born, the World Wide Web was not available for teaching and learning, the ISTE had not created computer standards, and multimedia uses of the web had not emerged.

Roblyer (2003) cites Clark (1983, 1985, 1991 and 1994) as openly criticizing computer-based effectiveness research such as meta-analyses to summarize results across studies comparing computer-based and traditional methods. Concluding that most of such researches suffered from what he called confounding variables where there were attempts to show the impact on achievement of one method over the other without controlling other factors such as instructional methods, curriculum contents or decrease achievement. This may mean that when variables such as instructional methods, curriculum contents or the environment in which the learning takes place is controlled, results may be positive or otherwise in favour of computer-based method or traditional method.

Roblyer (2003) further cites Kozma (1991, 1994) as responding to these challenges by proposing that "research should not look at technology as a medium to deliver information but in the context of the learner actively collaborating with the medium to construct knowledge" (p. 11). What Kozma may be saying is that educators should not just provide computers and assume that teaching and learning will just be fine, but should apply appropriate methods that will enable learners manipulate the materials to construct their own knowledge.

A study that was funded by the Milken Foundation and reported in Education Week (Archer, 1998) and cited by Roblyer (2003) found out that students who did well on

the National Assessment of Educational Progress (NAEP) were exposed to some kinds of technology. For instance:

- Eighth graders whose teachers used computers for simulations and applications performed better than those whose teachers did not.
- Fourth graders whose teachers used computers for Math or learning games did better than those whose teachers did not.
- In both grades, students whose teachers had had professional development in technology did better and had good school climate than those whose teachers had no training.

2.10.1 Justifying technology use: The case for motivation

Roblyer (2003) contends that motivating students to learn, to enjoy learning and to want to learn more has recently become very important and since there is a strong correlation between school dropout and social vices, the need to keep students in schools has become a priority and technology can play this important role. In the first place, technology-based methods can help gain learner attention. The visual and interactive features of many technology resources help to focus students' attention and encourage them to spend more time on learning task.

Roblyer (2003) further says that, when teachers engage students in creating their own technology-based products, this helps students to be engaged through productive work. Word processing, hypermedia, computer-generated art and telecommunications are very effective in this regard. This he says promote creativity, self-expression, and feeling of self-efficacy. In the same vein, technology-based methods help increase students perceptions of control. Students are optimistically motivated when they realize they are in control of their own learning.

2.10.2 Justifying technology use: Unique instructional capabilities

Some technological media can help create unique learning environment or contribute in making traditional learning environment more effective and powerful (Roblyer, 2003). He opines that technology can link learners to information sources and cites Miller (2001) as noting that technology expands learning environment for students and let them have access to primary source materials, obtain information, and have experience with people and places that they could not otherwise have. Roblyer (2003) says that technology can also link learners to education sources and training sources through distance learning. It also helps learners visualize problems and solutions though interactive visual media. Roblyer (2003) cites Kozma (1991) as noting that these media provide "powerful visual means of representing social solutions and tasks such as interpersonal problem solving, foreign language learning, or moral decision making" (p. 12).

Technology also helps in tracking learner progress using a well-designed computer-based system for data collection which is sometimes called a computer-managed instruction (CMI) system. It also helps link learners to learning tools. Technology can link learners at distant sites with each other and with varied online resources. This can help learners get access to information that are not available through local sources, develop research and study skills that will benefit them in all future learning, and provide them with multicultural activities without leaving the classroom. Technology can also increase students' multicultural awareness as they interact online with students of different cultures (Roblyer, 1991 as cited in Roblyer, 2003) and enhance their communication skills as they correspond with each other (Cohen & Riel, 1989 as cited in Roblyer, 2003).

2.10.3 Justifying technology use: Support for new instructional approaches

Technology helps in small-group instruction that involves cooperative learning with the aim of solving complex problems. This includes the development of hypermedia products and special-purpose databases and research projects that uses online and offline databases and videodiscs and multimedia (Roblyer, 2003). Teachers can use technology resources such as multimedia and the Internet to set complex, long term goals that need basic skills, therefore motivating students to learn both the low level skills as well as the higher level ones.

2.10.4 Justifying technology use: Increased teacher productivity

Technology resources like word processing, spreadsheet, database, gradebook, graphics, publishing, instructional management, test generalization programmes and online communications can help teachers cope with their growing paperwork load by helping them spend less time on record keeping and preparation and get more time on analyzing students' needs and having direct contact with them (Roblyer, 2003).

2.10.5 Justifying technology use: Required skills for an Information Age

Roblyer (2003) opines that students need to learn skills that will prepare them for the information society. In the first place, students need technology literacy skills as standards set by the International Society for Technology in Education (ISTE) (2000), the National Council for the Accreditation of Teacher Education (NCATE) and the National Educational Technology (NET) Standards all recognize that technology skills are requirement for job skills.

Secondly, students need information literacy skills which are task definition, information-seeking strategies, location and access, use of information, synthesis, and evaluation which Johnson and Eisenberg call the 'Big Six'. These skills, according to

them, are needed in learning in the Internet age (Johnson & Eisenberg, 1996 as cited in Roblyer, 2003). Roblyer however finds the first three skills more enjoyable and easier to students (Roblyer, 1998a as cited in Roblyer, 2003).

Again, students need visual literacy skills since the society relies more on images and visual communication strategies (Christopherson, 1997; and Roblyer 1998b as cited in Roblyer, 2003). Adding that a visually literate individual can interpret, understand and appreciate the meaning of visual messages; communicate more effectively by applying basic principles and concepts of visual design; produce visual messages using computer and other technology; and use visual thinking to conceptualize solutions to problems. Christopherson (1997), observes that students with visual communication skills are more marketable.

2.11 Barriers To Technology Integration

Ninety-nine percent (99%) of American K-12 schools have been connected to the Internet with student to computer ratio of 5:1. Technology that has changed the world outside schools is now changing schools and this change is driven by competitive economy and students born in technological era. This pushes teachers to integrate advanced technology into their teaching to satisfy students' needs, promote learning and prepare students for the digital world (Zhao, 2007).

Despite this need, national surveys showed that there is inefficient use of technology in core subjects including Social Studies. Zhao (2007) cites Becker's (2001) study as showing that teachers who were least likely to integrate technology in their classroom included Social Studies teachers. He contends that the most common reasons cited for teachers' low technology integration in the classroom include insufficient technology training, lack of experience in technology use for instructional purposes,

limited awareness of appropriate software, limited availability of computers and software, lack of planning time, and classroom management concerns.

According to Doolittle and Hicks (2003), the National Council for the Social Studies (NCSS, 1994) as well as other Social Studies educators have advocated the integration of technology in Social Studies classrooms to transform teaching and learning. Despite the clear call for technology integration in Social Studies classrooms, its application is underdeveloped. Rose and Fernlund (1997) observe that it is very demanding on teachers when they want to make effort to take advantage of technological opportunities in the classroom. Doolittle and Hicks (2003) cite Diem (1999) as opining that the challenge that Social Studies teachers face is to find how to use the new tools and techniques in ways that will enhance the understanding of content. And further cite Berson et al (2001) as believing that when the Internet and its resources are mastered it will enhance the quality of learning experience in Social Studies classrooms.

Doolittle and Hicks (2003) cite Cuban (2001) as having a contrary view by saying that computer technology has not been integrated into the classroom across the disciplines and where it is used there is little evidence that show that it has transformed the teaching and learning process. And quote other researchers as referring to technology in Social Studies as a sleeping giant because even though Social Studies educators contend that interactive technologies has great potential, little technology research, development and implementation has taken place among Social Studies educators.

In his study 'Perception of Teachers Towards the Utilization of Information and Communication Technology (ICT) in Teaching Introductory Technology in Secondary Schools in Delta States in Nigeria, Umunadi (2012) identified the

following as some of the challenges to improving information and communication services: high cost of private provision of power; lack of local manufacture or Maintenance of information and telecommunication equipment and lack of local software development capacity; and absence of effective and efficient postal communication; inadequate human capacity and indigenous technical knowhow. He further found out that ineffective electrical supply was one of the factors that hindered effective ICT usage of equipment. On teachers' perception on ICT utilization, he found out that most ICT items were not utilized because teachers agreed that ICT was too cumbersome and so led to students graduating with only theoretical knowledge.

Dania and Enakrire (2012) conducted a research on utilization of ICTs for effective teaching of Social Studies in Secondary Schools in Delta State, Nigeria, and found out that Nigeria was way slow in embracing technology integration in Secondary Schools since most of the instruction and administrative work in Secondary Schools in Delta State was still carried out manually. This they said was as a result of lack of high cost of computer hardware and software for their application, weak infrastructures, selfish political ambition of individuals and diversion of fund for other purposes in schools. Others were inadequate skilled ICT professionals/teachers, lack of appropriate organizational recognition, unwillingness of teacher to adapt to new trends of teaching, inadequate fund to acquire furniture, textbooks, befitting classroom, cost of subscription to the internet on a regular basis. These they stated were stumbling blocks on the adoption of ICTs in Secondary Schools in Delta State. Stating that 'schools need ICTs to aid their teaching and learning and educational management so as to meet up with the technological development of the 21st century (Dania & Enakrire, 2012).

Cuban (1999) in his article 'The Technology Puzzle' gives five alternative reasons for the apparent limited use of ICT in the classroom. Apart from reasons like lack of training, too little time, large number of older teachers etc, Cuban (1999), points out that in contrast to the small number of teachers who regularly use computers as an embedded part of their classroom teaching, a large number admit to using them at home, for lesson planning, online research, e-mailing etc. This discrepancy leads Cuban (1999), to propose his alternative explanation which include:

Contradictory advice from experts – Cuban (1999), describes how the advice from experts about what teachers should teach in terms of ICT skills has shifted to a bewildering degree over the last two decades. First, Cuban (1999), argues that teachers were told to teach basic to all student; then, it was applications, such as word processing; next, they were asked not to send students to computer labs for specific training, but to incorporate the use of computers into their own classroom practice. Later, this involved learning and teaching HTML, so that students could create multimedia products. At the same time, they had to teach internet research skills and applications relevant to the ever-changing working environment. The difficulties this creates for teachers is exacerbated by the following additional factors:

Intractable Working Conditions – Cuban (1999), laments that in contrast to most other work places, the teacher is asked to meet ever greater demands with no discernable shift in working conditions.

Demands From Others – Teachers have to juggle a large number of roles, from friendly and demanding teacher to disciplinarian and social worker to subject expert.

The Inherent Unreliability of the Technology – Regular breakdown are a severe test on the patience of even the most committed technophile.

Policy Makers' Disrespect for Teachers' Opinions – Teachers are rarely involved in discussion as to which software, hardware and training are most suitable for them and their students.

Lack of technology integration training seems to be the major challenge that hinders teachers from integrating technology in their classrooms (Zhao, 2007). Barriers related to access to certain Social Studies websites, unreliable websites, technology ability, imbalance among students and between students and teachers, network problems overwhelming amounts of Social Studies information on the web also hinder teachers from integrating technology into the teaching of Social Studies (Zhao, 2007).

A large number of studies, according to Zhao (2007), have been geared towards teachers' concerns, perception and experiences of technology integration into the classroom, however, few of the studies have been geared towards how Social Studies teachers perceive and use technology in the classroom after they have undergone technology integration training. He cites the U.S. Department of Education (2005), as claiming that lack of technology integration training and understanding of how to use computers to facilitate students' learning are major deterrents to teachers' use of technology. To curb this, he advocates teachers' need of access to research, innovative examples of technology use, and staff development.

2.12 Teachers' Use of Technology

Almeklafi and Almmeadadi (2010), cites Rowand (2000) as saying a survey based on a National Center for Education Statistics (NCES, 2000), found that 39% of teachers indicated that they used computers or the Internet to create instructional materials, 34% for administrative record keeping, less than 10% reported to access model lesson plans or to access research and best practices. Novice teachers were more likely to

use computers or the Internet. Similarly and according to a report released by the U. S. Department of Education, NCES (2000), novice teachers were more likely to use computers or the Internet to accomplish various teaching objectives. Similarly, a study conducted by Theng and Hua (2008) found out that teachers held a reasonably positive attitude towards ICT adoption in schools.

2.13 Teachers' Gender and Technology Integration

Rajasekar and Raja (2007), conducted a research on teachers' computer knowledge and attitudes towards computer of 670 secondary school teachers and found out that there was no significant difference in the attitude towards computer between male and female teachers. A survey was also conducted by Uniyal and Pandey in 2008 in India on teachers' attitude towards computer in relation to sex, age, locality and experience and observed that there is no difference in opinion between male and female teachers. Panigrahi also conducted a survey in 2011 on one hundred Senior Secondary School teacher on perception of teachers' towards extensive utilization of Information and Communication Technology and found out that there is no difference between the perceptions of male and female teachers. Padmavathi (2013) also found out that there is no significant difference in the perception of computer in terms of gender.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

Methodology, according to the Oxford Dictionary, is a system of methods used in a particular area of study or activity. This chapter contains the study design, a description of the study area; that is, Effutu Municipality, the population of the study, the instruments used to collect data, validity and reliability, data collection procedure, data analysis and ethical considerations.

3.1 Study Design

This study employed the descriptive cross-sectional study and therefore a mixed method approach to collect data. Descriptive study seeks to gather information so that a description of what is going on can be made and may be designed to discover whether there is any relationship between two variables (Agyedu, Donkor & Obeng, 2007). A cross-sectional design, according to Bryman (2012), entails the collection of data on more than one case and at a single point in time in order to collect a body of quantitative or quantifiable data in connection with two or more variables which are then examined to detect patterns of association. The study sought to investigate the perception of teachers in integrating technology into teaching, their level of knowledge and competences and basic facilities available in schools to help teachers integrate technology into teaching. Data on all these variables were collected simultaneously.

3.2 Study Area

The study was conducted in the Effutu Municipality in the Central Region of Ghana. The Effutu Municipality, which shares boundaries with Gomoa-East and Gomoa-

West Districts, has a total population of sixty-eight thousand, five hundred and ninety-seven (68,597) according to the Ghana Statistical Service (2010). The Effutu Municipality has Winneba as its capital, fishing as its major occupation and Effutu as its major language. The Effutu Municipality is made up of public, private and religious Educational systems with most private schools performing better in the BECE than the public and religious schools. Effuru Municipality was selected for the study due to the high proximity of getting the needed respondents for the study. Again, there was high return rate of the questionnaire.

3.3 Population

The target population was all teachers in the Effuru Municipality in the Central Region of Ghana. The accessible population for the study was all JHS teachers in the Effutu Municipality in the Central Region.

3.4 Sample and sampling techniques

The Effutu Municipality is made up of three circuits having twenty-one public JHS with two hundred and eight teachers. Purposive sampling technique was adopted to select nine Social Studies teachers and seven ICT teachers from each circuit for the study. A total sample size of forty-eight teachers was used for the study. Two teachers from each of the circuits were conveniently sampled and interviewed. Purposive sampling, according to Agyedu, Donkor and Obeng (2007), is where the sample or elements of the population are deliberately selected on the judgement of the researcher to suit the purpose of the study and nothing is left to chance. According to Isreal (1992), a sample size of twenty to fifty elements is necessary for subgroups. While Kish (1965) says that thirty to two hundred elements are sufficient when the attribute is present twenty to eighty percent of the time.

3.5 Instrument

The researcher used interview guide and questionnaire to collect information. Questionnaire was distributed to collect data from teachers. An interview guide was also used to collect data from six of the teachers sampled. A semi-structured interview is where the researcher designs a set of key questions to be raised before the interview takes place, but builds in considerable flexibility about how and when these issues are raised and allows for a considerable amount of additional topics to be built in, in response to the dynamics of conversational exchange (Dampson & Mensah, 2014).

3.6 Validity and Reliability

Face validity of the instruments was done by colleagues while content validity was done by the researcher's lecturers and supervisor. The term Reliability concerns the degree to which an experiment, test, or any measuring procedure yields the same results on repeated trials (Ruland, Bakken, & Roislien, 2007). A reliability analysis using Cronbach's Alpha statistics was performed to determine the internal consistency of the items on questionnaire instrument. Reliability of the questionnaire was determined through the use of the Statistical Product and Services Solution (SPSS) version 20. The reliability measurements for the piloted instrument were calculated and the results was $\alpha = 0.873$. According to Creswell (2007) Cronbach's Alpha reliability coefficient values of 0.70 and above are considered reliable.

3.7 Data Collection Procedure

To ensure effective data collection procedure, the researcher sought for permission from the Department of Basic Education and another one from the Effutu Municipal

Education Office before seeking for the consent of the teachers involved. After establishing rapport between her and the teachers, the researcher distributed the questionnaire personally to the teachers concerned and interviewed some of them.

3.8 Data Analysis

The data were analyzed using the SPSS software and that from the interview was recorded, played several times, transcribed and analyzed thematically. Mann-Whitney U test was used to test the hypothesis which sought to investigate whether there was significant difference in the perception of male and female teacher integration of technology in Social Studies. Mann-Whitney U test is used in testing for the differences that exist between two independent groups. It compares medians and converts the scores on the continuous variable to ranks, across the two groups and evaluates whether the ranks for the two groups differ significantly (Pallant, 2005, p.291).

3.9 Ethical Considerations

The privacy and concern of respondents was negotiated and respected in the study. The rational and purpose of the study was explained to respondents. The researcher also sought for letters of authorization from the Department of Basic Education and the Effutu Municipal Education Office to heads of schools and the teachers concerned and assured them of confidentiality and anonymity before embarking on the research.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.0 Introduction

This chapter deals with the analysis of the data. The chapter presents the data with the help of Tables. The content of this chapter encapsulates the demographic data of respondents. This is followed by teachers' knowledge about educational technology, factors affecting technology integration, facilities available for technology integration and teachers' knowledge and competences for technology integration.

4.1 Demographic Profile of Participants

The demographic profile of teachers used for the questionnaire covered such areas as sex, age range, number of years in teaching, circuit, level of education and subjects taught. Responses from the questionnaire indicated that 60.42% of the respondents were males, while 39.58% were females (see Table 4.1).

The findings from the questionnaire show that there is no significant difference between male and female perception of technology integration. When asked whether their sex can influence how they integrate technology into their teaching, all six teachers responded in the negative. One male teacher replied that:

> Oh, personally, personally, I do not think that that could be a border, yeah.

When asked to explain he replied that:

> Erm..I don't see erm…somebody's sex to inhibit erm…whatever topic the person attempts teaching in Social Studies yea.

A second teacher responded that:

> Ok. Err…in the area of gender, I will say yes and no at the same time. Because, for example err…in some parts of the world the issues of gender bias is gradually influencing the learning of ICT and technology. Teaching for

instance, err for instance, a girl who regularly goes to a café, that is, Internet café to learn, may be looked upon by some people as the café is usually filled with a one-sided gender which is the male.

Yet another teacher replied:

My sex cannot influence how I should integrate technology into teaching.

The two female teachers replied:

No. Because technology integration has got nothing to do with the sex of the person. But it only has to do with enhancing lesson and also for better understanding of what is being taught.

And

No, I do not think so.

Table 4.1 Age range of Respondents

Age Range	Frequency (%)
Less than 25 years	3 (6.25%)
25 – 35 years	23 (47.92%)
36 years and above	22 (45.83%)
Total	**48 (100%)**

Table 4.1 shows the age range of teachers. Respondents revealed that teachers who were less than 25 years were 3, representing 6.25% of the total respondents. Those in the range of 25 – 35 years were 23, representing 47.92% while those who were 36 years and above were 22, representing 45.83% of the total population.

It was clear that over 93% of the respondents were 25 years and above which indicates that majority of the respondents were quite mature.

Table 4.2 Teaching Experience

No. of years in teaching	Frequency (%)
1 – 5 years	20 (41.67%)
6 -10 years	6 (12.5%)
11 – 15 years	10 (20.83%)
16 – 20 years	5 (10.42%)
21 years and above	7 (14.58%)
Total	**48 (100%)**

Table 4.2 shows teachers' number of years in teaching. It is clear that 20 respondents, representing 41.67% have taught within 1 – 5 years, 6 others, representing 12.5% have taught within 6 -10 years, 10 respondents, representing 20.83% were in the range of 11 -15 years 5 others, representing 10.42% have taught within the range of 16 – 20 years while 7 teachers, representing 14.58% have been teaching for 21 years and above.

Table 4.3 Circuit

Circuit	Frequency (%)
Winneba-East	18 (37.5%)
Winneba-West	15 (31.25%)
Winneba-Central	15 (31.25%)
Total	**48 (100%)**

Table 4.3 shows the distribution of teachers in the Effutu Municipality. It can be seen that, 18 respondents, representing 37.5% of the total population were from the Effutu-

East Circuit, 15 respondents each, representing 31.25% were from the Effutu-West and Effutu-Central Circuits respectfully.

Table 4.4 Level of Education

Level of education	Frequency (%)
Cert 'A'	1 (2.08%)
Diploma	12 (25%)
1st Degree	23 (47.92%)
2nd Degree	12 (25%)
Total	**48 (100%)**

Table 4.4 shows the level of education of respondents. It was seen that one respondent, representing 2.08% was a Cert 'A' holder, 12 respondents, representing 25% were Diploma holders, 23 respondents, representing 47.92% were 1st Degree holders while 12 respondents, representing 25% were 2nd Degree holders.

It is clear that most of the respondents 47.92% were 1st Degree holders, and 25% each were Diploma and 2nd Degree holders who are expected to have at least an Introduction to Computer course during their period of study.

Table 4.5 Subject Taught

Subject	Frequency (%)
Social Studies	26 (54.17%)
ICT	22 (45.83%)
Total	**48 (100%)**

Table 4.5 shows the subjects that respondents teach at their various schools. It was seen that 26 respondents, representing 54.17% taught Social Studies and 22 others, representing 45.83% taught ICT in their schools.

One of the objectives set out for the study was to describe how teachers in the Effutu Municipality perceive technology integration. In an attempt to achieve this objective, questionnaires were administered to Social Studies and ICT teachers in the Effutu Municipality. Some of the teachers were also interviewed. Responses from the questionnaire are presented in Table 4.6 below.

Table 4.6 Knowledge About Educational Technology

	Statement	Strongly Disagree/Disagree	Undecided	Strongly Agree/Agree
1	Technology integration is learning about computers	29 (60.4)	2 (4.2)	17 (35.5)
2	Technology integration is using computers and other tools in teaching.	3 (6.3)	0 (0)	45 (93.7)
3	Technology integration is using electronic tools and methods in teaching	6 (12.5)	4 (8.3)	38 (79.2)
4	Educational technology integration can improve the quality of teaching and learning that takes place in schools.	32 (66.7)	0 (0)	16 (33.3)
5	Educational technology resources are important learning tools.	2 (4.2)	1 (2.1)	45 (93.7)
6	Students who have access to technological resources are more likely to do better than those who do not	3 (6.3)	1 (2.1)	44 (91.7)
7	Educational technology resources should be available in each school.	1 (2.1)	0 (0)	47 (97.9)
8	Educational technology resources should be available in each classroom	1 (2.1)	1 (2.1)	46 (95.9)
9	Access to computers should be limited to the school library for research	36 (75.1)	2 (4.2)	10 (20.9)
10	Having computers in my class is a waste of resource	44 (91.6)	2 (4.2)	2 (4.2)
11	If I use educational technology, I will not have enough time to cover all the	37 (77.1)	5 (10.4)	6 (12.5)

	topics in the syllabus			
12	The integration of educational technology into the curriculum results in only minor improvement in learning over the traditional methods	6 (12.5)	5 (10.4)	37 (77.1)

Source: (Field Work, 2016).

In Table 4.6, twenty-nine (29) respondents, representing 60.4% either disagreed or strongly disagreed with the statement that technology integration is learning about computers; two (2) respondents, representing 4.2% were undecided; whereas seventeen (17) others, representing 35.5% either agreed or strongly agreed with the statement. This indicates that over 50% of the total population were quite confident that technology integration is not just learning about computers.

Three (3) respondents, representing 6.3% disagreed or strongly disagreed that technology integration is using computers and other tools in teaching; none of the respondents were undecided; while forty-five (45) respondents, representing 93.7% either agreed or strongly agreed with the statement. Six (6) respondents, representing 12.5% either disagreed or strongly disagreed that technology integration is using electronic tools and methods in teaching; four (4), representing 8.3% were undecided; while thirty-eight (38), representing 79.2% either agreed or strongly agreed that technology integration is using electronic tools and methods in teaching.

On the issue of whether technology integration is using computers and other tools in teaching, and technology integration is using electronic tools and methods in teaching, 83.8% and 79.2% of the respondents respectively agreed or strongly agreed. Interview findings revealed thus:

> Mmm technology integration in my view …is the infusion of technological resources in the teaching and learning process.

Another respondent replied:

> Technology integration…is the art of chipping in technology education when teaching.

These show that teachers know what technology integration is.

Thirty-two (32) of the respondents; representing 66.7% disagreed that educational technology integration can improve the quality of teaching and learning that takes place in schools; and sixteen (16) respondents, representing 33.3% agreed with the statement. Majority of respondents, 66.7% disagreed or strongly disagreed that educational technology can improve the quality of teaching and learning that takes place in our schools. However, interview responses indicate that:

> **Interviewee**: Mmm ermm…the world is always said to be a global village now. This is largely so because of technology. Since Social Studies involves social challenges or issues bordering man...erm…the integration of technology into the teaching of Social Studies will make certain abstract-like topics…be better understood by pupils.

Two (2) respondents, representing 4.2% disagreed that educational technology resources are important learning tools; one (1) respondent, representing 2.1% was undecided; while forty-five (45) representing 93.7% either agreed or strongly agreed with the statement. These are responses from some of the interviewees on the importance of technological tools:

> "Ok, in my view, technology can be integrated into teaching by using computers or laptops. This will minimize time usage for and avoid inconveniences to teachers, as the carrying of real TLMs that is, teaching and learning materials, will be replaced by the usage of projectors".
>
> And

> "Eeerm…basically.. I think teachers should endeavor to use computers and projectors and other erm.…technological imputes in their teaching…there are some educational websites that you can access so each time you see that whatever you are going to teach will have some bearing on some of these sites you quickly go there so that your children will have err…access to those sites and then they will understand the lesson better".

Three (3) respondents, representing 6.3% either disagreed or strongly disagreed that students who have access to technology resources are more likely to do better academically than those who do not; one (1) of the respondents, representing 2.1% was undecided; while forty-four (44), representing 91.7% either agreed or strongly agreed with the statement. This is an interviewee's view:

> "Social Studies is a broad subject which cuts across all the scope of living and non-living things. Technology can thus be used in searching for capital towns of some countries. Technology can also in the teaching of Social Studies be used in finding the causes, effects and solutions to some environmental problems. Example is err…deforestation in our society".

One (1) respondent, representing 2.1% strongly disagreed that educational technology resources should be available in each school; while forty-seven (47), representing 97.9% either agreed or strongly agreed that educational technology resources should be available in each school. One interviewee replied thus:

> Errm…technology integration has very far reaching effects on teaching, so efforts should be made to practicalize err…this lofty programme in all the schools yeah.

One (1) respondent, representing 2.1% strongly disagreed that educational technology resources should be available in each classroom, one (1) other respondent, representing 2.1% was undecided while forty-six (46) others, representing 95.9% either agreed or strongly agreed with the statement.

Thirty-six (36) of the respondents, representing 75.1% either disagreed or strongly disagreed that access to computers (in schools) should be limited to the school library for research; two (2) representing 4.2% could not make up their minds; while ten (10), representing 20.9% either agreed or strongly agreed that computers should be limited to the school library for research purposes. Forty-four (44) respondents, representing 91.6% either disagreed or strongly disagreed that having computers in their class is a waste of resources; two (2) representing 4.2% were not sure; while another two (2), representing 4.2% agreed that having computers in their class is a waste of resources.

Thirty-seven (37) respondents, representing 77.1% either disagreed or strongly disagreed that if they use educational technology, they will not have enough time to cover all the topics on the syllabus; five (5), representing 10.4% were not sure; while six (6) others, representing 12.6% either agreed or strongly agreed with the statement.

Six (6) respondents, representing 12.5% either disagreed or strongly disagreed that integration of educational technology into the curriculum results in only minor improvement in learning over the traditional method; five (5) respondents, representing 10.4% could not decide; while thirty-seven (37), representing 77.1% either agreed or strongly agreed with the statement.

Another objective set out for the study was to examine the factors that affect technology integration in the Effutu Municipality. Responses from the questionnaire as well as from interviewees are presented below.

Table 4.7 Factors Affecting Technology Integration

	Statement	Strongly Disagree/Disagree	Undecided	Strongly Agree/Agree
13	My school administration do support activities geared towards educational technology integration	19 (39.6)	4 (8.3)	25 (52.1)
14	My school/Municipality encourages and supports teaching with technology	15 (31.3)	3 (6.3)	30 (62.6)
15	There are enough educational technology tools in my school.	38 (79.2)	3 (6.3)	7 (14.6)
16	If I encounter problems when using technology, there is someone at my school to provide technical assistance	21 (43.8)	3 (6.3)	24 (50.0)
17	Monies are made available for procurement of educational technology tools for my school.	37 (77.1)	3 (6.3)	8 (16.7)
18	Colleague teachers in my school encourage me to use educational technology in my teaching and learning.	20 (41.7)	6 (12.5)	22 (45.8)
19	There is support from my school's administration/Municipality (eg. Release time) for teachers who want to learn how to use educational technology resources	27 (56.3)	4 (8.3)	17 (35.4)
20	My school is connected to the national electricity grid	31 (64.6)	0 (0)	17 (35.4)
21	My school has constant power supply	35 (72.9)	1 (2.1)	12 (25.0)
22	My school has a/is thinking of having a standby generator to use in case of power failure	37 (77.1)	4 (8.3)	7 (14.6)

Source: (Field Work, 2016).

In Table 4.7 on factors that affect technology integration, nineteen (19) respondents, representing 39.6% either disagreed or strongly disagreed with the statement that 'my school administration do support activities geared towards educational technology integration; four (4) representing 8.3% were not sure while; twenty-five (25), representing 52.1% either agreed or strongly agreed with the statement.

Fifteen (15) respondents, representing 31.3% either disagreed or strongly disagreed that 'my school /Municipality encourages and supports teaching with technology; three (3), representing 6.3% could not make their minds; while thirty (30), representing 62.6% either agreed or strongly agreed with the statement. Thirty-eight (38) respondents, representing 79.2% either disagreed or strongly disagreed that there are enough educational technology tools in their schools; three (3), representing 6.3% were undecided; while seven (7), representing 14.6% either agreed or strongly agreed with the statement.

Twenty-one (21) of the respondents, representing 43.8% either disagreed or strongly disagreed that if they encounter problems when using technology, there is someone at their school to provide technical assistance; three (3), representing 6.3%, were undecided; while twenty-four (24), representing 50% either agreed or strongly agreed with the statement. Thirty-seven (37) respondents, representing 77.1% either disagreed or strongly disagreed that monies are made available for the procurement of educational technology tools for their schools; three (3) other respondents, representing 6.3% could not decide; while eight (8) respondents, representing 16.7% either agreed or strongly agreed with the statement.

Twenty (20) respondents, representing 41.7% either disagreed or strongly disagreed to the statement that colleague teachers in their schools encourage them to use educational technology in their teaching and learning practices; six (6) representing

12.5% were not sure; while twenty-two (22) respondents, representing 45.8% either agreed or strongly agreed with the statement. Twenty-seven (27) respondents, representing 56.3% either disagreed or strongly disagreed that there is support (eg. Release time) from their school's administration or Municipality for teachers who want to learn how to use educational technology resources; four (4) respondents, representing 8.3% could not decide; while seventeen (17) respondents, representing 35.4% either agreed or strongly agreed with the statement.

Thirty-one (31) respondents, representing 64.6% either disagreed or strongly disagreed; and seventeen (17) others representing 35.4% either agreed or strongly agreed that their school is connected to the national electricity grid. Thirty-five (35) respondents, representing 72.9% either disagreed or strongly disagreed; one (1) respondent, representing 2.1% could not decide; and twelve (12) other respondents, representing 25% either agreed or strongly agreed that their school has constant electrical power supply.

Thirty-seven (37) respondents, representing 77.1% either disagreed or strongly disagreed that their schools have a/or is thinking of having a standby generator to use in case there is power failure; four (4), respondents, representing 8.3% did not decide; while seven (7) others, representing 14.6% either agreed or strongly agreed with the statement. These are the views of some of the respondents:

> **Interviewee 1:** "Then lack of power in some schools to be able to use these resources effectively is also one of the hindrances. Then…err...inability of the authorities concerned to organize in-service training errm…for teachers on technology integration, yeah".

> **Interviewee 2:** "Ok…in my view I will say lack of ICT learning materials, for example computers, is a great hindrance to the integration of technology into

teaching. Then also the absence of electricity in some parts of the country, especially in the rural areas is also another factor or another thing that serve as a hindrance to the integration of technology. Furthermore, lack of Internet to access and research on some issues and information is also a major hindrance".

Interviewee 4: "Err…due to the lack of facilities that will aid the integration of technology into the teaching and learning".

When asked to mention some of the facilities that are lacking, this is what was said:

Interviewee 4: "Most schools don't have computers in Ghana here. The few schools that have computers are not connected to the national grid. My school for example is not having electricity not to talk about Internet connectivity. You see, how can you effectively integrate technology"?

For interviewee 5, she puts it as:

Interviewee 5: "Infrastructure is a major barrier. Another is the discomfort many teachers have with technology in general".

The third objective that was set to guide the study was to assess whether basic schools have basic facilities to enable teachers integrate technology into teaching. In an attempt to achieve this objective, questionnaires were administered to Social Studies and ICT teachers. Some of the teachers were also interviewed. Just as research question 1, and research question 2, research question 3 was also based on the literature review. Responses from the questionnaire and the interview are presented below:

Table 4.8 Facilities Available For Technology Integration

	Statement	Strongly Disagree/Disagree	Undecided	Strongly Agree/Agree
23	If I want to teach a computer-based lesson, computers are available for use.	25 (52.1)	0 (0)	23 (47.9)
24	My students have access to computers to complete course assignments.	35 (72.9)	1 (2.1)	12 (25.1)
25	Pupils have computers at home	42 (87.6)	2 (4.2)	4 (8.4)
26	My school has internet connectivity for use by teachers	45 (93.7)	0 (0)	3 (6.3)
27	My school has internet connectivity for use by pupils.	43 (89.6)	0 (0)	5 (10.4)
28	My school has various software for use by teachers.	40 (83.4)	1 (2.1)	7 (14.6)
29	Only ICT teachers are allowed to use the computers	30 (62.5)	3 (6.3)	15 (31.3)
30	My school has an ICT laboratory	30 (62.5)	1 (2.1)	17 (35.4)
31	Computers are locked up in Computer lab	27 (56.3)	1 (2.1)	20 (41.7)
32	My school has a projector for use during lessons	39 (81.2)	2 (4.2)	7 (14.6)

Source: (Field Work, 2016).

In Table 4.8 on the issue of availability of facilities for technology integration, twenty-five (25) respondents, representing 52.1% either disagreed or strongly disagreed that if they want a computer-based lesson, computers are available for them to use; and twenty-three (23) others representing 47.9% either agreed or strongly

agreed with the statement. When asked to say his last words, one interviewee thus replied:

> Errm…as I have said it is a very lofty idea, Government erm…all stakeholders in education should errm…do well to make some positive contributions in that regards, yea, yea.

Thirty-five (35) respondents, representing 72.9% either disagreed or strongly disagreed; one (1) respondent, representing 2.1% was undecided; and twelve (12) others, representing 25.1% either agreed or strongly agreed that students have access to computers to complete course assignments. This is what one interviewee had to say on the issue of availability of educational resources in schools:

> Erm…to mention a few, I think lack of financial resources on the part of the schools and Government to provide some of these technological resources erm…like computers and projectors, errm

Forty-two (42) respondents, representing 87.6% of the total respondents either disagreed or strongly disagreed; two (2) others, representing 4.2% could not decide; while four (4) others, representing 8.4% either agreed or strongly agreed that their pupils have computers at home. Forty-five (45) respondents, representing 93.7% either disagreed or strongly disagreed that their schools have internet connectivity for use by teachers; and three (3) others, representing 6.3% either agreed or strongly agreed with the statement. One interviewee realizing the lack of technological resources in schools, thus advised:

> "Yea, in giving…solutions to the problems, I think…Government should solicit funds from Donor countries and organizations to provide the

needed…technological resources, then…I think solar power, if not electrical power should also be provided in schools then…thirdly, I think in-service training should be organized for teachers on technology integration".

Forty-three (43) respondents, representing 89.6% either disagreed or strongly disagreed that their schools have internet connectivity for use by pupils; and five (5) others, representing 10.4% either agreed or strongly agreed with the statement. Forty (40) respondents, representing 83.4% either disagreed or strongly disagreed that their schools have various software for use by teachers; one (1) other respondent was not decided; while seven (7) respondents, representing 14.6% either agreed or strongly agreed with the statement.

Thirty (30) respondents, representing 62.5% either disagreed or strongly disagreed that only ICT teachers in their schools are allowed to use the computers in their schools; three (3) others, representing 6.3% could not decide; while fifteen (15) other respondents, representing 31.3% either agreed or strongly agreed with the statement. Thirty (30) respondents, representing 62.5% either disagreed or strongly disagreed that their schools have ICT laboratories; one (1) other, representing 2.1% could not decide; while seventeen (17) others, representing 35.4% either agreed or strongly agreed with the statement.

Twenty-seven (27) respondents, representing 56.3% either disagreed or strongly disagreed that computers in their schools are locked up in computer laboratories; one (1) respondent, representing 2.1% was undecided; while twenty (20) others, representing 41.7% either agreed or strongly agreed with the statement. Thirty-nine (39) respondents, representing 81.2% either disagreed or strongly disagreed that their schools have projectors for use during lessons; two (2), representing 4.2% could not

make up their minds; while seven (7), representing 14.6% either agreed or strongly agreed with the statement.

The last objective set out for the study was to assess whether Social Studies teachers posses adequate knowledge and competences to integrate technology into teaching. In achieving this objective, questionnaires were administered to teachers and some of them were interviewed. Table 4.9 presents the responses of the teachers on the issue.

Table 4.9 Knowledge and Competences For Technology Integration

	Statement	Strongly Disagree/Disagree	Undecided	Strongly Agree/Agree
33	I have a need to use educational technology in my instructional activities	4 (8.4)	2 (4.2)	42 (87.5)
34	I was introduced to technology integration in my College of Education/ University.	13 (27.1)	1 (2.1)	34 (70.9)
35	There are opportunities at my school/Municipality for development of teachers interested in using educational technology in their class.	21 (43.8)	4 (8.3)	23 (47.9)
36	Workshops are organized by my school/Municipality on how to use educational technology in my class	15 (31.3)	5 (10.4)	28 (58.3)
37	Training is focused on integrating technology in the classroom rather than teaching basic skills.	23 (47.9)	8 (16.7)	17 (35.4)
38	I have knowledge in basic ICT skills	6 (12.5)	1 (2.1)	41 (85.5)

39	I have knowledge in how to integrate technology into teaching.	7 (14.6)	3 (6.3)	38 (79.2)
40	I have sufficient knowledge about the different types of software to use in my lessons	19 (39.6)	2 (4.2)	27 (56.3)
41	I feel prepared to teach using educational technology resources	7 (14.6)	5 (10.4)	36 (75.0)
42	When a computer develops a technical problem, I can fix it.	32 (66.7)	0 (0)	16 (33.3)
43	When a computer develops a technical problem, there is a resource person/technician to fix it.	28 (58.4)	0 (0)	20 (41.7)

Source: (Field Work, 2016).

In Table 4.9 on the issue of teachers' knowledge and competences for technology integration, four (4) respondents, representing 8.4% either disagreed or strongly disagreed that they need to use educational technology in their instructional activities; two (2), representing 4.2% could not make up their minds; while forty-two (42) , representing 87.5% either agreed or strongly agreed with the statement.

Thirteen (13) respondents, representing 27.1% either disagreed or strongly disagreed that they were introduced to technology integration in their colleges of education or university; one (1) respondent, representing 2.1% could not decide; while thirty-four (34) respondents, representing 70.9% either agreed or strongly agreed with the statement. Twenty-one (21) respondents, representing 43.8% either disagreed or strongly disagreed; four (4) others, representing 8.3% could not decide; while twenty-three (23) others, representing 47.9% either agreed or strongly agreed that there are opportunities at their schools or Municipality for development of teachers who are interested in using educational technology in their classrooms.

Fifteen (15) respondents, representing 31.3% either disagreed or strongly disagreed that workshops are organized by their schools or Municipality on how to use educational technology in their classrooms; five (5), representing 10.4% were undecided; while twenty-eight (28) others, representing 58.3% either agreed or strongly agreed with the statement. Twenty-three (23) respondents, representing 47.9% either disagreed or strongly disagreed that training is focused on integrating technology in the classroom rather than teaching basic computer skills; eight (8), representing 16.7% could not decide; while seventeen (17) respondents, representing 35.4% either agreed or strongly agreed with the statement.

Six (6) respondents, representing 12.5% either disagreed or strongly disagreed; one (1) respondent, representing 2.1% was undecided; while forty-one (41) others, representing 85.5% either agreed or strongly agreed that they have knowledge in basic ICT skills. Seven (7) respondents, representing 14.6% either disagreed or strongly disagreed; three (3), representing 6.3% were undecided; while thirty-eight (38) others, representing 79.2% either agreed or strongly agreed that they have knowledge in how to integrate technology into teaching.

Nineteen (19) respondents, representing 39.6% either disagreed or strongly disagreed, two (2) others, representing 4.2% were undecided, while twenty-seven (27) others, representing 56.3% either agreed or strongly agreed that they have sufficient knowledge about the different types of software to use in their lessons. Seven (7) respondents, representing 14.6% either disagreed or strongly disagreed; five (5) respondents, representing 10.4% were undecided; while thirty-six (36) others, representing 75% either agreed or strongly agreed that they feel prepared to teach using educational technology resources.

Thirty-two (32) respondents, representing 66.7% either disagreed or strongly disagreed; and sixteen (16) others, representing 33.3% either agreed or strongly agreed that when a computer (in their schools) develops technical problem, they can fix it. Twenty-eight (28) respondents, representing 58.4% either disagreed or strongly disagreed; and twenty (20) others, representing 41.7% either agreed or strongly agreed that when a computer develops a technical problem, there are resource persons or technicians to fix it.

A hypothesis was set to test whether there is any significant difference in the perception of male and female teachers about ICT integration. The null hypothesis stated thus: there is no significant difference in the perception of male and female teachers about ICT integration. The alternate hypothesis also stated thus: there is significant difference in the perception of male and female teachers about ICT integration. Mann-Whitney test was used to test the hypothesis. Table 4.10 presents the results.

Hypothesis: There is no significant difference in the perception of male and female teachers about ICT integration.

Table 4.10 Mann-Whitney Test

Ranks

	Sex	N	Mean Rank	Sum of Ranks
Overall	Male	29	24.95	723.50
	Female	19	23.82	452.50
	Total	48		

Table 4.11 Test Statistics

Test Statistics[a]	Overall
Mann-Whitney U	262.500
Wilcoxon W	452.500
Z	-0.274
Asymp. Sig. (2-tailed)	0.784

a. Grouping Variable: Sex

In the Table above, the Z value is -0.274 (rounded) with a significance level of p 0.784. The probability value (p) is not less than or equal to 0.05, so the result is not significant. This shows that there is no significant difference in the perception of male and female teachers about ICT integration therefore the null hypothesis was accepted while the alternate hypothesis was rejected.

CHAPTER FIVE

DISCUSSION

5.0 Introduction

The preceding chapter was devoted to the presentation of findings obtained from the study. This chapter therefore deals with a scrutiny of major findings making inferences from the literature review. The major findings based on the research questions are extracted and further discussed.

5.1 Knowledge About Educational Technology

The study reveals that majority, (60.4%) of the respondents were quite confident that technology integration is not just learning about computers. This confirms what Gorder (2008) citing Sheingold (1990) opined when he said that integrating technology in the classroom is not about teaching learners to operate computers, but integrating technology is about helping teachers use technology as a tool for teaching and learning.

Majority of respondents, 66.7% disagreed or strongly disagreed that educational technology can improve the quality of teaching and learning that takes place in our schools. This however contradicts Doolittle and Hicks' (2003) assertion that teachers hold positive perception towards the use of interactive technologies in the classroom and that teachers consider computers as having a positive impact on students' enthusiasm, provides additional learning opportunities for gifted students as well as helping handicapped students. And that classrooms with the use of technology have students with positive attitudes and a greater inclination to learn, and increase in student achievement too (Sayparn, 2012). About 79.2% of the respondents either agreed or strongly agreed that technology integration is using electronic tools and methods in teaching. This result supports Tiene and Luft's (2001) description of a

technology rich classroom where 12 networked computers with Internet access, a scanner, a printer, videoconferencing cameras, all of which are connected to several computers, digital still-frame cameras, camcorders, and a VCR are all present for use in a single classroom.

The result indicates that majority of the respondents (93.7%) have positive attitude towards ICT and either agreed or strongly agreed that educational technology resources are important teaching and learning tools. This reinforces Theng and Hua's (2008) observation that teachers held a reasonably positive attitude towards ICT adoption in school.

The study also reveals that majority of the respondents (91.7%) believe that students who have access to technology resources are more likely to do better academically than those who do not. The study also confirms the earlier study by Gorder (2008), which found that proper use of instructional media positively affects students' achievements. It also reinforces the position of Serkan and Ibrahim (2012), which says that the use of ICT in lessons prospers the lesson visually and increases students' interest in the lesson. And that when used effectively and integrated into education, computers and Internet technologies can improve teaching and learning, strengthen teacher professional development, support broad educational reform, enhance school-community partnerships, and improve school management (Rusten & Hudson; 2002, p. 77).

The study further reveals that while 97.9% of the respondents either agreed or strongly agreed that technology resources should be made available in each school, 95.9% still believes that such resources should equally be made available in each

class. The result also shows that majority of respondents disagreed that access to computers was limited to the school library for research purposes.

The respondents (91.6%) disagreed or strongly disagreed with the idea that having computers in their classes is a waste of resources. This confirms the view of Dawson, et al, (2010), that the integration of ICT is no longer a luxury but a necessity for all institutions.

Over 77% of the respondents either agreed or strongly agreed that integration of educational technology into the curriculum results in only minor improvement in learning over traditional method. This result supports the study by Serkan and Ibrahim (2012) which says that most of the widely-used ICT-based resources reflect traditional approaches and their resulting contribution to teaching environment is very small.

5.2 Factors Affecting Technology Integration

Regarding factors affecting Technology Integration, the study reveals a positive perception of teachers to the efforts being made by their school administration. While 52.1% of respondents either agreed or strongly agreed that their school administrations do support activities geared towards educational technology integration, 62.6% also either agreed or strongly agreed that their school or Municipal Authority encourages or supports teaching with technology.

According to the results of the study, 79.2% of the total population either disagreed or strongly disagreed that there are enough educational technology tools in their schools and 77.1% also either disagreed or strongly disagreed that monies are made available for the procurement of educational technology tools for their schools.

The study further reveals that most schools were not only connected to the national electricity grid, but also there were no constant power supply and a standby generator for use in case of power failure. This supports Rusten and Hudson's (2002) research which found out that many schools, especially older ones, have an insufficient supply of electricity to withstand the additional demand made by the computers.

5.3 Availability of Facilities for Technology Integration

The availability of ICT facilities and knowledge of its use are important facilitating conditions for effective integration of technology into the teaching and learning process. Ideally, teachers must have computers both at home and at school. Teachers must as well have knowledge in the use of computers. Therefore, having appropriate ICT facilities in every school and classroom will help facilitate the integration of ICT into the teaching and learning process, especially in Social Studies.

From the study, it is observed that majority of the respondents have a negative perception about the availability of such facilities in their schools. Over 52% disagreed that if they want to run computer-based lessons, computers are available for use. About 72.9% of the respondents either disagreed or strongly disagreed that their students have access to computers to complete course assignments and 87.6% also either disagreed or strongly disagreed that their pupils have computers at home. The finding is in line with earlier study conducted by Boadu (2014) which confirms that teachers face the challenge of unavailability of technology resources in the attempt to use technology in their class. These findings also confirm the National Center for Education Statistics (1999a, 1999b) and Wired Digital's (2001) observation that many technology materials and devices that are available are in limited use in schools, may

be too expensive, schools may lack the infrastructure to support them, or teachers may be unfamiliar with and untrained in their use (Royblyer, 2003).

The study also revealed that 93.7% of the respondents either disagreed or strongly disagreed that their schools have Internet connectivity for use by teachers and 89.6% either disagreed or strongly disagreed that their schools Internet connectivity is for use by pupils, while 83.4% were of the view that their schools have no software for use by teachers. This finding is in line with the observation made by Qablan, et al, (2009), which indicates that the Internet connectivity does not exist in most of the schools where their study was carried out. However, 56.3% disagreed that their computers are locked up in the computer laboratories. Also, 81.2% of the respondents either disagreed or strongly disagreed that their schools have projectors for use during lessons.

5.4 Teachers' Knowledge and Competences for Technology Integration

Competency is essential for successful integration of technology in classroom teaching. The result of the study indicates that a greater number of the respondents have a positive experience of the use of ICT and its tools and are prepared to integrate them into their instructional activities. About 58.3% agreed that workshops are organized either by their schools or Municipal Authorities for development of teachers who are interested in the use of ICT. The result confirms the earlier study by Boadu (2014) that technologies such as computers, projectors, Internet and audio-visuals could be used to teach History. However, the study shows that no provision has been made for resource persons or technicians to fix the computers when they break down. More than 58% of the respondents affirm this. This is also in line with the observation by Padmavathi (2013) which shows that teachers' perception towards use of computer was found to be favourable.

When asked whether there is the need for them to integrate technology into their teaching, 87.5% of the interviewees either agreed or strongly agreed that they need to use educational technology in their instructional activities. This confirms what Ertmer et al (2003) say teachers have some knowledge about technology and want to use technology but lack the knowledge on how to integrate technology in teaching and learning (Gorder, 2008). And that teachers are not using technology even though they are skilled with using technology (Baurer and Kenton (2005), as cited in Gorder, 2008). This shows that the overall perception of teachers towards transformative role of ICT is positive. There is therefore the need to strengthen the in-service training to reinforce the teacher motivation to use ICT.

5.5 Hypothesis

Ho: There is no significant difference in the perception of male and female teachers about ICT integration**.**

The findings of this study revealed that there is no significant difference between the perception of male and female teachers in the integration of technology into the teaching of Social Studies. This shows that the null hypothesis was accepted while the alternate hypothesis was rejected. This confirms Rajasekar and Raja's (2007) study which found out that there was no significant difference in the attitude towards computer between male and female teachers. And that there is no difference between the opinion and perceptions of urban and rural teachers (Padmavathi, 2013; Uniyal & Pandey, 2008; Panigrahi, 2011; Manisha, 2012). Other studies however indicate that gender plays a role in teachers' integration of technology into teaching (Hermans, et. al., 2008).

CHAPTER SIX

SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

6.0 Introduction

Chapter five dealt with a discussion of major findings. This chapter focuses on the summary of findings, benefits of the findings, recommendations, areas for future research and conclusion.

6.1 Summary of Findings

The summary of findings are as follows:

- There is a positive perception of teachers concerning the usefulness of technology integration in teaching and learning, especially in Social Studies.
- Majority of the respondents disagreed that there were enough educational technology tools and anytime they encounter problems when using technology, there is no one in the schools to provide technical assistance.
- Most schools are neither connected to electricity grid, no constant power supply nor standby generator for use in case of power failure.
- Most respondents have a negative perception about the availability of technology facilities in their schools for use by both students and teachers.
- A greater number of the respondents have a positive experience of the use of ICT and its tools and are prepared to integrate them into their instructional activities.
- No provisions have been made for resource persons or technicians to fix the computers whenever they break down

- Integration of educational technology into curriculum results in only minor improvement in learning over traditional method. Here, majority of the teachers said that technology integration did not do much in teaching and learning.
- Majority of respondents believe that those who have access to technology resources are more likely to do better academically than those who do not.
- Majority of teachers have positive attitude towards ICT and agree that educational technology resources are important learning tools. Here, most teachers were of the view that technology integration had the potential of improving teaching and learning and were ready to integrate technology if resources are made available. These conflicting views may be due to the fact that teachers were not integrating technology in their classroom practices so could not really assess the potential of technology in classroom practices.
- There is no significant difference in perception of the use of computer in terms of gender. This indicates that both male and female teachers have the same perception about technology integration in the teaching of Social Studies.

6.2 Impact of the Findings

The study has established that the idea of integrating ICT tools and materials into the teaching and learning process is a necessity. Governments all over the world are taking pragmatic steps to provide ICT resources to both teachers and students. The study confirmed that integrating ICT into the classroom activities has a great potential for improving the teaching and learning process. For this intervention to work properly, teachers need to know the various information technologies available and their potential uses in the classroom. It is also necessary for teachers' knowledge and skills to be updated to make the fullest use of the hardware and software resources

available. Beyond the provision of the ICT resources attention should be paid to Internet connectivity in schools, connecting schools to the national grid or providing standby generators to make facilities functional. Authorities must also ensure that technicians are also available to fix the computers and other accessories when they break down.

6.3 Challenges

The benefits accruing from the use of technology in the teaching and learning environment stand the danger of being elusive due to some teething problems. First and foremost is lack of adequate resources is a constraining barrier to any integration effort. If teachers do not have sufficient equipment, time, or support, it will be very difficult to achieve a meaningful integration.

Again, other important obstacles are the difficulties associated with access to the ICT-based teaching software, lack of time to develop ICT-based teaching materials and lack of ICT-based teaching materials and lack of technical or resource persons to help teachers. Fixing problems of the computers and other associated technological tools as they break down can positively affect results.

Another important cause of ineffective ICT use is inadequate teacher training. There are problems related to extensiveness and quality of teacher training programmes.

Lastly, teachers face the challenge of unavailability of internet connectivity, erratic power supply, standby generators, resource persons to fix computers when they breakdown and lack of motivation to use technology in their classroom practices.

6.4 Limitations to the Study

One major challenge that confronted the research was the fact that the researcher is a basic school teacher and had to combine her teaching with research work which was

very challenging. Some respondents were not ready to take part in the research arguing that answering questionnaires and / or being interviewed negatively affected their instructional hours. The study confined itself to only JHS teachers handling Social Studies and ICT in the Effutu Educational Municipality and hence the findings can hardly be generalized.

6.5 Suggested Area for further Research

The study focused on the perception of teachers in integrating ICT into teaching Social Studies at the JHS level in the Efutu Municipality. Purposive sampling was used to select Social Studies and ICT teachers for the study. The results could have been different if views of parents were sought. Therefore, a further research can be done on the perception of parents on integrating ICT into the teaching and learning of Social Studies in the Effutu Municipality.

6.6 Conclusion

Information and Communication Technology (ICT) has been developing in recent times and opens new horizons in the field of education. There have been many remarkable developments in ICT-based teaching and learning techniques and materials. Governments have been spending a significant amount of resources on ICT equipment for schools. In the study, benefits and challenges to the technology integration efforts have been discussed. Recommendations to effectively reap the fullest benefits of integration effort have been addressed.

It is very important to appreciate the fact that the era of ICT has come to stay. Conscious efforts need to be made by all stakeholders to encourage the development of equipment and ICT-based teaching and learning materials in schools. Proper and ample training must be provided or organized for teachers to increase their beliefs,

confidence, ability, commitment and use of technology in the classroom more creatively.

6.7 Recommendations

In this era of digital communication, both students and teachers have an easy access to sources of information. For effective teaching and learning, teachers need to employ different ways and means which will appeal to the senses of the pupils in the classroom. The necessary stimuli must be provided by the teacher in order to elicit the desired responses. It is well known fact among educators that the educational experiences involving the learner actively participating in concrete examples are retained longer than abstract experiences. ICT materials are no doubt the most effective in stimulating these senses. However, to make fullest utilization of ICT integration in the classroom practices, the following recommendations are worth noting.

- Educational institutions like the Universities and Colleges of Education should help teacher trainees to be aware of various information technologies and their potential uses in the field of education. It is pertinent to expose the teachers to information technology so as to realize its benefits for them and their students.
- Teachers need also to update their knowledge and skills in using ICT to make fullest use of hardware and software resources available. With changing teaching methods in curriculum issues, it is important that teachers have to leave their apprehensions behind about technology mediated instructions and adopt new technologies.

- The Ghana Education Service (GES) should organize seminars for teachers on frequent basis to expose teachers to the types of technologies and how to use them. Customized training courses addressing teachers' needs in both basic and pedagogical skills which aims at giving the teachers the enhanced skills in pedagogical and technical use of ICT-based learning can aid the teachers to integrate technology.
- Ministry of Education should make technology resources available in schools and also teachers should be more innovative and creative by using a variety of technologies in their lessons.
- The Ghana Education Service need to redesign and reconstruct the educational system based on the new educational paradigms so that both teachers and students develop the knowledge and skills sought in this digital age.
- GES should also make educational technology tools such as computers and projectors available in all schools to enable teachers integrate technology effectively in their classroom practices.
- GES should also make technicians available to provide assistance to teachers who encounter problems in technology integration or to fix the computers whenever they break down.
- Government must take steps to extend internet connectivity, constant electricity power and standby generators to schools to make technology integration in classroom effective and meaningful.

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APENDIX A

QUESTIONNAIRE FOR TEACHERS

The purpose of this questionnaire is to gather data regarding social studies teachers' knowledge and practices of integration of educational technology in JHS in the Effutu Municipality. Educational Technology here refers to technology resources that aid teaching and learning (including computers, projectors, internet and online materials). Your participation in this study is strictly voluntary and any information given will remain confidential and anonymous.

Section A: Bio-data

1. SEX: MALE ☐ FEMALE ☐
2. AGE: Less than 25 years ☐ 25 – 35 years ☐ 35 and above years ☐
3. No. of years in teaching

   1 -5 ☐ 6 – 10 ☐ 11 -15 ☐ 15 – 20 ☐ 21+ ☐
4. Circuit: Winneba East ☐ Winneba West ☐ Winneba Central ☐
5. Level of Education:
6. Cert 'A' ☐ Diploma ☐ 1st Degree ☐ 2nd Degree ☐
7. What subject(s) do you teach?.....

Instructions: For each of the statements in **Sections B-E,** there are five options that respondents can choose from. Respondents are required to indicate with a tick (√) the extent to which they agree or disagree with the statements that follow.

Section B. Knowledge (Perception) about Educational Technology.

SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, and SA = Strongly Agree

	SD	D	U	A	SA
8. Technology integration is learning about computers					
9. Technology integration is using computers and other tools in teaching.					
10. Technology integration is using electronic tools and methods in teaching.					
11. Educational technology integration can improve the quality of teaching and learning that takes place in schools.					
12. Educational technology resources are important learning tools.					
13. Students who have access to technological resources are more likely to do better than those who do not,					
14. Educational technology resources should be available in each school.					
15. Educational technology resources should be available in each classroom.					
16. Access to computers should be limited to the school library for research.					
17. Having computers in my class is a waste of resource.					

18. If I use educational technology, I will not have enough time to cover all the topics on the syllabus.					
19. The integration of educational technology into the curriculum results in only minor improvement in learning over the traditional methods.					

Section C: Factors affecting Technology Integration

SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, and SA = Strongly Agree

	SD	D	U	A	SA
20. My school administration do support activities geared towards educational technology integration.					
21. My school/Municipality encourages and supports teaching with technology.					
22. There are enough educational technology tools in my school.					
23. If I encounter problems when using technology, there is someone at my school to provide technical assistance.					
24. Monies are made available for procurement of educational technology tools for my school.					

25. Colleague teachers in my school encourage me to use educational technology in my teaching and learning.					
26. There is support from my school's administration/Municipality (eg. Release time) for teachers who want to learn how to use educational technology resources.					
27. My school is connected to the national electricity grid					
28. My school has constant power supply					
29. My school has a/thinking of having a standby generator to use in case of power failure.					

Section D: ICT Facilities Available For Technology Integration

SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, and SA = Strongly Agree

	SD	D	U	A	SA
30. If I want to teach a computer-based lesson, computers are available for use.					
31. My students have access to computers to complete course assignments.					
32. Pupils have computers at home.					
33. My school has internet connectivity for use by teachers.					

34. My school has internet connectivity for use by pupils.					
35. My school has various software for use by teachers.					
36. Only ICT teachers are allowed to use the computers.					
37. My school has an ICT laboratory.					
38. Computers are locked up in Computer lab					
39. My school has a projector for use during lessons					

Section E: Knowledge And Competencies For Technology Integration

SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, and SA = Strongly Agree

	SD	D	U	A	SA
40. I have a need to use educational technology in my instructional activities.					
41. I have a need to use educational technology in my instructional activities.					
42. There are opportunities at my school/Municipality for development of teachers interested in using educational technology in their class.					
43. Workshops are organized by my					

school/Municipality on how to use educational technology in my class.					
44. Training is focused on integrating technology in the classroom rather than teaching basic skills.					
45. I have knowledge in basic ICT skills.					
46. I have knowledge in how to integrate technology into teaching.					
47. I have sufficient knowledge about the different types of software to use in my lessons.					
48. I feel prepared to teach using educational technology resources.					
49. When a computer develops a technical problem, I can fix it.					
50. When a computer develops a technical problem, there is a resource person/technician to fix it.					

Thanks for taking part in this Research.

APENDIX B

AN INTERVIEW GUIDE ON TECHNOLOGY INTEGRATION FOR JHS TEACHERS

1. Please, in your view, what do you say technology integration is?

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2. Is it necessary to integrate technology into the teaching of Social Studies in this era?

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3. Can you briefly tell how teachers should integrate technology into teaching?

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4. In your view, what are some of the hindrances of integrating technology into teaching?

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5. Can you please give alternative solution(s) to the above hindrances(s) (if any)?

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6. Do you think your sex can influence how you integrate technology into teaching?

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7. Do you think pupils and teachers in the rural areas and those in the urban areas of Ghana have equal access to technology resources?

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8. Why do you say so?

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9. What is your suggestion to the MOE/GES as far as technology integration is concerned?

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Thank You Very Much