

**SENIOR HIGH SCHOOLS PREPAREDNESS FOR INTEGRATION OF
COMPUTER BASED INSTRUCTION IN TEACHING AND LEARNING OF
SOCIAL STUDIES IN NORTHERN REGION, GHANA**

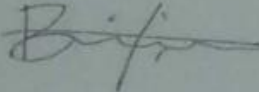
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**A THESIS SUBMITTED FOR THE REQUIREMENTS OF THE AWARD OF
DEGREE OF DOCTOR OF PHILOSOPHY IN THE SCHOOL OF
EDUCATION, KENYATTA UNIVERSITY**

OCTOBER, 2020

DECLARATION

This thesis is my original work and has not been presented in any other university for consideration. The thesis has been complimented by referenced sources, pictures or tables, duly acknowledged. Where text, data, graphics, pictures or tables have been borrowed from other works including the internet, the sources are specifically accredited through referencing per anti-plagiarism regulations.

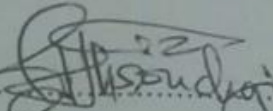
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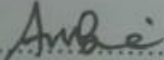
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DEDICATION

This doctoral thesis is dedicated to the late Professor Henry Okello Ayot, my late mother Iddrisu Fatimata, and my children Hamzia, Bayan, Maqasid, Zaituna, Mansur, and Marsus.

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ABBREVIATIONS AND ACRONYMS

ANCOVA	Analysis of Covariance
ANOVA	Analysis of Variance
ASSP	Africa Social Studies Programme
BYOD	Bring Your Own Device
BYOS	Bring Your Own Software
BYOT	Bring Your Own Technology
CAI	Computer Assisted Instruction
CBI	Computer Based Instruction
CD-ROM	Compact Disks-Read Only Memory
CK	Content Knowledge
CMI	Conventional Methods of Instruction
CoEs	Colleges of Education
CRCT	Criterion Referenced Competency Test
CRDD	Curriculum Research and Development Division
DD	Digital Divide
DVDs	Digital Video Disks
GEM Report	Global Education Monitoring Report
GES	Ghana Education Service
GETFund	Ghana Education Trust Fund
GPI	Gender Parity Index

GIS	Geographic Information System
GoG	Government of Ghana
IBM	International Business Machines Corporation
ICT	Information and Communication Technology
ICTs	Information and Communication Technologies
IE	Inclusive Education
INSET	In-service Education and Training
LAN	Local Area Network
LMS	Learning Management System
LWDs	Learners With Disabilities
MoE	Ministry of Education
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
OECD	Organization for Economic Co-operation and Development
OER	Open Educational Resource
PCK	Pedagogical Content Knowledge
PISA	Programme for International Students Assessment
SDGs	Sustainable Development Goals
SHSs	Senior High Schools
SPSS	Statistical Package for Social Sciences
TAI	Television Assisted Instruction
TEPL	Technology Enhanced Personalized Learning

TK	Technological Knowledge
TNA	Training Needs Assessment
TPACT	Technological Pedagogical Content Knowledge
TVET	Technical and Vocational Education and Training
UK	United Kingdom
USA	United State of America
WASSCE	West African Senior School Certificate Examination

ABSTRACT

Computer Based Instruction (CBI) is an instructional innovation which helps to improve on the quality of instruction. CBI support learners develop critical thinking, creativity and collaboration skills needed to function effectively in this 21st Century. The Government of Ghana rolled out the ICT in Education Policy (2015) to transform the education. But current literature does not show the extent to which schools, teachers and students were prepared for the application of CBI in the instructional processes. The study, therefore, explored schools' preparedness for the integration of CBI in Social Studies instruction among secondary schools in the Northern Region, Ghana. The research aimed to establish school administrators, teachers, and students' perceptions towards the use of CBI in teaching and learning of Social Studies; assess schools, teachers, and students' level of preparedness for the integration of CBI in Social Studies instruction; investigate the extent to which CBIs are integrated into Social Studies instructions; establish the relationship between the demographic characteristics of Social Studies teachers and their integration of CBI in Social Studies instruction; explore challenges teachers and students faced when employing CBIs in Social Studies instruction; and suggest strategies to deal with the challenges. The study was anchored on the Theory of Planned Behaviour (Ajzen & Holmes, 1976), and the Diffusion of Innovation Theory (Rogers, 1995), and adopted the convergent mixed research methods design. The target population was 7,906 participants from which 972 students, 84 teachers were randomly sampled to complete questionnaires, and 12 heads of school and a Director for ICT were purposively sampled for the interviews. Questionnaires were employed to collect data from teachers and students. Heads of schools and Director for ICT were interviewed. Qualitative data from the interviews were validated using member check and analyzed thematically and supported with anecdotal. A checklist was used to collect data on schools' digital infrastructure. Using Cronbach's alpha formula, questionnaires were pre-tested to ensure reliability. Questionnaire for the teachers were accepted at $r=0.89$ and that of the students at $r=0.73$. Descriptive statistics (percentages, mean and standard deviation) were used to analyze the findings from demographic information of the respondents, teachers and students' perceptions of CBIs integration, preparedness for CBI integration, and the extent of integration of CBI in Social Studies instruction. Inferential statistics (correlation, multiple regression and t-test) were used to test the null hypothesis to determine if there was a significant relationship between teachers' variables and their use of CBIs in Social Studies instructions. The hypotheses were at $\alpha = 0.01$ and 0.05 . The qualitative data were recorded in audio files (MP3), categorized, transcribed and imported to qualitative data analysis software (MAXQDA) for final analysis and reporting. Data presentation was made using percentages, charts, graphs, and frequencies. The findings discovered that there was no significant relationship between teachers' variables and their CBI integration in Social Studies instruction. Head teachers, teachers and students although had positive perceptions towards CBI (total mean perception scores: teachers $M=3.8$, $SD=0.8458$, students Mean= 3.4 , $SD=1.3794$), they hardly incorporated CBI in Social Studies instructions (total CBI integration scores: teachers $M=2.2$, $SD=1.217$ and students $M=1.2$, $SD=0.9771$), due to lack of internet and computers, poor ICT skills, limited budgetary support, inadequate digital infrastructure, and lack of school-based ICT policies. From the findings, the study recommends in-service training, and provision of budgetary support, supply of digital infrastructure and hiring of ICT experts to provide support to the teachers and students for effective utilization of CBI in teaching and learning in order to improve students' learning outcomes.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The introduction of ICT, especially the internet has brought significant changes in the world and more importantly in communication. Acquisition of knowledge and access to information significantly dictate new patterns of creation and national development. Institutions of learning are facing a paradigm shift towards social construction of knowledge and skills using technology to support students to function effectively in this 21st century. ICTs, especially in education, can transform the nature of instruction: when, where and how instructions take place within educational settings and the role of instructors and learners. Governments across the globe have invested heavily and will continue to spend in the provision of ICT tools and facilities in educational institutions to support innovation. There is hope in these investments.

For instance, the United Kingdom in the 2008/2009 proposed 2.5 billion pounds while the USA according to (Nut, 2010) invested 6 billion dollars within the same period on ICT in education facilities. Specifically, in the USA, from 2013 to 2014, more than 23 million tablets and computers were bought by educational institutions for classroom use (Harrold, 2016). In Malaysia, according to (Ghavifekr & Adam, 2015), the Smart School initiative was inaugurated in 1999 to serve as an avenue for the Education ministry to train digital citizens who are well equipped with creativity and critically thinking skills to actively participate and contribute to the national and global economic and social development. Similarly, Technology in Education investment is anticipated

to balloon by 17% yearly to US\$252 billion by 2020 (Global Education Monitoring Report, 2018).

In Australia, the ratio of pupils with access to computers at home rose from 91 percent in 2000 to almost 99 percent in 2013. Uninterrupted internet access balloon from 67 percent in 2000 to 98 percent in 2013 (DerBortoli, Buckley, Underwood, O’Grady & Gebhard, 2014). Like the USA and UK, Australia has the highest number of children who used computers to learn at school at least once a week (81%), while (87%) use computers to study at home at least once a week (DerBortoli et al., 2014). The application of CBI into instructional processes is a promising strategy to improve the learning outcomes of students globally. In many countries, huge investments have been made to support innovation in education. For instance, as part of its 12th Five-Year plan, the Chinese government has allocated funds to construct at least a computer laboratory in every rural school throughout the country.

In Finland, ICT is not a subject of its own in the national curricular but it is one of the seven competencies which has been successfully integrated into the curriculum of schools. To this end, the Finnish Digital Education Policy seeks to update the general education system to the 2020 standards to make the country the first country of inspiring learning and education. The reforms target three main areas; namely, new pedagogy, new learning, and digital learning. The goal is to improve learning outcomes, respond to future job market requirements, and renew pedagogy through

experimentation and transform teaching and learning into an inspiring life-long process (Finland Country Report on ICT in Education, 2017).

Governments and donors in most countries have made a lot of investments on ICT in education. Jordan, Chile, Gambia, Peru, Mexico, Namibia, Russia, Rwanda, Sri Lanka, Armenia, Argentina, Jamaica, Ghana, Turkey, Peru, Uruguay, Kenya, South Africa, and Nigeria have launched nationwide ICT in education programmes. Some of these projects have applied broadcast technologies such as television (Mexico), or radio (The Gambia). Some have set up web portals as part of the implementation to share instructional resources (Argentina & Chile), while others provide support to learners to acquire highly subsidized laptops to be used to deliver inclusive quality education and lifelong learning (USAID, 2019).

The World Economic Forum (WEF), Global Information Technology giant discovered that in Africa, South Africa is blessed with the most advanced and best-developed telephone system coupled with a promising ICT sector with a yearly budget of 9.6 billion dollars. The Networked Readiness Index (NRI) comprising 115 economies from 2005 to 2006 were used to evaluate the level of readiness of a county to take part in and derived the maximum benefits from the ICT innovation. In spite of these gains, some of South Africa's ICT facilities are unevenly distributed and poorly developed in some parts of the country. ICT in Education Implementation Plan 22 (draft) extrapolated that 5,778 public schools in South Africa have used computers to support learning out of the 25,582 schools, and 13,011 have one or more computers purposely for school management and administration. Below 5% of educational institutions has the capacity

to acquire the internet and were using the internet for learning, research, teaching, collaboration and communication. It further noted that the application of ICT for instruction was relatively low due to the absence of reliable internet connectivity.

In Kenya, over the last five years, there were plans by the government to channeled 600 million dollars to procure laptops for all students enrolling in class one effective from January 2014. The aim was to create a knowledge-based economy that would direct and propel the country according to (Mwunda, 2014) towards achieving vision 2030 agenda. Kenya Institute for Curriculum Development has recorded some significant steps towards the development of e-content for most subjects in schools. The institute has developed digital content for 12 subjects from form one to form four at the SHS level, and developed Science and Mathematics e-content for the elementary school classes' three to eight. The institute proposed according to (Republic of Kenya, 2005a) to digitalize content in all subjects. In Tanzania, the Ministry of Education has piloted a project aimed at using ICT to offset the teacher shortage.

In Ghana, attempts to apply ICT in education began to obtain governments' attention in the last decade. In September 2007, as part of government's initiative to improve the quality of instruction in schools, ICT in education was formally commissioned as part of the educational reforms. The main goal was to equip all students of pre-tertiary institutions with basic digital skills including the use of internet to enable them to apply these skills and competencies not only in their learning but also in a different context in their daily activities including research, problem-solving, and interaction with others

(CRDD, 2007a, b and c) cited in (Agyei & Voogt, 2016). Eventually, the Government of Ghana (GoG) and other stakeholders in the past and present have invested a lot of funds in the procurement of computers and the establishment of computer laboratories in most public SHSs in the country.

Spending on ICTs in education is an expensive project for any country, whether developed or developing to undertake. For developing countries such as Ghana, investing in ICTs in education presents the dilemma of spending scarce resources on ICTs or consequently suffering from widening digital divide or technological gap (Ghana's ICT in Education Policy, 2015). Swarts (2006) opines that information and communication technology can be a powerful tool for learning: research, understanding, designing, interpreting and communicating about the dynamic world, they can also be black holes into which people pour in money, intelligence and time, and getting very little in return. A wise investment in ICT in education should have the potential of injecting effectiveness, efficiency, and quality into instructional processes in schools to facilitate lifelong learning in line with the SDG 4.

Empirical research on the effect of technology application on students' performance has yielded varied outcomes. For instance, research indicates that educational games, for example, have the propensity to increase the participation of students in instructional processes. Ritzhaupt, Higgins and Allred (2011) conducted Quasi-Experimental study in the USA to examine the impact of educational games on middle school students' performance and attitudes towards mathematics. The intervention was 16 weeks of

games which included one session of gameplay per week. The data were analyzed employing analysis of covariance (ANCOVA). The findings discovered a significant transformation in students' performance and a positive attitude towards mathematics (Cannon, 2017).

Similarly, Baker (2014) surveyed in Georgia, the USA to explore the correlation between an intelligent tutoring system, class assignments, and student performance on the state standardized Criterion-Referenced Competency Test (CRCT). Data were collected from 200 third grade CRCT marks, quizzes, and universal screener scores. A multiple regression stepwise analysis was used to evaluate the correlation among the constructs. The students' quiz marks revealed the strongest correlation to achievement on the state standardized test.

Hunter (2012) carried out a quantitative study that evaluated the impact of CAI on learners' achievement and attitudes towards Social Studies. Pre-test and post-test marks were employed to test the effect of treatment on Social Studies' students' achievement and attitude towards the subject. A one-way analysis of variance (ANOVA) was employed to measure the impacts of instructional type on the perception of Social Studies. The findings discovered a significant improvement in students' attitudes and performance in Social Studies (Cannon, 2017).

In contrast, Cavanaugh (1999) performed a meta-analysis on the effectiveness of CBI on the USA learners' performance. The data were amassed from K-12 distance education programmes across the country. The quasi-experimental research design was employed

for the research. The control group was taught with traditional instructional methods while the treatment group was taught using online interactive distance education. The findings from the study were not statistically significant enough to conclude that online interactive distance learning is more effective and efficient than the Traditional Methods of Instruction (Cannon, 2017).

In Ghana, the total number of people registering for distance and open learning programmes has ballooned for some tertiary institutions (for example, University of Cape Coast and University of Ghana), but has declined for others (for instance University of Education Winneba). Current programmes offered across universities in the country are usually not diversified and with limited resources to accommodate learners with disabilities (Ghana Education Strategic Plan, 2018-2030). Again, despite the popularity of CAI applications in education, some researchers have discovered a significant difference concerning the impact of Computer Assisted Instruction (CAI) programmes on Chinese children's performance. International Initiative for Impact Evaluation (2019) Research which examined the usefulness of CAI systems have had mixed findings concerning the learning outcomes of children. In some cases, the impact has been negative while on others, the impact had been positive.

In Africa, several researches have documented a positive impact of CBI on students' learning outcomes. For example, Julius (2018) carried out Quasi-Experimental Research on the impact of CAI on Kenyan SHS students' achievement in Chemistry. The findings discovered that learners taught with the CAI recorded superior scores in

Chemistry than their colleagues taught with Conventional Methods of Instruction (CMI). In Nigeria, Kareem (2015) investigated the effects of CBI on the Nigerian SHS students' achievement in Biology when compared to the CMI. The findings from the study revealed that improved performance of students' in Biology originated from the use of CBI. Similarly, in their Quasi-Experimental research on enhancing motivation (extrinsic and intrinsic) involving Chemistry learners using CAI, (Olanmi et al., 2016) discovered that learners taught with CAI had superior motivation as well as higher achievement than those taught with the CMI.

A quantitative research by Atta (2015) to evaluate the effect of CBI on basic school learners' achievement in Ghana reported that the experimental group taught with CBI obtained higher scores than the control group taught with the CMI. The students also demonstrated a positive attitude towards CBI. But there seems to be a gap in the literature on the level of application of CBI especially among teachers of Social Studies at the SHSs level in the Northern Region of Ghana. Again, despite attempts to improve learning outcomes through technology application in education, the learning crisis has been visible and documented by many countries across the globe. Learning deficits are higher for poor people than the rich. Poor children learn the least compare to the rich due to several factors (World Bank Report, 2018).

Sedega, Mishiwo, Fletcher, Kofi, & Awudetsey (2017) carried out Quasi-Experimental research that examined the impact of CBI on SHS learners' performance in the pie chart and histogram in core Mathematics. Two varied treatments were used in the study. The

treatment was given an instruction that incorporated CBI while the control group received CMI. Data analysis from the pre-test and the post-test revealed that the CBI approach has led to much gains in terms of students' achievement than the CMIs used in teaching Pie Chart and Histogram in Core Mathematics.

In Social Studies, CBI may motivate students' to actively participate in Social Studies instructions, enhance students learning outcomes, make learning fun, and improve learners communication, problem-solving, collaboration, decision-making, and research skills (Martorella, 1997; & National Council for the Social Studies, 1994). Social Studies is the study of problems of society. The subject focuses on man and his unpredictable relationship with the dynamic world. Social Studies is an integrated subject which focused on the fusion of content around critical issues such as environmental problems, population, and urbanization, sustainable development, peace, and conflicts resolution, as well as desirable attitudes, values, and problem-solving skills.

Presently, there exists developing literature on the use of e-mail, the World Wide Web, and Web page construction to enhance global understanding and cultural insights while engaging students in a range of educational active student-centered tele collaboration and communication activities. Similarly, Web Quests (Donlan, 1999) and simulations (Frye & Frager, 1996) have been applied to encourage students to explore historical and contemporary perspectives while constructing their own learning with a visually stimulating and interactive tool. The instructions usually designed and rely on Web

links and other technology to promote students' participation, research, analysis and critical thinking skills (Berson & Balyata, 2004).

Over the years, it appears Ghanaian SHSs Social Studies teachers often apply CMI's such as role-plays, debates, group work, brainstorming, lecture, note-taking, and the like during instructional processes. However, the 21st century is a period of dramatic transformation and development in all spheres of human endeavor including education. The role of Social Studies teachers should shift from being a lecturer and fountain of knowledge to that of leaders, managers and administrators, curriculum interpreters, learning mediators, subject experts, scholars, life-long learners, instructional designers, mentors, facilitators, teaching and learning materials developers, supervisors, assessors and programme innovators. This therefore requires a paradigm shift in pedagogy that creates room for the integration of CBI with active student-centered constructivist approaches to learning in instructional processes to improve students' learning outcomes.

However, the successful integration of CBIs in Social Studies instruction heavily depends on several factors, namely; the level of school preparedness in terms of digital infrastructure, the perceptions of school administrators, teachers and students towards CBI integration, schools, teachers' and students' level of preparedness, type of teacher professional development programmes in place, time available to teachers for the integration, level of access to digital resources by teachers and students, among other factors. Empirical studies have demonstrated that school leadership, for instance, plays

a critical role in leading a sustainable change, providing vision and objectives, as well as initiating professional development initiatives aim at using CBI to bring about positive pedagogical changes.

Wright and Wilson (2011) carried out a study that evaluated 10 teachers' perceptions of technology integration and technology use in instructions in the USA. The findings revealed that teachers who completed the five stages were those who engaged students in using technology and continued their own professional development. The same results, however, may not be obtained in Africa and for that matter Ghanaian context. Data from Global Education Monitoring Report (2018) for instance revealed that most adults in low and middle-income countries including Ghana did not have even basic computer skills. For instance, from 2014 to 2016, only 4% of adults in Sudan and Zimbabwe could copy and paste files. Establishing regulations and specific accreditation processes for ICT skills training providers, public and private, is critical for accountability but demand resources and expertise many developing countries may lack.

Effective pedagogical utilization of technology in schools in Africa faced several challenges. For example, Kinyua (2016) conducted experimental research that evaluated the impact of CBI on the achievement of Kenyan SHS students in Art and Design. The findings show a lack of personal computers, insufficient computer programmes, low ICT skills among teachers, and lack of the internet in schools as barriers to CBI integration. In agreement (Kennah, 2016) stated poor teachers ICT knowledge and

skills, inadequate digital infrastructure and limited time for the integration due to rigid time tables as barriers to technology integration in Cameroonian secondary schools. At the 6th International e-learning conference held in Dar-es-salaam, it was reported that ICT implementation in Tanzania was hampered by unclear policies, lack of finance, limited technical support, high-cost ICT tools, and unmatched ICT facilities (Kizito, 2012). Little studies have been conducted on the challenges Social Studies teachers at the SHSs in the Northern Region faced when employing CBI in their instructional processes. Again, Social Studies assessment approaches have transformed over the years but still does not use technology to the fullest to evaluate a wide range of desired educational outcomes especially non-cognitive competencies.

The application of CBI in education presents a plethora of opportunities despite some potential teething challenges. To tap the gains that come with ICT application in various aspects of human endeavors, Ghana's ICT in Education Policy (2015) was launched. The policy offered a framework to establish gradual ICTs in education to enhance quality delivery on three key domains: first, ICTs as an operating and a learning tool. Second, ICTs as integrated into instruction. Finally, ICTs as an option for students' future careers. The MoE eventually, saw ICTs as means, not to an end itself. Ghana's ICT in Education Policy was designed to:

- i. Enhance the deployment and utilization of ICT within the educational system to improve on educational access and delivery in schools.

- ii. Transform the educational system to improve the quality of education at all levels of the educational system and expanding access to education, facilities, research, resources, and training.
- iii. Orient the country's entire educational system to the teaching and learning of science and technology in order to accelerate the acculturation of science and technology in society and produce a critical mass of requisite human resources who are critical, creative, patriotic and well-informed willing to contribute to national development.
- iv. Accomplish universal basic education and improve the levels of basic information and computer literacy in the country.
- v. Train people to become productive and functionally literates.
- vi. Expand access in the country to secondary and tertiary education.
- vii. Strengthen science education at all levels especially at the basic and SHS levels (Ghana ICT in Education Policy, 2015).

To achieve the above policy targets, the Government of Ghana (GoG) through the Ministry of Education (MoE) and the Ghana Education Service (GES) initiated a project with a view to promoting the application of ICT in Mathematics, English and Integrated Science (MEIS) curriculum in Senior High Schools (SHSs). Provision of internet to SHSs to enhance the quality delivery of instruction by teachers was the main goal of the project. The installation of internet connectivity in 400 SHSs, as well as the development of a manual for pedagogical integration of ICT, were part of the project implementation. English, Mathematics and Integrated Science teachers' capacity were

built on how to pedagogically use ICT in their instruction to enhance the quality of instruction and lifelong learning.

However, the implementation violated the principle of equity as it left out Social Studies and other subject teachers. Second, the project also left out private SHSs in the country. Again, despite this policy, SHSs students in Ghana are not permitted to use mobile phones in schools. Social Studies curriculum was silent on the integration of CBI in learning and teaching of the subject. Finally, it seems the teacher training curriculum in Ghana pays little attention to the training of teachers on how to pedagogically incorporate technology into instruction although huge investments have been made by the Government aimed at achieving ICT in education.

The 1992 Constitution of Ghana advocates for free education. Article 26 (b) of the constitution, for instance, explicitly provides that:

Secondary education in its different forms, including technical and vocational education, shall be made generally available and accessible to all by every appropriate means, and in particular, by the progressive introduction of free education.

As a result, the GoG started the implementation of the Free Secondary School Education Policy in September 2017 which has increased access to secondary education by about (43%) between 2016 to 2018 (GoG Budget, 2019) and about 1, 264, 000 students will benefit from the policy next academic year. This increased enrolment has led to the introduction of the Double Track System (DTS) to accommodate students.

Access to secondary education is no longer an issue. However, there are quality and equity issues begging for attention. For instance, in terms of the impact of the Free SHS DTS on quality (Oduro, 2019) reported from a survey that 90 respondents (75%) ranked the impact on quality teaching and learning low. In terms of the impact of the DTS on equity, 84 participants representing (69.7%) indicated the DTS had a very low impact on equity, with some explaining that disadvantage secondary schools do not have the required number of trained teachers while endowed schools have the full complement of subject teachers. Investments in school governance, management, and inputs in most cases are not guided by how well they improve the teacher-learner relationship. To be efficient and effective, they should be (World Bank Report, 2018).

Studies on the integration of CBI in instructional processes at the SHS level in Ghana have been carried out and documented. Also, in spite of the investments put in by Governments to support policies aimed at quality education delivery in the country, the literature reviewed does not show the level at which SHSs Social Studies teachers in the Northern Region, Ghana integrated technology in their instructional processes. Little study has been carried out specifically on the level of Social Studies teachers and SHSs readiness for the application of CBI in Social Studies learning and teaching. Again, the literature reviewed was silent on the influence of demographic characteristics of Social Studies tutors on the application of CBI in their instructional processes. The study was therefore conducted to probe into the level of schools and teachers preparedness for the implementation of CBI in Social Studies instruction in the Northern Region of Ghana.

1.2 Statement of the Problem

CBI is one of the latest applications of ICT in education that improves the quality of instruction. There is a plethora of benefits Social Studies students and teachers can gain from the use of CBI in instructional processes. CBI stimulates the interest of students' because the programmes are interactive and engage the students' attention and spirit of competitiveness to increase their learning outcomes. In addition, CBI personalized learning because it progresses at the learners' own pace and normally does not proceed ahead until the learner has mastered the skills and concepts. Again, CBI offers differentiated instructions to stimulate learners who are intellectually weak, gifted or average. CBI is appropriate for learners with disabilities because they get quick feedback to facilitate their practice, learning, and skills acquisition. Again, Technology based assessment allow learners to demonstrate higher order thinking and share their appreciation of the material in a way that was previously cumbersome to assess by traditional means.

For instance, Programme for International Students Assessment (PISA) administer novel technology based assessment of learners performance in a creative problem solving designed to evaluate students ability to respond non-routine situations to reach their potentials as critical, reflective and constructive citizens. Specifically, in Social Studies, CBI could motivate students' to actively participate in Social Studies instructions, facilitates students learning, sustain students' interest during instructions and improves students' problem-solving, communication, decision-making, and research skills to enhance lifelong learning.

Recognizing the effect of technology use on learners acquisition of relevant knowledge and skills, Social Studies teachers and the educational managers need to create a space for teachers to transform their pedagogy, classroom facilities, activities, and plans to reduce the nexus between the traditional teacher-centered rote learning instructional methods and the 21st century constructivist active student-centered inclusive approaches to instruction. This demands effective application of CBI into the current pedagogy and content to offer instructors the needed technological pedagogical content knowledge, skills and competencies to enable them to pedagogically utilize technology to enhance the learning outcomes of students.

To achieve SDG 4 by 2030 and in line with the national and African Union (AU) goals of education, the Government of Ghana seeks to undertake a plethora of reforms which targeted various sectors of education, namely; pre-tertiary education curriculum reform; Secondary education reform; teacher education reform; TVET reform; tertiary education reform; and ICT in education reform (Ghana Education Strategic Plan, 2018-2030). The objective is to improve equitable access to and participation in inclusive quality education at all levels; enhance the quality of instruction in science, technology, engineering and mathematics (STEM) at all levels; and to ensure sustainable and efficient financing, accountability, and management of education service delivery (Ghana Education Strategic Plan, 2018-2030).

However, despite these plans and investments by the GoG and other stakeholders to support the implementation of policies on ICTs application in the country especially in education, the literature reviewed from quantitative, qualitative and mixed methods researches did not show the levels of Social Studies teachers and SHSs readiness for the application of CBI in Social Studies instructional processes. Again, there seems to be a gap in terms of knowledge on SHS heads, teachers, and students' perceptions of CBI application in Social Studies instruction, and the relationship between the demographic variables of Social Studies teachers and their application of CBI in instructional processes. It was against this background that the research was conducted to explore into the level of schools and teachers' preparedness for the integration of CBI in Social Studies instruction in among SHSs in the Northern Region, Ghana.

1.2.1 Purpose of the Study

The main goal of this research was to explore SHSs' readiness for the integration of CBI in Social Studies instructional processes in the Northern Region, Ghana. The findings from the study will guide policymakers to design interventions to improve the situation. Students will get an opportunity to learn with CBI to enable them to acquire digital literacy and the 21st Century skills, namely; creativity, critical thinking, communication and collaboration. These skills will make them competent productive global citizens who will constantly work for the good of humanity. Social Studies instructors' capacity will be built to enable them to competently and effectively integrate CBI into their instructions to enhance students' learning outcomes in line with the SDG 4.

1.2.2 Objectives of the Study

Based on the goal of the study, the following specific objectives were designed to assist the research to:

- i. Establish the relationship between teachers' demographic variables such as gender, age, experience and school location and their application of CBI in Social Studies instructions.
- ii. Examine a) school heads, b) teachers and c) students' perceptions of the integration of CBI in Social Studies instruction.
- iii. Investigate a) schools and b) teachers' level of preparedness for the integration of CBI in Social Studies instruction.
- iv. Investigate the extent to which a) teachers and b) students integrate CBI in Social Studies instruction.
- v. Explore the challenges teachers and students faced when using CBI in Social Studies instructions.
- vi. Suggest strategies to deal with the challenges teachers and students face when integrating CBI in Social Studies instruction.

1.2.3 Research Questions

In line with the objectives, the following questions were formulated to direct the research.

- i. What is the perception of school heads, teachers and students on the integration of CBI in Social Studies instruction?
- ii. How prepared are SHSs and teachers for the integration of CBI in Social Studies instruction?
- iii. To what extent do teachers and students integrate CBI in the teaching and learning of Social Studies?
- iv. What challenges do teachers and students face in employing CBI in Social Studies instruction?
- v. What strategies can be applied to overcome the challenges faced by teachers and students to enhance the effective integration of CBI in Social Studies instruction?

1.2.4 Research Hypothesis

The following null hypothesis was formulated to guide the study.

Ho1: There is no significant relationship between teachers' demographic variables and their application of CBI in Social Studies instruction.

1.3 Significance of the Study

The findings from this study may guide teacher training universities and colleges of education in Ghana when developing programmes to facilitate pre-service ICT capacity building on how to effectively apply CBI in Social Studies instruction. The research findings will also serve as a guide to the MoE and the GES to determine the In-service Education and Training (INSET) and the initial training needs for Social Studies

teachers in the 21st century. This may influence the National Council for Curriculum and Assessment (NaCCA) and teacher training institutions to provide refresher courses to the Social Studies teachers that address the need to effectively and efficiently apply technology in their instructions to enhance lifelong learning.

SHS administrators would apply the findings of the study in making critical decisions on the category of ICT facilities to purchase as and the kind of technical support necessary for effective and efficient integration of CBI in instructional processes. The NaCCA of the GES will find the results of the study useful in developing Social Studies and ICTs curriculum that will increase the integration of CBIs in Social Studies instruction. This will help students acquire digital literacy, critical and creative thinking to work for the country to meet Sustainable Development Goals by 2030. Finally, the findings from the study will add to the existing literature which will guide researchers conducting studies on similar issues in the future.

1.4 Limitations and Scope of the Study

1.4.1 Limitations

Limitations are problems, issues, and occurrences that may arise during a study and is usually beyond the control of the investigator. In qualitative research, limitations often arise from reliability and validity issues (Simon & Geos, 2013). The following were the limitations of this study:

- i. Schools sampled for the study were scattered across the locale of the study (Northern Region). This nearly put a lot of pressure on the researcher's travel plans particularly in instances where repeated visits had to be made to some of these geographically dispersed schools during fieldwork. Research assistants were recruited to support the researcher to overcome the challenge.
- ii. Schools were in session and busy at the time of data collection. As a result, some respondents filled the questionnaires hurriedly and others did not answer all items on the questionnaires. This nearly compromised the quality of the results. However, the researcher reduced this effect by relaying early information on research intent and also gave respondents ample time to complete the questionnaires. Data cleaning strategy was also used to remove the uncompleted questionnaires before data organization, analysis, and reporting. Devlva, Kirby, Knapper, and Birtwhistle (2002) mentioned time constrains as a significant limitation associated with surveys.
- iii. The students' opinion and perceptions on CBI were obtained through a self-reported assessment which could not be free from their personal biases.
- iv. One school head declined to be recorded during the interview stage of the data collection process. This put a lot of pressure on the researcher as he had to interview the respondent and wrote the responses at the same time.

1.4.2 Scope of the Study

Scope of a study is the parameters within which the research will be operating (Simon & Geos, 2013). The scope of research, therefore, describes the level at which the study

context will be investigated in the study and defines the parameters within which the study will be operating. The scope of this research was specifically restricted to the following:

- i. It would have been appropriate for this research to cover both public and private institutions in the Northern Region. However, as a result of insufficient resources and time constraints, the study was restricted to only public SHSs within the region.
- ii. The study was further confined to schools' preparedness for the integration of CBI in Social Studies instructions in public SHSs within the region.
- iii. Additionally, the study was limited to only heads of schools, Social Studies teachers and students and not all teachers in those schools.
- iv. Finally, the research was restricted to the level of SHSs preparedness for the application of CBI in Social Studies instructions only and no other subject within the SHS curriculum.

1.5 Assumptions of the Study

The study assumed that:

- i. Sample schools had enough ICT resources and infrastructure to enable teachers and learners to make maximum use of them in Social Studies instructional processes.
- ii. Teachers and learners had a positive perception of CBI integration in Social Studies learning and teaching.

- iii. Social Studies teachers and learners had some basic competencies and ICT skills to facilitate the application of CBI in instructional processes.
- iv. Teachers' capacity has been developed on how to pedagogically use ICT in Social Studies instructional processes.
- v. The nature of learning settings in Social Studies instruction significantly contributes to the kinds of attitudes held by students towards Social Studies. Therefore, changes to the learning environment that incorporates technology can improve students' attitudes towards the subject.

1.6 Theoretical Framework

The study was directed by two technology adoption models, namely; the Theory of Planned Behaviour (Ajzen & Holmes, 1976), and the Diffusion of Innovation Theory (Rogers, 1995). The theory of planned behaviour deals with the intention to use new technology. It assumes that for an individual to accept innovation, he must show a willingness to use the said innovation. The theory identifies three independent variables that would affect the adoption of an innovation. The first variable is the attitude towards the behaviour which refers to the extent to which an individual is for or against the behaviour in question (Ajzen & Holmes, 1976). The second variable is the subjective norm which means the perceived social pressure to perform or not perform the behaviour. Lastly, the theory considers perceived behaviour control as the third variable. This refers to the perceived ease or difficulty of performing behaviour assumed to reflect past experiences as well as anticipated challenges (Ajzen & Holmes, 1976).

In this model, the independent variables directly connect to the dependent variables in this study, namely; school heads and teachers' preparedness in terms of competency, availability of ICT infrastructure and technical support. Teacher competency determines to a large extent whether the teacher will be willing to use CBI during Socials Studies instruction or not. When the schools' administration or other stakeholders provide ICT infrastructure, they generally expect the teachers to use the resources to improve students' learning. This puts some pressure on teachers to apply the needed technology to enhance the quality of instructions. Quality instruction improve students' learning outcomes.

Technical support makes teachers gain confidence in the use of CBI and hence connects to the third independent variable of perceived behavior control. Initially, teachers could be apprehensive about adopting CBI in their day-to-day teaching due to fear of the unknown. Some teachers may be against innovation. However, once they learn its usefulness such as effectiveness in lesson preparation and delivery as well as storage of notes, adoption will become the norm rather than the exception.

The last theory that guided the study was the Diffusion of Innovation Theory by (Rogers, 1995). This theory assumes that innovations are communicated through certain channels over some time and within a particular social system (Rogers, 1995). According to this theory, individuals adopt innovations with varying degrees of willingness. The theory classifies individuals into five segments of innovativeness, namely; innovators, early adopters, early majority, late majority and laggards (Rogers,

1995). The diffusion of Innovation assumes that innovativeness is related to such variables as individual characteristics, internal organizational structural characteristics and external characteristics of an organization.

This model emphasizes individual characteristics that can be linked to the independent variable of schools, school heads, and teachers' preparedness for CBI integration in the study as well as the moderating variables of ICT policy requirements, methodology and Social Studies curriculum. The characteristics of the schools are mapped into the availability of facilities as well as technical support for teachers who are willing to use CBI in the teaching and learning processes. This, therefore, guided the researcher to collect data on all the variables of the study and how they interacted to determine schools' level of preparedness for the integration of CBI in Social Studies instructional processes.

1.7 Conceptual Framework

Independent Variables

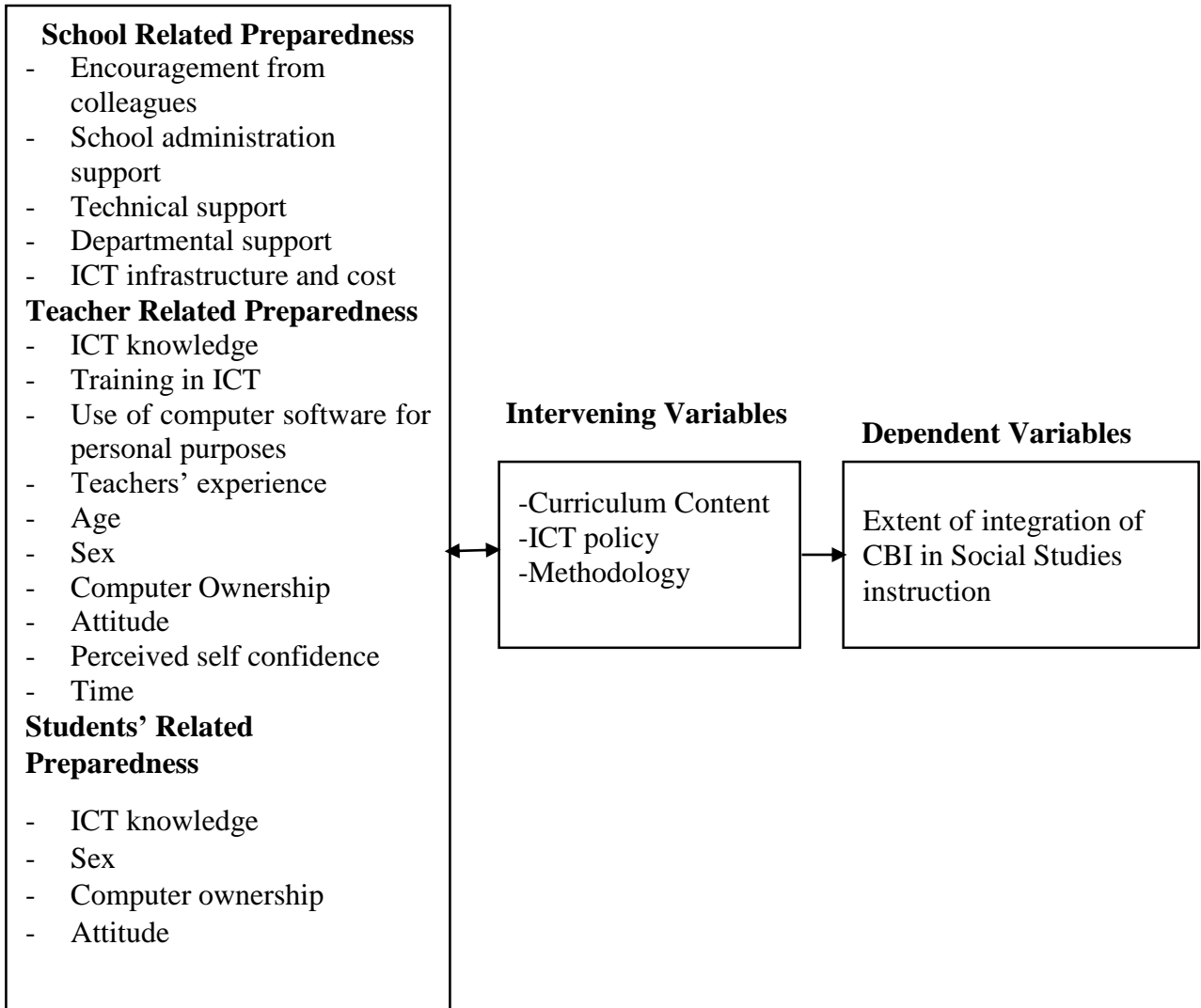


Figure 1.1 Conceptual Framework of the study

Source: Researcher's Construct

A conceptual framework is a model of representation where the researcher explores and represents the connections and linkages among the studied constructs (Orodho, 2004).

Therefore, a conceptual framework is a diagrammatical illustration that shows the

connection between the variables of a study. From Figure 1.1 above, teacher-related preparedness, school-related preparedness and students' related preparedness are independent variables. In between the dependent and independent variables are the intervening/extraneous variables.

Teacher-related preparedness includes teachers ICT skills, teachers' perception of ICT, training on CBI use in teaching, use of computer software for personal purposes, teachers' experience, age, gender, computer ownership. The school-related preparedness for the integration of CBI in Social Studies instruction includes encouragement from colleagues, school administration support, technical support, departmental support and availability of relevant software and hardware. Students' related preparedness includes, learners' ICT knowledge/skills, gender, computer ownership, and students' attitude/perception of CBI. The intervening or moderating variables are Social Studies curriculum, policy requirements, and teachers' workload. The dependent variable is the level of integration of CBI in Social Studies instructional processes.

1.8 Operational Definitions of Key Terms

The following terminologies which appeared in this study have been given definitions that fit the context of this study.

Accountability in Education

This is a process focused on supporting players of education to meet their responsibilities and reach their goals. Individuals and institutions are duty bound to, based on legal, social, political or moral justification, to offer an account on how they meet well-defined educational targets or goals. Reaching SDG 4 should be a collective effort. Accountability does not rest with single actors. For instance, schools are obliged to offer supportive learning environments, but to deliver this they depend on governments providing resources, teachers respecting their professional ethics by delivering quality instructions and students behaving appropriately by learning effectively.

Accreditation

This a process where an officially mandated body on the basis of evaluation of learning outcomes or competences based on specified methods, awards qualifications (titles, certificates, diplomas and degrees) to individuals, or grants equivalences, credit units or exemptions. In Ghana, the National Accreditation Board discharge these responsibilities as mandated by law.

Artificial Intelligence

Artificial intelligence also called machine intelligence refers to the intelligence demonstrated by machines as opposed to the natural intelligence shown by animals and humans.

Authentic Learning

These are learning experiences that places learners within the context of real-life situations, experiences, and challenges. Examples include debates, role-play, dramatization, stimulations, field trips, and demonstrations, among others.

Blended Learning

Blended learning environment is where learning takes place online and in person augmenting and supporting teachers' instructional activities. It allows learners to have some level of control over a path, place, pace or time of learning. It combines the Conventional Methods of Instructions and Computer Based Instructions to deliver authentic teaching and learning to students.

Bloom's Taxonomy

This is a set of three hierarchical models applied to categorized learning objectives into levels of difficulty and specificity. The model categorized learning objectives into three, namely; cognitive domain, affective domain, and psychomotor or sensory domains.

Citizenship

This refers to the status of being a legal member of a country by virtue of birth, marriage, adoption or naturalization, to which one owes allegiance by which one is entitled to be protected. Citizenship goes with certain rights and responsibilities.

Citizenship Education

This is a process of preparing learners to be critical, reflective and reasonable in making informed decisions that affect them and others in society.

Cloud Computing

This describes data centers available to a variety of users over the internet. Clouds may be restricted to a single organization (private clouds) or open to many users (public clouds). Presently, large clouds often have distributions over multiple locations and from varied central servers.

Collaborative Learning

This refers to educational strategies involving a joint intellectual activity by the learner or learners and their instructor(s). Normally, learners work in groups, mutually researching for information, an understanding, meaning or creating a product(s) under the supervision of a teacher who acts as a facilitator.

Competence

This means skills and proficiency needed to effectively and efficiently carry out a particular task. In this study, competence refers to teachers with enough knowledge, skills, and capacity to effectively integrate CBI in Social Studies teaching and learning.

Computer

This is a device that manipulates data based on instructions given or the commands issued. Examples include desktop computers, laptops, mobile phones, smart phones, among others.

Computer Based Instruction

This means any type of computer used to support teaching and learning. It is a teaching strategy where a computer is used to offer support in the instructional design, delivery

of lessons, assessment of learning outcomes, record keeping, and provision of immediate feedback to help improve students' learning outcomes.

Constructivism

Constructivism is a theory of learning with grounding from Dewey views on progressive education extrapolated that it is what the learner does that he or she learns and not what the teacher does. It is, therefore, refers to teaching and learning where the learner is actively engaged, dictate the content, instructional objectives and the pace of learning. The constructivist class will employ active student-centered inclusive instructional pedagogies such as brainstorming, group work, debates, problem-solving, scaffolding, brain writing, and the like.

Conventional Methods of Instruction

This refers to the learning approaches that are commonly adopted for curricular delivery. These are non-computer aided instructional methods such as lectures, teacher demonstration, notes taking, debates, role-play, practical activities, and whole class discussions.

Digital Divide

The digital divide refers to inequality of access to ICT services and resources such as telephones, computers, Facebook, WhatsApp, smart phones and the internet. Traditionally, it refers to the gap between learners who had access to the internet and other ICT resources at home and in school and those who did not.

Digital Citizenship

This means ethical, responsible, informed, and safe use of technology. It encompasses a range of literacies and skills that can include internet privacy and security, safety,

cyberbullying, online reputation management, information literacy, communication skills, copyright and creative credit.

Equity

Equity in education refers to increase all learners' access to educational opportunities and resources with a focus on closing achievement gaps and eliminating all barriers that hinder students due to their ethnicity, race, origin, sex, sexual orientation, geographical location, English language ability, religion, disability, or socioeconomic status.

Education for Sustainable Development

This refers to a type education aim at inculcating in learners relevant knowledge, appropriate skills, social and moral values to creatively and constructively resolve present and future global issues and produce more sustainable and resilient societies.

Ghana Education Service

This is a public institution in Ghana charged with the responsibility of implementing approved national programmes and policies concerning the pre-tertiary education sector. The service ensures that every child of school going age enrolls in school regardless of their gender, sex, religion, race, or social and economic status.

Gender Parity Index

This is a socioeconomic index usually applied to measure the relative access to education of females and males. The global index is normally released by the UNESCO. Gender Parity Index (GPI) is calculated as the quotient of the total number of females by the total number of males enrolled in a given level of education (primary, secondary, or tertiary). GPI equal to one indicates equality between males and

females. GPI less than one signifies that gender parity favors males while GPI greater than one indicates gender parity that favors females.

Global Citizenship Education

This is a kind of education with a focus to inform and empower educators to assume active roles to confront and solve local and global challenges and to become proactive contributors to a more resilient, tolerant, peaceful, inclusive and secured world.

Inclusive Education

This a type of education where students with disabilities can be active, valued, and fully involved as active members of a class in which dynamism is viewed as the standard. Quality education within the context is delivered through a combination of useful programs of study, efficient instruction, and critical supports support for all.

Information and Communication Technology

This means information sharing using technologies. In this study, the information implies Social Studies content, principles, theories and generalizations shared through the medium of technology such as computers, CDs, DVDs, video, voice, captions, power points, WhatsApp and animations.

ICTs Integration

This means the application of computer systems, programmes, and platforms such as video, radio, the internet, PowerPoint, Facebook, WhatsApp, computer games, computer tutorials and the like for instructions to enhance the acquisition of the 21st Century skills in Social Studies classrooms.

Learning Management System

Learning Management System is a software application for documentation, reporting, tracking, administration, and delivery of educational courses, programmes, training, learning and development programmes. It emerged from e-learning and is designed to identify training and learning gaps, uses data and reporting. It focused on online learning delivery but assist in other areas, acting as platform for online content, including both synchronous based and asynchronous based.

Literacy

This means the ability of an individual to read and write with understanding of a basic short statement to his/her day-to-day activities. The concept has evolved over the years to include several skills domains; each conceived on a scale of different mastery levels and serving varied purposes.

Leave No One Behind

This is a global commitment towards the attainment of the SDGs by 2030 that aimed to ensure that all children, regardless of socioeconomic status, sex, or race have access to quality education and lifelong learning. The concept is derived from No Child Left Behind Act which was signed into law by President George W. Bush in the USA in January, 2002.

Non-cognitive Competences

Non-cognitive competencies also called social and emotional learning which is critical in Social Studies education refers to a wide range of skills, values, attitudes, and habits that facilitate effective functioning of individuals in school, work, and life. Examples

include self-management, self-awareness, social awareness, relationships skills, as well as motivation, hard work, empathy, compassion, perseverance, and growth mindset.

Out-of-school Children

The definition of out-of-school children is broad and encompasses a wide range of issues and refers to children within the official primary school going age range who do not have access to school in their community, do not enroll despite the existence of a school, enroll but do not attend school, or enroll but completely drop-out of the education system.

Parity Index

Parity index is a measure of inequality defined as a proportion or ratio of the values of an education indicator of two groups of population. Usually, the numerator is the value of the disadvantage group while the denominator represents the value of the advantage cohort. An index value between 0.97 and 1.03 indicates parity. Index value below 0.97 shows disparity in favour of the advantage group. A parity above 1.03 indicates disparity in favour of the disadvantage group. Variables can be defined by geographical location, gender, age, wealth/income, among others.

Partnership for 21st Century Skills

This is a national not for profit advocacy institution that motivates schools, districts, and countries to integrate technology into education, and offers resources, tools, and capacity building to achieve that goal.

Pedagogy

Pedagogy is defined as the science and art of instruction. It refers to the actual teaching skills a teacher apply to support the learners acquisition of knowledge, skills, attitudes, and values appropriate to a specific subject(s).

Personalized Learning

This refers to instruction in which the instructional approach, objectives, instructional resources, content and the pace are organized based on the needs of the learner. Also, learning activities are meaningful and relevant to learners, driven by their interests, and usually self-initiated.

Private Institutions

Private institutions are institutions that are not operated and managed the state but are established, controlled, operated and managed by private institutions such as individuals, Non-governmental Organizations, religious groups, special interest groups, business enterprises or foundations.

Programme for International Student Assessment

A Programme for International Student Assessment (PISA) is a triennial international survey by the Organization for Economic Co-operation and Development (OECD) in member and non-member states that seeks to measure educational systems by testing the scholastic knowledge and skills of 15 years old learners in Science, Literacy and Mathematics. It was designed and used in 2000 and repeated every three years. The goal is to compare education attainment across the globe. In 2018, China and Singapore topped the list with Dominican Republic and Philippines at the bottom.

Public Expenditure on Education

This means total current and capital expenditure on education by local, district, regional and national governments. The term covers public expenditure for both private and public institutions. Individuals and households contributions are exempted.

Secondary Education

Secondary education comprises two strands based on the International Standard for Classification of Education scale. Level 2 or lower secondary education (second and final of basic education) in Ghana called Junior High School, and Level 3 secondary education (education stage before tertiary education) also called Senior High School in Ghana. In the context of this study, secondary education refers to that education stage before tertiary education. In Ghana, it is called Senior High School which last for three (3) years.

Skills

Skills are non-innate competences and capabilities that can be learned and applied, and have economic or social benefits to both individuals, groups and their societies. Examples include communication, collaboration, critical thinking, creativity, active listening, adaptability, research, decision-making, management, leadership among others.

Social Capital

Social capital is not built overnight; it is reciprocal and does not need money especially in this virtually connected world to build and sustain.

Social Studies

Social Studies is a study of the contemporary problems of human survival in society. The subject prepares the individual to fit into society by equipping him/her with relevant knowledge, desirable attitudes and values needed in resolving personal and societal issues. The aim is to develop a critical and creative thinking individual who will contribute to national development in the spirit of patriotism.

Sustainable Development Goals

Sustainable Development Goals are 17 global development targets and aspirations designed by the United Nations in 2015, to serve as a blueprint to achieve a better and more sustainable future for all. Worldwide, countries are collectively working to accomplish these targets by 2030. They are part of the UN Resolution 70/10, the 2030 Agenda.

Teaching

Teaching is a process of identifying educators' needs, feelings, experiences and challenges, and intervening positively to enable them interact and acquire knowledge and skills from the experiences. Within the context of this study, teaching means imparting knowledge, skills, attitudes and values in Social Studies to the learners employing a variety of instructional resources and pedagogy. Examples of interventions mostly applied during teaching include listening, questioning, computer enhanced learning, online chats with learners, providing information, motivating learners, demonstrating skills, assess learning, and facilitating all the process of learning.

Tertiary Education

Tertiary education also called third-stage or post-secondary education is the level of education following the completion of secondary education. World Bank defined tertiary education to include universities, colleges of education, trade schools and other colleges. The aim is to offer learning at the highest level of complexity and provide a room for specialization.

Teachers' Perceptions

This refers to the understanding and attitudes that influence Social Studies teachers' constructions of reality. In this context, Teachers perceptions are the perspectives, thoughts and mental images teachers have on the integration of CBI in Social Studies instructions. Teachers' perceptions of issues are shaped by their life experience, background knowledge, gender, age among others. Teachers' perception of issues influences their expectations.

Teacher Professional Development Programmes

This refers to series of activities consciously planned and executed to develop an individual knowledge, skills and competences as a teacher. Development of such competences can be provided by means of mentoring, coaching, collaborative planning, team teaching, and sharing of best practices. Examples are research, and institution based skills training, continuing education, workshops, conferences, among others. The goal is to keep the teachers abreast with contemporary instructional methods to enable them to deliver inclusive and quality education for all and lifelong learning.

Learning

Learning means a change in behaviour resulting from experience. It refers to the gaining of knowledge, skills, and desirable attitudes and values from instruction or training. Knowledge being acquired within this context is the Social Studies concepts, principles, theories and generalizations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the literature on the concept of Social Studies and the rationale for the inclusion of Social Studies in Ghana's SHS curriculum; historical development of Social Studies; the place of SHS education for Ghana's development, the concept of Computer Based Instruction (CBI), CBI strategies and potentials; school heads, and teachers' perceptions of the integration of CBIs in Social Studies instruction; schools and teachers' preparedness for the implementation of CBI; challenges encountered and the way forward. The influence of gender on the integration of CBI is also discussed. The summary of the existing gaps identified from the literature review was also unpacked.

2.2 An Overview of the Concept of Social Studies

Social Studies have been defined variously by different scholars based their educational believes and ideology. Martorella (1994) highlighted the issue appropriately when he reported that the field of Social Studies is so caught up in ambiguity, inconsistency and contradiction that it represents a complex educational enigma. Some educators held the view that Social Studies is the study of geography and history while others argue Social Studies should examined the closed areas that are perceived as taboo in a progressive society (Hunt & Metcalf, 1955), decision making (Engle, 1963), public policy (Oliver & Shaver, 1966), sustainable management of the environment (Newmann, 1977), moral development (Kohlberg, 1973, 1975), rights and social responsibilities (Superka &

Hawke, 1982), make learners critics of society (Engle & Ochoa, 1988) cited by (Ross, 2006).

The most influential of these debates was those by (Barr, Barth, & Shermis, 1977), who sum up the various positions of Social Studies curriculum into three main strands, namely; Social Studies as Citizenship Education, Social Studies as an amalgamation of the social sciences, and Social Studies as a reflective inquiry. In Ghana, Social Studies is an integrated subject which goal is Citizenship Education. Within the school curriculum, Social Studies offer coordinated systematic of study and application of principles, ideas, theories, concepts, and generalizations from the Social Sciences such as Anthropology, History, Geography, Economics, Religion, Psychology, Political Science, and Sociology, to explain issues and resolve social problems. The main focus of Social Studies is to prepare the learner to develop critical thinking and the ability to make informed decisions for the public good as patriotic citizens of a culturally diverse, democratic changing world.

The real objective of Social Studies education is to leave a man in the condition of continually asking questions to keep learning each and every day we live. By so doing, creativity, communication, leadership, critical thinking, as well as the social skills will be developed. The National Council for the Social Studies (1994) cited in (Kankam 2016) offered one of the most comprehensive definition of Social Studies as integrated study of the social sciences and humanities to promote civic competence. Within the school curriculum, Social Studies offers coordinated, systematic study drawing from

such disciplines as anthropology, archeology, economics, geography, history, law, philosophy, political science, psychology, religion, and sociology as well as appropriate content from the humanities, mathematics and the natural sciences.

Social Studies Syllabus for Ghana's SHSs (CRDD, 2010) shared the above view when it postulated that Social Studies is a study of the problems of society. The subject prepares the learners to fit in the society by equipping them with knowledge about the culture and ways of life of their society, its problems, its values and its aspirations for the future. The use of CBI by Social Studies teachers will enable learners to acquire these skills to make them functional in society. In this digital age, the 21st Century skills such as critical thinking, creativity, communication, collaboration, media literacy, information literacy, technology literacy, initiative, leadership, flexibility, productivity and social skills are needed by learners to enable them to become productive national and global citizens.

However, presently, the goal and objectives of Social Studies differ from country to country because each country has its unique needs, challenges, and aspirations. For instance, currently, Ghana faces a plethora of challenges ranging from unemployment, cybercrime, youth indiscipline, political thuggery, illegal mining, environmental degradation, open defecation, depletion of forest resources, political intolerance, cynicism, mistrust, corruption, and nepotism, to the winner take all syndrome among others. People's orientation and commitment towards partisan issues are rapidly sinking

our national character. Few people are willing to volunteer and sacrifice for the development of the country.

Multi-party democracy in Ghana continues to be plagued by challenges such as incumbency abuse, bitter and highly acrimonious governance which often compromise unity, peace, national cohesion and national development. Political extremists often scheme to get people chased out as soon as the political terrain changes (Oduro, 2019). He continues that people who paralyze analysis in matters of policy formulation and implementation are those cherished by political leaders, and political party fanatics tend to remotely control institutions in their professional decisions. Institutional leaders appointed based on political lines tend to work in the interest of their political parties and not based on institutional or national interests. To protect their jobs, politically influenced appointees in leadership positions tell the government only things they know the government wants to hear concerning policy initiatives. Ghanaians with critical and innovative ideas on crucial national policies and programmes are gradually retreating for fear of being lambasted and lampooned, creating a phenomenon where only people with political power determines what is appropriate in policy issues. That is not good for national development.

Social Studies is a unique subject in the tertiary and pre-tertiary education level capable of preparing the learner with appropriate knowledge, skills, desirable attitudes and values such as patriotism, honesty, hard work, spirit of volunteerism, self-reliance, integrity and requisite mindset to deal with the above challenges in Ghanaian society.

Social Studies at the tertiary and pre-tertiary level and possibly Leadership for National Character as a liberal course at the universities as suggested by (Oduro, 2019) can help train that kind of citizens and leadership that makes people feel they belong and respected irrespective of political, tribal, or religious orientation. They will also ensure that classrooms at the pre-tertiary institutions and lecture theatres at the universities will train people with critical mindedness who can accommodate dissenting opinions.

In Ghana, the Social Studies approach at the SHS level focused on the holistic integration of content in nation-building around critical issues such as Our Culture and National Identity, Peace building and Conflict Resolution, Education and Social Change, Our Constitution, Democracy and Nation Building, Sustainable Development, Population Growth and Development, Youth and Discipline, Leadership and Fellowship, among others to desirable attitudes, values, beliefs and problem-solving skills. Viewed from the lenses of the multidisciplinary content and student-centered pedagogical methods, some scholars have concluded that Social Studies is indeed Citizenship Education (Kankam, 2016).

Social Studies main goal is to promote Citizenship Education among learners by preparing students to be critical, reflective, considerate, and reasonable in making decisions that affect them and others in society. Social Studies when effectively taught with student-centered inclusive pedagogy that incorporate technology has the potential of developing in learners' higher-order thinking such as analysis, creativity, synthesis, and evaluation which is vital in this 21st Century as extrapolated by Bloom's

Taxonomy. Therefore, Social Studies as a subject is needed in Ghanaian curriculum now than ever (Bariham, 2019).

2.2.1 Emergence of Social Studies Curricula Globally

Social Studies originated from the Great Britain in the 1920s and rapidly spread to the USA later. History, Civics, and Geography were the main social science subjects found in the early American Secondary school curricula (Jarolimek, 1981) cited in (Dwomoh, 2018). Social Studies was used to promote social welfare and inclusion in America. The content of the Social Studies curriculum is the most inclusive of all school subjects (Ross, 2006). Historians facilitated the Social Studies curriculum reforms in 1982 at the Madison Conference in the sub-committees of Civil Government, Political Economy, and History. These committees played critical roles towards the development of Social Studies curriculum. Social Studies was further developed by scholarly works of John Dewey and promoted by great thinkers like George Counts, Edgar Wesley, Harold Rugg, and Earle Rugg (Barr, Barth, & Shermis, 1977).

Some scholars also argued that Social Studies education started in the United State of America where the Social Studies movement was formed as a result of the influence of John Dewey progressive education ideology (Salia-Bao, 1990). This led to the formation of the progressive education called the Pragmatists (Salia-Bao, 1990). Their instruction by then stressed the progressive philosophy which was based on child-centered education, inquiry, and discovery learning (Kankam, 2016). It is important for teachers to study the history of a subject in order to ensure better appreciation and the

understanding about subject meaning, goal, scope, objectives, and content to enable them to effectively teach the subject and contribute meaningfully to curriculum review. The traditional view of the origins of the contemporary Social Studies curriculum is that the National Education Association's 1916 Committee on Social Studies introduced the term Social Studies and created the scope and sequence of courses that define the contemporary curriculum (Ross, 2006).

In Africa, when most countries were obtaining independence in the 1960s, there was a need to train new leaders and educationists to make changes in the education curriculum to meet the needs of the time. Social Studies was therefore made to become part of the school curricula after several conferences in the United States of America, Britain and Africa. The first conference was held in 1961 at the Endicott House, Massachusetts Institute of Technology to study some of the problems of education of the emerging nations of Africa and to suggest strategies to overcome those challenges. At the Massachusetts' conference, a Sub-committee on the Humanities and Social Studies was formed (Tamakloe, 2008) cited in (Kankam, 2016), and agreed that the objectives of Social Studies were to: Sensitize the student to his own culture, to social heritage and to the problems of developing African states and societies; induce a sharp awareness in the students of his own world and of involvement in the wider world of which he is invariably a part; and develop the ability to identify and evaluate critically the economic, social, political and moral problems and situations he will face as a citizen (Carnoy, 1972).

In 1968, another conference dubbed ‘Mombasa Conference’ in Kenya was organized and attended by eleven Anglophone countries namely; Ghana, Kenya, Nigeria, Uganda, Sierra Leone, Ethiopia, Lesotho, Malawi, Zambia, Botswana, and Tanzania. The conference formerly introduced Social Studies as a subject to be studied in African schools beginning from the primary level (Binfo, 2020). However, after the conference, Ghana faced some challenges in structuring her curricula for basic schools to ensure effective teaching of Social Studies based on the agreed proposals. This was due to inadequate human and material resources, and the lack of support from the existing specialised teachers to take up the subject.

At the Mombasa Conference, it was agreed that the objectives of Social Studies were to; create an appreciation of the evolving physical and social environment as a whole, it’s natural, man-made, cultural and spiritual resources, together with the careful utilization and conservation of these resources for sustainable development; build capacity to learn and to acquire skills, including speaking, reading, listening, writing, calculations, analysis, observation, and inference which are crucial to the forming of well-informed judgments; foster the acquisition of that relevant knowledge which is essential to present development as well as to a positive personal contribution to the improvement of humanity; develop an understanding of diversity and interdependence of all members of the local community, national and the international community (Mombasa Conference Report, 1968). The above objectives were used as a blueprint from which most Anglophone countries in Africa developed their Social Studies curricula.

2.2.2 Historical Development of Social Studies in Ghana

The Social Studies programme as a field of study was first introduced into the curriculum of the teacher training colleges in Ghana in 1940s (Tamakloe, 2008). The teaching of Social Studies during this period was piloted at the Wesley College (Kumasi), Presbyterian Training College (Akropong), and Achimota Training College (Accra). However, due to teachers' and students' negative perception and attitudes towards the Social Studies programme, this experiment according to Agyemang-Fokuo (1994) was not allowed to blossom.

The Mombasa conference of 1968 eventually gave birth to the Africa Social Studies Programme (ASSP). The actions of the ASSP greatly influenced the ideology of teaching a single subject called Social Studies in Ghana in particular and some Anglophone countries in Africa in general. The ASSP offered a platform for African Social Studies scholars to meet and pull their material and professional resources together to foster the development of functional Social Studies curriculum for their mother countries. It was against this background that the Curriculum Research and Development Division (CRDD) started designing programmes of instruction in Environmental Studies in primary schools in Ghana in 1969 to replace the existing ones dubbed 'centres of interest.'

From 1969 to 1980, major intervention was implemented to; develop a curriculum for an integrated Social Studies programme, pilot the teaching and learning of the subject, and train teachers on how to teach the subject countrywide. Scholarships from the

British Council and the University of Bristol were awarded to some selected teachers to take a year course in teaching Social Studies in England from 1969 to 1970. Twenty-two (22) teachers were sent to Wrexham, North Wales for training in Environmental Studies from early 1970 to late 1970s. These teachers returned to assume the position of subject organisers in the regions and districts (Binfo, 2020). SHS Social Studies syllabus and 4-year post-secondary training college syllabus were designed in 1975 by the CRDD.

However, despite these interventions by the government aimed at promoting the teaching and learning of Social Studies in Ghanaian schools, some factors suddenly surfaced leading to a decline of the development of the subject. First, specialisation in Social Studies as an integrated subject in the teacher education curriculum was brought to an end in 1980. This led to the resumption of the Separate Subject Approach in the teacher training colleges. Social Studies was therefore made non-examinable subject in the school curriculum. Second, Middle schools kept the separate social sciences till they were phased out in 1987 in line with the regulation of West African Examination Council (WAEC) which conducted the final Middle School Leaving Certificate (MSLC). Finally, the subject organisers who were specially trained to supervise the implementation of an integrated Social Studies programme in the regions and districts nationwide were withdrawn from their offices into classrooms in 1970 (Binfo, 2020). This delivered a heavy blow to the successful implementation of Social Studies programmes in Ghanaian schools.

2.2.3 Educational Reforms of 1987 and Development of Social Studies in Ghana

The Junior Secondary School Education (Evans-Anfom) Reforms of 1987 was implemented by the Provisional National Defence Council (PNDC) government led by Flt Lt Jerry John Rawlings. The reforms were based on the report of the Education Commission headed by Dr E. Evans-Anfom of the University of Education, Winneba. The Education Commission published its report in August, 1986 which was to address the concerns and criticisms about the existing educational system, almost similar concerns and criticisms that necessitated the 1974 reforms. In the reforms emphasis was placed on skills acquisition, creativity and the arts of enquiry and problem solving. This necessitated the introduction of new curriculum content. New subjects such as Social Studies and Environmental Studies were introduced.

These reforms contributed immensely to the development of the teaching and learning of Social Studies as a subject. Until the implementation of the reforms proposed by the committee, Social Studies may not have seen development and that its unsteadiness in the educational system would have continued. It was these reforms that made Social Studies a core subject at the JHS and SHS levels of education in the Ghanaian schools. Other contributions which could be traced from the implementation of the 1987 Reforms and which made the Social Studies subject gained its stability in the educational curriculum were as follows; printing of textbooks in Social Studies for Junior Secondary Schools by the Ministry of Education through the CRDD in 1987; introduction of Bachelor of Education degree in Social Studies at the University of Cape Coast in 1988; introduction of Diploma in Social Studies at the University of

Education, Winneba in 1989; and the introduction of Social Studies at the primary school level in 1991. It was upon this that the Ghana's Social Studies series for Primary Schools was published. These developments contributed significantly to the development of Social Studies programme in Ghana.

2.2.4 Rationale for the Inclusion of Social Studies into Ghana's SHSs Curriculum

A definition is given to a subject to determine its nature, objectives, scope, and content. Social Studies is a core subject in Ghana's SHS curriculum. The subject aimed at preparing the learners to become useful citizens capable of meeting the needs of today and facing the challenges of tomorrow. The rationale for the inclusion of Social Studies into the curriculum of SHSs in Ghana is to equip learners with relevant knowledge, skills, principles, and concepts from the various Social Sciences to enable them to appreciate the relevance of these experiences as they seek to understand more about themselves and the complex social relationships of which they are part. This makes the Social Studies programme not only relevant to the learners but also facilitates the smooth transition of the students from secondary to tertiary education and to the wider society. In agreement, Martorella (1997:10) cited in Bariham (2015) stated the purpose of Social Studies was "to develop reflective, critical, competent and concerned citizens who are capable and willing to contribute to national development in the spirit of patriotism."

According to Ghana's Social Studies teaching Syllabus for SHSs (CRDD, 2010), the Syllabus is designed to help students to: build the capacity to fit into the ever changing Ghanaian society; equip learners with relevant knowledge, desirable attitudes and

values for resolving personal and societal issues; build in learners critical thinking and analytical skills necessary for well-informed decision making; develop in learners a sense of national consciousness, peace and unity; train learners to apply inquiry and problem-solving skills for solving personal and societal problems; and groom children to become responsible citizens who are patriotic, competent, capable, and willing to contribute to national development (CRDD, 2010). In some modern societies, most people especially the minority groups are often oppressed through marginalization, exploitation, powerlessness, cultural imperialism and some times violence. Social Studies education empowers the learner to challenge and disrupt these oppressive tendencies.

The objectives of Social Studies can be realized and students' learning outcomes improved if Social Studies teachers adopt critical pedagogy that incorporates CBI in their instructions instead of the traditional chalk and talk methods of instructions. The appropriate integration of the Social Studies subject matter and methods of instructions in instructional settings by teachers can help the student to understand concepts, think, transform and reflect on the body of knowledge presented to him or her (Yalley, 2017). With this, Social Studies teachers will eliminate classroom distractions, identify areas of difficulties and strategies to deal with those challenges in technology-driven classrooms.

However, a critical examination of the Social Studies syllabus for SHSs (CRDD, 2010) revealed that the suggested teaching and learning activities did not integrate CBI into

the teaching and learning of the content. Instead, CIMS such as discussion, brainstorming, storytelling, role-play, group work, project work, real-life scenarios, debates, and case studies have been suggested for teachers. The need for teachers to use the internet to support students learning has been mentioned on the syllabus only once. This gap in the Social Studies curriculum might have been responsible for the limited use of CBI during instruction by most Social Studies teachers. This study filled that gap through a recommendation on the need to support schools and teachers to integrate technology into the Social Studies curriculum. Tackling the technical and political constraints that misalign education systems requires action on three fronts: investing in better information on learning; mobilizing coalitions for learning; and adopting an iterative, adaptive approach to change (World Bank Report, 2018).

2.2.5 The Place of Secondary Education for National Development in Ghana

Education is an important vehicle in accelerating development in the personal and societal context. No aspect of Ghana's development agenda can be strategically pursued without reference to quality education. A key to the chain of education (Senior High School) education offers the transition bridge between basic education and tertiary education. It is at the Secondary Education level that the foundation of skills, values, knowledge, attitudes and competencies build at the basic level are modified and sharpened to connect into national human resource development values and aspirations. The quality of graduates churned out by the country's tertiary educational institutions is strongly influenced by the caliber of students trained by the SHSs. No policy dialogue on the development of knowledge, skills, and attitudes relevant for sustaining Ghana's

development can be considered complete without reference to what happens at the secondary school level.

That is why the 1992 Constitution of Ghana advocates for free education. Article 26 (b) of the constitution, for example, explicitly provides that secondary education in its various forms, including vocational and technical education, shall be made generally accessible to all by every appropriate means possible, and in particular, by the progressive introduction of free education. In connection with the above constitutional requirement, the previous National Democratic Congress (NDC) Government with assistance from the World Bank under the project named Secondary Education Improvement Programme (SEIP) launched a progressive free SHS education in 2014.

Similarly, in September 2017, the current Government under the New Patriotic Party (NPP) introduced the full Free SHS Education policy. The GoG took a bold decision to expand basic education to include SHS and made it free to increase access to education across the country. Under the policy, enrolment in SHSs went up by (43%), 881,600 in 2016 to 1,264,190 students by the end of 2019 (GoG Budget, 2019). This implies that over 1.2 million students will benefit from the policy next academic year. As at July 2020, Ghc 3.2 billion was invested on the implementation of the free SHS policy (GOG Mid-Year Review Supplementary Estimate, 2020). However, the extent to which this increase in enrollment can be directly attributed to the free SHS policy has not been independently verified because other moderating variables such population growth, parental awareness on value of education among others could have been responsible for

this increase in enrollment and not necessarily the free SHS policy. Further research is needed to determine if indeed the increase in enrollment was triggered by the fee free SHS initiative. This notwithstanding, to overcome the challenges posed by this high rate of enrolment, GoG started the construction of 962 structures in the SHSs across the country (GoG Budget, 2019).

To fulfill high demand for SHS education, the MOE created a double track school calendar (gold and green tracks) as short term strategy in over 400 SHSs to admit more students and eliminate congestions in schools. By ending of 2019, about 484,743 students were placed in both tracks (gold and green), out of which 405,540 students enrolled (MOE Medium Term Expenditure Framework, 2019-2022). Despite these interventions aimed at expanding access to secondary education, there are quality and equity issues that need to be addressed (Oduro, 2019). In terms of learning outcomes at SHSs, results from the West African Senior Secondary Certificate Exam (WASSCE) have been poor for both core and elective subjects, particularly in 2015. These results diverge substantially across regions, with the five northern regions of Ghana performing worst. At the school level, there are large disparities even within the same region: in some SHSs, almost 100% of students obtained grades of A1 to C6, and in others 0% do so (Ghana Education Strategic Plan, 2018-2030).

Gender parity has almost been achieved, and increased up to 0.96 in 2016/17. However, there are substantial inequities in terms of access to secondary education across wealth quintiles. Learners from the poorest 20% of households, the most deprived districts,

and/or from rural vulnerable communities are almost five to six times less likely to access secondary education. Learners with disabilities although account for 1.7% of the general population at this age is also underrepresented. They constituted only 0.2% of enrolment in SHSs in Ghana (Ghana Education Sector Medium-term Development Plan, 2018-2021).

The above data imply that the implementation of quality fee free SHS ought to be prioritized because (Belinda Bozzli, Face booker) noted that *“destroying a nation does not need the use of bombs and missiles. It only requires lowering the quality of education. Then the patients die at the hands of doctors. Buildings collapse at the hands of engineers. Money is lost at the hands of accountants, and Truth killed at the hands of the judges.”*

Quality education indicators are mainly three, namely; inputs such as quality of students, quality of teachers, adequacy of teachers, adequacy of classrooms, access to ICT resources, adequacy of instructional resources among others; process such as what happens in class between instructors and learners, school leadership, time management among others; and output such as exams results, certificates, and skills and competencies acquired by learners among other factors. Public Expenditure on Education that focuses on the construction of classroom blocks without investing in other inputs such as teacher training and professional development, school leadership and management, monitoring and supervision of students learning among other factors may not deliver quality education for all and lifelong learning. In 16 African countries

surveyed, (Global Education Monitoring Report, 2018) reported that the probability of school fees abolition increased by at least four times in election years, and the reasons are obvious.

Building a new society to deliver Education for Sustainable Development heavily relies on the introduction of ICT in education. ICT is an all-encompassing resource that should be seen as useful, accessible and sustainable strategies of enhancing learning, teaching, school management and the entire educational sector as a whole. ICT in education-oriented projects come with risks originating from the complexity, cost, and resistance to change at different levels. To overcome these risks, ICT should be applied to address areas where the educational system capacity is poor, where there are deficits in students learning outcomes, or where schools are underperforming (USAID, 2019). Education systems and policies need to be inclusive and meet the commitment to quality which cut across the 2030 Agenda. Teachers need to deliver inclusive and equitable quality education and facilitate lifelong learning opportunities for all.

2.3 Concept of Computer Based Instruction (CBI)

Computer Based Instruction (CBI) refers to tools, techniques, resources, and content used in instruction to improve students' learning outcomes. The functional use of CBI has been categorized into teacher-centered instruction in which the teacher takes control of the design, development, delivery, and assessment of instruction and student-centered learning, in which the students are actively involved in useful activities that result in authentic learning. CBI is one of the latest instructional innovations in

education from the point of view of both the learner and the teacher that can be used to improve the quality of Social Studies instruction. It is an interactive instructional approach that combines the use of a computer programme to deliver teaching, monitor the kind of learning that takes place, assess students learning, and provide timely feedback to improve learners' performance.

Computer Based Instruction (CBI) is also called Computer Assisted Instruction (CAI), Computer Aided Instruction (CAI), Computer Based Learning (CBL), Web-Based Learning (WBL), Computer Based Education (CBE), Computer Managed Instruction (CMI), Computer Enriched Instruction (CEI), E-learning, Virtual learning, Online Learning among others. CBI also called digital adaptive learning resources refers to those technologies that can accommodate learners' interactions by directly offering the student individualized instructions (EdSurge, 2016). CBI programmes gather and analyze large volumes of data from the students to design instructions to meet the peculiar needs of each student. Examples include digital readers and tablets, 3D printing, virtual reality, games/gamification, Cloud Computing, Artificial Intelligence (AI), and mobile technology.

In Social Studies education, CBI can serve the purpose of adding the learning and teaching of concepts and skills as well as offering practical instructions through interactive programmes that teach effectively and efficiently. CBI such as multimedia employs a combination of graphics, sound, text, radio, and video; and is available in various forms such as computer games, computer intelligent tutorials, tutorials,

simulations, drill, and practice, to present content and provide immediate feedback to students (Patel, 2013). Currently, CBI is today's educational setup that can be applied to help learners to learn in all areas of the Social Studies curriculum (The Environment; Governance, Politics and Stability; and Social and Economic Development). It can offer a discourse between the learner and the computer in a variety of contexts with or without the assistance of the human teacher (Encyclopedia Britannica, 2017).

In her foreword to the ICT in Education Policy in Ghana 2015, the then Honorable Minister for Education Professor Naana Jane Opoku-Agyemang observed that:

The deployment of ICT into Education will result in the creation of new possibilities for learners and teachers to engage in new ways of information acquisition and analysis. ICT will enhance access to education and improve the quality of education delivery on an equitable basis.

She further extrapolated that:

It is the government's desire that through the deployment of ICT in Education, the culture and practice of traditional memory-based learning will be changed into education that stimulates critical thinking and creativity necessary to meet the challenges of the 21st Century.

When used effectively, ICT in education can among other things; offer opportunities for the professional development of both pre-service and in-service teachers, especially through distance education; enhance the quality of instruction in schools; improve the teachers' knowledge, skills, attitudes, and research skills; increase the quality of educational administration and management processes; enhance the consistency and quality of instruction both for formal and non-formal education; offer opportunities for improving application of active student-centered pedagogical approaches during

instructions; facilitate inclusive education by eliminating the inequalities in gender, language, and learners with disability; and foster collaboration, creativity, higher-order thinking skills among learners (Ghana ICT in Education Policy, 2015).

In Africa, and specifically, in Ghana, the sentiment for the introduction of computer technology in all schools and other governmental and non-governmental organizations has been best summarized by Professor F. H. Allotey of the Kwame Nkrumah University of Science and Technology when he addressed top decision-makers in Africa at a conference in Tanzania:

We paid the price for not taking part in the industrial revolution of the late eighteenth century because we didn't have the opportunity to see what was taking place in Europe. Now we see that information technology has become an indispensable tool. We can no longer sit down and watch passively (Sagahyroom, 1995:164).

Digital revolution would not change to accommodate Africans countries, but we need to change to adapt to these changes brought about by the digital revolution. Regardless of the specific category of ICT presently applied in this or that country, national ICT in education policies and plans should: consider specific national economic, political, cultural, and social conditions; tap from similar policies and best practices from other countries; ensure linking of the desired scale of ICT introduction in education and available technical, financial, and human resources; design broad action plans for various levels and agents within the entire educational system; and take into consideration the impacts of ICT use in education as observed by various categories of students, educators, educational systems, teachers and communities. Policy choices cannot be made without examining the present situation, specifying the goals to be

reached, projecting the means to attain them, implementing the strategies, and evaluating the results (UNESCO, 2004).

2.3:1 Computer Based Instruction Strategies

Specifically, the approaches in CBI integration underwent some transformation in the last decades with research involving CBI as a tutor or tool and its various modes such as drills and practice, tutorials, simulations, instructional games, and multimedia instruction (Douglas, 2000). The current categories of CBI strategies are unpacked below;

- i. **Computer Intelligent Tutorials:** Computer Intelligent Tutorials (CITs) is used to teach new skills, knowledge, processes, and concepts. CITs are the most popular CBI that delivers information, guides the learner through the process, allows the learner to practice the new skill and provides an assessment of the learners' competencies and knowledge acquired (Frazer & Walberg, 1995). CITs are capable of providing immediate feedback and adapt their presentations to suit the varying needs of learners. These programmes usually made up of screens of textual materials, followed by assignments. For instance, in each tutorial group, content is given in small units followed by exercises. The computer scores the learner, and feedback is given immediately to enhance the mastery of knowledge, skills, and concepts.
- ii. **Computer Simulations:** Computer simulations offer a comprehensive computer model of an experiment or real-life scenario (Trowbridge et al., 2004). An example of computer simulation is Virtual Reality usually used to prepare

learners for real-life emergencies. In Social Studies, for instance, the settings for computer simulations maybe Social Studies resource room or even in class. Computer simulations are used in a situation where it is not feasible to provide instruction in real life. Simulations motivate students, arouse and sustain their interest in teaching and learning. In his study involving college learners in an economics programme (Berson, 1996) discovered that the treatment group taught with computer simulations demonstrated higher mastery of critical thinking skills and content knowledge than the control group taught with the traditional instructional methods.

- iii. Computer Instructional Games: Computer Instructional Games are a series of activities that are played with a well-defined set of rules and usually produce a winner at the end of each activity. The main goal of computer games is to consolidate knowledge and skills acquired. This can enhance the transfer of learning of concepts in Social Studies. Gibson et al (2014) observed that digital games and simulations can achieve greater levels of interactivity, emotional power and effectiveness of instruction compared to CMI.
- iv. Multimedia Instructions: CBI, for instance, is one of the multimedia instructions that have demonstrated to enhance students' performance and arouse their interest in learning contexts (Gambari, 2010). Multimedia instructions tap into the functions of multisensory perceptions in the learning process. Multimedia offer sound, music, pictures, animations, audio, graphics and video to make learning lovely, participatory, effective, and authentic. Multimedia supports teachers to deliver the desired learning experience in the

most effective and efficient manner to the learner. For example, with the application of multimedia, Social Studies students can design individual or group presentations to develop skills in collaboration, information retrieval, and communication. Students can also create presentations that facilitate evidence of understanding of content, theories and generalizations in their own perspectives (Rice & Wilson, 1999) cited in Mehmet and Erdinc (2005). Another strategy to develop skills and knowledge is the use of web-based videos that employ scenario-based learning design. This strategy offers open situations for the student to make well-informed decisions and reflect on the processes involved. The interaction comes from places in the story where there is a choice to be made. The learner's prior knowledge and decisions result in meaningful consequences leading to effective learning. The above approach according to (Giussani, 1995) is to free the younger generation from mental slavery and from the tendency to conform, which mentally enslaves them to the forces in society.

- v. Intelligent Tutoring Systems (ITSs): ITSs are designed to enable students to receive individual support without increasing the workload of the teacher. Differentiated instruction with internet-based software is the best method of instruction for urban students (Cobb, 2010). ITSs are designed with different user interfaces. Tutoring systems designed with more complex user interfaces are called Intelligent Tutoring Systems (ITSs). The more sophisticated user interface allows learners to enter intermediate steps of a solution and to obtain immediate feedback on various steps rather than only inputting the final answer. Research has documented that individual-to-individual human tutoring is more

effective than whole classroom instruction (VanLehn, 2011). However, VanLehn (2011) conducted a survey that correlates computer tutoring systems to human tutoring for primary students. The results revealed the effect size of human tutoring to be $d=0.79$ and the effect size of intelligent tutoring systems to be $d=0.76$. This indicates that intelligent tutoring systems are nearly as effective as human instructions.

- vi. **Computer Drill and Practice:** Computer Drill and Practice are appropriate for the behaviourist model which argues that repeated practice of lower-level cognitive skills can offer structured reinforcement of concepts learned. The guided drill is a computer system that gives questions to students, returns feedback and chooses an additional question based on the learners' answers. Drill and practice may combine educational games to stimulate Social Studies students to actively participate in the process of learning and teaching. Gee & Umar (2014) carried out action research in Malaysia involving 60 primary school students to determine the impact of Drill and Practice Course software application on learners' performance and motivation in learning English. The results from the pre-test and posttest marks demonstrated a significant difference in students' performance after using the courseware in English lessons. Drill and practice improved students' performance, retention and motivation in the English language than the conventional instructional methods.
- vii. **Interactive White Boards (IWBs):** The use of Interactive White Boards is another mode of CBI, also called Smart Boards. IWBs are multipurpose tools that can be used for educational games, simulations, and other forms of

interactive technology to enhance Social Studies learning and teaching activities. However, the breakdown of the equipment may be enough to cause the loss of instructional hours. Again, notwithstanding the fact that a smart class makes teaching and learning more interesting and meaningful, a technology-oriented class brings in monotony to learning. Learning will then be seen as a mechanical process where teachers and students frequently employ digital tools that work in a predetermined manner.

- viii.* Open Educational Resource (OER): Open-Educational Resource are digitized learning resources offered freely and openly for educators, students, and self-learners to use and reuse for learning, teaching, and research. Recent data show that there are over 3000 open access programmes in more than 300 universities across the globe, with China and the United States of America contributing almost 1750 courses (OECD, 2007). However, in Africa and for that matter Ghana, in particular, National Accreditation Board (NAB), an institution responsible for the accreditation of educational institutions to run programmes do not recognize certificates of courses undertaken through such online modes. Maybe it is time to rethink such a policy but without compromising the quality of higher education. The worldwide e-learning market is projected to be worth \$325 Billion in 2025. In 2017, almost 77% of US companies applied online learning and 67% of US companies offered learning opportunities via smartphones. Educational experts have observed that e-learning increases retention rates by 25% to 60%.

- ix. **Social Media:** In a world characterized by the knowledge economy, it has become necessary for teachers to use social media to share with learners things deemed interesting, useful and can support learning. For instance, Facebook and WhatsApp can be used by teachers to create discussion groups for sharing information about projects/assignments; carry out surveys to get feedback and suggestions on training courses; create closed or secret groups and upload course material and assignments for learners. YouTube can be used by teachers and students to search for relevant content to enhance effective learning. IBM, for instance, uses YouTube for the employee learning. They have an entire YouTube channel where employees can watch video tutorials and other learning materials to learn best practices to enhance productivity. However, the frequent use of social media can make learners become addicted to it. Again, there are a plethora of scientific researches that demonstrated a strong correlation between the usage of a product of digital technologies and their impact on the users' mental health. Teachers should guide and effectively supervise students' usage of these technological devices so that they become assets and not liabilities.
- x. **Human-Robot Interaction:** The word robot is a machine that performs autonomous operations (Merriam-Webster, 2017). The term robot is used to describe assembly line machines, remote-controlled cars, self-roving vacuum cleaners, and even mobile phones. From the above, adaptive learning programmes can be seen as robots due to their ability to perform tasks, self-adjust, and communicate with learners. The founder and CEO of Knewton, Jack Fierrea, a popular 25 learning analytics software development company and

provider of computer-adaptive learning systems observed his adaptive learning programmes and remarked that, “A good tutor can crack jokes and make you want to learn, but this robot tutor can essentially read your mind” cited in (Lapowsky, 2015). Some robots are specifically designed to engage in social interactions with humans. Robots have been designed to socialize with children for extended periods of time, including providing education to the children. For instance, in 2016, a postgraduate course at Georgia applied a computer-adaptive teaching assistant named “Jill Watson” to respond to students questions in online learning platform. Learners indicated that the computer teaching assistant could offer feedback from students’ queries more effectively than human teachers. Meanwhile, learners were not aware that the tutor was not a human, but a virtual tutor powered by the artificial intelligence of IBM’s Watson (Coughlan, 2016) cited in (Rathmell, 2018).

2.3.2 Significance of CBI in the Teaching and Learning process

Generally, the educational importance of CBI and other categories of ICT use in education cannot be overemphasized. Reference can be made to the period when B. F Skinner applied programmed instructions to teaching machines, through Brunner’s experiment with CAI, to the current era of information transmission and exchange via the internet. The integration of CBI in the instructional process has the potential of enhancing the quality of students learning outcomes in line with Sustainable Development Goal 4 which focuses on quality education for all and lifelong learning. But learning crisis has been a global issue often hidden by many. Some countries equate

more years in school to more learning, but the assumption could be problematic. The evaluation of the learning indicators of children often exposes the problem of learning crisis.

For instance, recent data revealed that about 37 million African children will learn so little in school that they will not be much better off than kids who never attend school (van Fleet 2012) cited in (World Bank Report, 2018). For many people, learning is simply not happening in schools. The application of CBI in teaching and learning has the potential to reverse this trend. UNESCO (2004) extrapolated that it was an error in judgement to assume that the pedagogical use of ICTs automatically increases the quality of education. UNESCO, however, failed to provide evidence to support that assertion. With the use of ICT resources like online chats, social media sites, and videoconferencing, teachers from deprived and difficult to reach rural areas to those in large urban areas can connect, collaborate and share with specialists and peers from across the globe to establish online professional learning communities.

Specifically, Social Studies has a preferable advantage as CBI makes learners collaborate and synthesize difficult content and concepts in the subject through simulation and animation. Integrating CBI into Conventional Methods of Social Studies instructions can inject knowledge and reduce the number of instructions given to learners allowing teachers more time for remedial support to slow learners using differentiated instruction. By the integration of CBI for learning activities, there is improved understanding, knowledge transfer, problem-solving skills, and role-playing

activities among learners (Forcheri et al., 2000). Similarly, computer simulations, for instance, enhance the acquisition of problem-solving skills and well-informed decision making among students (Julius, 2018). She further pointed out the practicality of computer simulations allow learners to actively engage in activities that would otherwise be too expensive, dangerous, or impractical to conduct in a traditional learning context.

CBI can also be used to provide remediation and enrichment for learners. Slaten, Rice and Emfinger (2013) examined the effects of using technology to remediate kindergartners learning. The study consisted of 4 kindergarten students who attended an afterschool programme at a local community center. The researchers met with the participants twice a week for 1 hour intervals. The mathematics educational software programme chosen in their study included a component that automatically determined areas of weakness for students based on a pre-assessment. The software programme generated practice assignments based on the areas of weakness identified. While the students were engaged with the programs, the teachers took anecdotal notes based on the academic progress of the students and the effectiveness of the technology implementation. The findings discovered pupils' interest in learning more about technology, inspire to learn, enjoyment in using technology, and improved self-confidence in themselves and their knowledge (Slaten et al., 2013) cited in Cannon (2017).

Similarly, Lewis (2010) conducted a study using a Quasi-Experimental design to compare the academic performance of students exposed to traditional Mathematics instruction with or without the supplementation of a computer-assisted instructional software programme, called Success maker. The participants for this study included 73 fourth grade students. Pre, and posttests were used to measure student achievement. An analysis of covariance (ANCOVA) was used to measure the change in student achievement from pre to post-test. The results reported revealed an improvement in academic achievement and student attitudes towards mathematics. Similarly, Ragasa (2018) compared the impact of CBI use on college trainees' performance in basic statistics. The post-test results show that the treatment group taught with CBI demonstrated higher achievement in basic statistics than the control group taught with CMI.

Technology provides Authentic Learning experiences (teaching and learning that places the learner in real-life situations). In Ghana, Ameyaw and Abgotse (2016) carried out action research involving 78 SHS students in the Volta Region to determine the impact of CBI on students' performance in Biology learning. The findings of the study show that students taught with CBI demonstrated a significant increase in their performance. However, the study did not consider the level of schools, teachers and learners readiness for the application of CBI in the instructional processes.

Finally, Inclusive Education advocates that students with disabilities can be valued, active, and fully involved as active members of a class in which innovation is viewed as

the standard and excellence in education is provided through a combination of important programs of study, efficient instruction and essential supports (Smith, Holloway, Patton & Dowdy, 1998). The latest trend educational transformation advocates for the assignment of learners, in respective of their disabilities in the inclusive classroom. The application of CBI can support all students including those with disabilities to fully benefit from the instructional processes. Learners with disabilities (LWDs) in Inclusive Education (IE) contexts require access to quality education that is equitable just like their able peers. Access to inclusive quality instruction is a significant milestone towards the achievements of their education goals, independence, and self-reliance.

The Partnership for 21st Century learning (2017) has outlined the following competencies relevant for the preparation of students for the complex life and work environments in this 4th Industrial Revolution, namely; critical thinking, creativity, collaboration, and communication. The internet, for example, allows 21st-century students to apply ICT in blended environments to get, process, and communicate information (Hunsinger-Hoff, 2016). Technology Enhanced Personalized Learning (TEPL) is grounded on the assumption that individual learners are from varied backgrounds, learn in different ways and at different rates, needs and interest vary, and therefore, information should be presented in different ways using a variety of medium including technology to meet the needs of all learners with varied abilities and interests.

The Watson computing programme by IBM is employed by some instructors to personalize learning in different learning contexts. Pearson, a worldwide education company, is applying the Watson computing programme to pilot sessions of digital textbooks and a computer intelligent tutor (Rathmell, 2018). The programme allows the students to explore with the intelligent instructor through the computer screen (Coughlan, 2016). This automated teacher will directly ask learners questions and provide feedback and assistance equally useful and previously shared with a colleague or teacher.

2.4 School Administrators' Perception of CBI

The school administrators' perceptions of CBI integration and the school vision are critical in giving guidelines for interventions that leads to the attainment of goals and vision of the school. In this respect, the school's ICT policy outlines the short-term, medium-term and long-term goals and expected outputs of the ICT integration in both administration and instructional processes (Anderson & Dexter, 2000). A vision directs the process, the goal, as well as guiding principles towards achieving the goal. This calls for a well-defined ICT policy and a vision in the school that will guide Social Studies teachers and ICT support staff towards their desired end product. Besides, the type of leadership and management of the school is significant if the recent free SHS policy rolled out across the country will be implemented to reverse the trend in poor performance of students' across all subjects at the WASSCE (Education Strategic Plan, 2018-2030).

Within the school context, the encouragement from the management to incorporate CBI in instructional processes and the motivation to foster networking among teachers in the school plays a critical role in causing positive attitudes towards the adoption of CBI in teaching and learning, but this must start with governments, which bear the primary responsibility to ensure the right to quality education and lifelong learning. Fullan (1991) reported that the appropriate strategy aimed at speeding up the adoption of technology in schools is the democratization of the entire change process that involves, motivate, and encourages the contribution of all major stakeholders in the school. This means all the stakeholders in the school actively take part in the designing and the implantation of the change process, own the change, see the project as theirs and assist any teacher wishing to adopt CBI to deliver meaningful authentic learning to meet the needs of all learners.

Cuban (2001) opine that to have ICT effectively implemented in schools, the policymakers need to assume certain responsibilities to be able to drive the process which includes; appreciate teachers' weaknesses and strengths and engage teachers in creating provision, designing and implementing CBI integration policies in learning processes. Effective evidence-based decision making does not only rely on the supply of the data but also on education school heads and administrators received to make them digital literates to be able to make innovative educational decisions. The design of the school daily class timetable has to change, to give enough time for the teachers to plan their lessons that incorporate CBI to enhance effective learning. Students with varied learning styles such as visual learners, audio learners, and the audio-visual learners

should all be accepted in the class and be given a conducive environment to learn. Teacher professional development and technical support should be provided to the teachers to enable them to effectively incorporate CBI in their instructions to promote lifelong learning.

The following principles according to (USAID, 2019) are designed to direct the development, conceptualization, design and the implementation of CBI application to deliver inclusive, equitable, high-quality education and lifelong learning for all in schools: Apply CBI to enhance students learning; use CBI to accomplish education and national development goals; Add short, medium and long-term costs in planning a budget for CBI application; use CBI to enhance data-driven decision-making; search for technology alternatives to find workable solutions; identify, coordinate, and involve different stakeholders; focus on teacher professional development, training, and ongoing coaching and support; designed a supportive school ICT policy to guide the implementation process; incorporate monitoring, evaluation and learning into the project which requires the ability to build capacity and hence system strengthening precedes system transformation (USAID, 2019).

2.4.1 Teachers' Perceptions of Computer Based Instruction (CBI)

Teachers' variables such as professional qualification, teaching experience, access to a computer, pedagogical use of ICT in the curriculum delivery, perception of CBI, as well as demographic characteristics of teachers like age and gender may direct the adoption of CBI in the instructional processes. In contrast, Albirini (2006) was categorical that

instructors' age did not significantly correlate with their attitudes towards CBI integration. Gakime (2016) reported that the success of the integration of CBI into classroom learning and teaching depends on the teachers' attitudes towards CBIs. Teachers who are more likely to integrate CBI in a classroom teaching and learning are those that have developed a positive attitude towards technology use in school.

Demirci and Gumus (2017) carried out research in Turkey to explore teachers' perceptions of Geographic Information Systems (GIS) use by Geography teachers. The findings discovered that though challenges such as lack of software and hardware existed, teachers' positive perception of GIS was a significant determinant to the successful application of GIS in Geography instructions. Similarly, Khan and Khine (2006) conducted a quantitative study that examined teachers' experiences with the internet and examined their attitudes towards the web 2.0 technologies. The participants consisted of teachers in all 3113 middle and high schools in two counties in West Virginia. They reported positive attitudes towards the web 2.0 technologies.

It is also important to understand teacher perceptions of CAI for students of varying ability levels. Thomson (2010) carried out mixed method research that evaluated perceptions and experiences of teachers using CBI. His study revealed that gifted students should be provided with learning opportunities where they can be exposed to material beyond their grade level and advance through the curriculum at their own pace. The findings from Thomson's study further discovered that teachers and students felt the online environment provided a more individualized and differentiated learning

experience for the students (Cannon, 2017). The key to the type of curriculum experienced in Social Studies learning environments is the teacher:

Teacher's beliefs about schooling, his or her knowledge of the subject area and of available materials and techniques, how he or she decides to put these together for the classroom—out of that process of reflection and personal inclination comes the day-by-day classroom experience of students. This is not to say that social studies classes are not affected by factors such as the characteristics of the students enrolled, but only to emphasize that the teacher plays the primary structuring role. (Shaver, Davis, & Helburn, 1980).

In Ghana, Bariham, Ayot, Ondingi, Kiio, and Nyamemba (2019) carried out a quantitative study to assess teachers' application of CBI in Social Studies teaching in West Mamprusi Municipality in the North East region, Ghana. The study found that despite the fact that teachers had a positive perception of CBI integration, they did not apply CBI in their instructional processes due to the absence of the internet, insufficient computers and a lack of technical support among other factors. Teachers' characteristics like gender, age, and location of schools significantly influenced their level of CBI application in pedagogy. However, the qualification of teachers did not significantly affect the level at which they incorporated CBI in Social Studies instructions. The above study was limited to basic schools and not SHSs. Also, the study focuses on teachers and not learners.

Teachers' perceptions of technology can be influenced by the level of training and professional development they have received based on the new technology. Wright and Wilson (2011) evaluated tutors' perceptions of CBI use in their instructions. Hooper and Rieber's (1999) five phases of technology were used to categorize the teachers'

perceptions. The five phases consist of familiarization, utilization, integration, reorientation, and evolution. The results show that teachers who completed the five stages were the teachers that engaged students in using technology and continued their own professional development.

Agyei and Voogt (2012) suggested parameters for educators to create suitable strategies for incorporating technology in instructions. These frameworks include: Establishing collaborative design groups where instructors can partner with colleagues to plan CBI and find solutions to CBI related issues they encountered on their daily practices; establishing a sample CBI curriculum resources for teachers to motivate them to practice and use them to enrich their instructions; orientation programme covering on the job training and other teachers' professional development programmes have to be put in place to adequately equip the instructors by sharpening their skills in both technological, theoretical, pedagogical and technical knowledge in their subject areas and adopting a user-friendly technology for easy acceptance and use by the students and for instructors to have the competencies to prepare student-centred pedagogical activities to foster authentic learning (Agyei & Voogt, 2012:561-562).

Teachers per their job description serve as leaders of their learning environments. They are for designing instructional objectives, designing instructional plans, assessing students learning, and the efficient management of learning environments to facilitate students learning. Their perception of CBI, therefore, will determine if they will make

good use of the strategy in the classroom to deliver inclusive, equitable and quality education opportunities for all and lifelong learning.

2.4.2 Students' Perceptions of Computer Based Instruction (CBI)

Generally, the literature on students' perception of CBI has produced varied conclusions. For instance, Sad and Ozhan (2012) conducted a qualitative phenomenological study to explore the perceptions of primary students regarding Interactive White Board (IWBs) use in their lessons. The findings revealed that students believed that instruction with IWBs positively impacted their learning especially because of visualization and contextualization, effective presentation, test-based use and motivational factors. In agreement, Hartley & Treagust (2014) surveyed students in South Africa to examine students' perceptions of CAI use in Mathematics learning. The results discovered that learners perceived CAI as a positive intervention because it increases their engagement in Mathematics learning, offer them the opportunity to practice problem-solving in Mathematics, and provide them with the chance to assess their own learning.

Similarly, Adekunle (2016) conducted a survey involving 7,500 secondary school students in Nigeria to determine their perception of computer education in Abuja. The results discovered that learners had a positive attitude towards the use of computers in education. Male students were found to have a positive attitude towards the use of CAI in education than female students. A huge difference between public and private schools students' perception of the integration of CAI in learning activities were

recorded. Notwithstanding the above, the context of the study was Abuja which is predominantly urban. Also, the study did not take into account the rate at which learners pedagogically used CAI in their learning processes.

In contrast, Tolbert (2015) carried out a quasi-experimental research to assess the impact of Computer Aided Instruction on students' performance and perception of CAI. In all, 56 students were sampled and were placed into two categories of equal numbers (n=28). The control group was taught with CMI and 20 minutes daily remedial traditional instruction. The treatment groups were taught with the CMI and 20 minutes daily remedial CAI. The findings revealed no significant difference between the two methods of instruction. The students' perception was no statistically significant difference in their perception of CAI.

The above findings justify the call for blended learning, an educational programme that integrates traditional teaching methods (offline learning) with computer-based learning (online). Blended learning strategy although useful, has its own advantages and limitations. Appropriate school perceptions of technology integration ought to be developed. This will facilitate teachers' and students' development of skills and competencies to apply ICT in their learning and teaching. Teachers can sharpen their students' ICT skills by specifically giving them with technology-related assignments.

2.5 Schools' Preparedness for the Integration of CBI in Social Studies Instruction

A supportive, friendly and stimulating school environment is a crucial foundation for social, physical, moral, emotional and psychological development of learners.

Technology oriented schools are in a better shape to deliver inclusive quality education and lifelong learning. Education for Sustainable Development demands the application of technology in education. Research on the integration of CBI in learning processes revealed rate of integration is greatly affected several factors. Successful integration of CBI in learning depends on a plethora of issues like the availability of certain ICT tools and programmes, teachers' perception of ICT use in education, type of training given to the teacher, availability of favourable school-based ICT policies, teachers and students ICT skills, access to computers and the internet, availability of time among others as unpacked below.

2.5.1 Availability of ICT Tools

The ICTs resources availability in schools can contribute significantly to increase teachers' willingness to incorporate CBI in classroom instruction. Kennah (2016) opines that the appropriate integration of ICT in education has been greatly affected by lesson duration, availability of the digital resources, students perceptions of the technology use, a physical class structure, teacher's content knowledge, class diversity, socio-economic background of teachers and students, leadership and school management approach, and community perception about CBI. Competent teachers, friendly learning environments, reliable assessment systems, and relevant ICT programmes for learning all required financial resources. As more children proceed further in education, financial needs will increase. Yet more funding leads to superior learning outcomes if only it is applied effectively and at the right time, with an intentional focus on students learning outcomes (Wolrd Bank Report, 2018).

Ford (2007) observed that the acquisition of ICT tools such as computer hardware and software, the setting up of the ICT infrastructure and their maintenance has been said to be costly in the majority of schools in developing countries and this has limited their adoption in the classroom instruction. In fact, most developing countries lack the appropriate infrastructure that supports the reliable supply of hardware and software facilities. This presents a challenge for schools to effectively incorporate CBI into learning and teaching. Effective use of CBI in learning hinges on the availability and accessibility of ICT facilities like a reliable supply of power, relevant hardware and software, adequacy of computers, the internet and other communication infrastructure.

Schools apart from the infrastructure should serve as safe spaces conducive for effective learning. However, apart from infrastructure deficits in some schools, between 2009 and 2015, almost 611 teachers were killed, and 19,000 forced to flee due violence in schools (GEM Report, 2018). School-related violence can be sexual, physical, emotional or psychological. It transit in cyberspace; and may consist of corporal punishment, cyberbullying, bullying, emotional and verbal abuse, sexual harassment, intimidation, gang rape and even presence of weapons among learners in schools. Overcoming school-related gender-based violence needs a multi-sectoral approach, effective laws, innovative policies, inclusive curriculum and partnership between education and other sectors of the state.

2.5.2 Teacher Training and Professional Development

Teachers are the most critical determinant of students learning in schools. Teacher Training and Professional Development Programmes are critical variables for the smooth implementation of CBI in instructional processes. Several studies have reported that whether inexperienced or experienced, ICT capacity building programmes equip teachers' preparedness with sufficient knowledge and skills for the pedagogical use of ICT during learning and teaching (Gakime, 2016). Sandholtz and Reilly (2004) indicated that teachers' technology skills are a strong determinant of technology integration in instructional processes.

However, these are not requirements for the effective pedagogical use of technology in classroom instructions. They argue that training programmes that concentrate on ICTs pedagogical training instead of technical issues and effective technical support may not help teachers to apply technologies in teaching and learning. Effective CBI implementation should be built on the principles of quality instruction. Ghana's National Curriculum Framework for Teacher Education prioritizes ICT in teacher education, as a cross-cutting issue to be integrated throughout the curriculum. Student teachers are soon going to be required to learn how to use ICT to further pupil learning in any subject. However, Voogt & Tondeur (2015) extrapolated that the application of ICT in learning is situational. For effective integration of ICT in instruction to take place, instructors should be willing to learn, practice and acquire skills and knowledge about the learners, schools, infrastructure, and tools at their disposal, and the environments they find themselves in.

In-service Teacher Professional Development demands significant time and resources in which developing nations invest millions a year to build and sharpen teachers' skills and competencies. However, most teacher professional development programmes goes unevaluated and much of it may be ineffective. Globally, a survey by OECD involving 34 schools discovered that almost 88% reported having attended a Professional Development Programme during the year. Of those, 71% attended at least one workshop; 44% attended an education conference and 37% attended in a teacher network (Global Education Monitoring Report, 2018). Many teachers lack the skills to collect, analyze, interpret and use data to improve their instructions. A study in five OECD countries on teacher pedagogical knowledge revealed that assessment, in addition to research and data use was the least emphasized part of pre-service teacher education (Global Education Monitoring Report, 2018).

Teacher professional Development Programmes should emphasize on the diagnostic use of data from research to improve students learning. One teacher training experts in the United States characterized professional development in the country as “episodic, myopic, and often meaningless” (World Bank Report, 2018). Teacher training in most low and middle-income countries including Ghana is often too short and of low quality in some instances. Most of them lack continuity and designed not on the basis of the teacher's needs. Most teacher professional development programmes especially in-service trainings are often design without conducting the Training Needs Assessment of the teachers. The present teacher education paradigm has been that teachers need to be

taught as they are supposed to teach. The dilemma of bringing teachers and teacher students to a new didactic method, like the integration of CBI, is in the fact that they themselves have been taught in plenary, discursive, non-ICT supported ways (UNESCO, 2004).

To fill these gaps and to effectively assess teachers' competencies in integrating CBI in their instructions, Mishra and Koehler (1986) designed the model dubbed "Technological Pedagogical Content Knowledge (TPACK)". TPACK model has three main intertwining knowledge categories being Technology, Content and Pedagogy. At the meeting point of these three knowledge categories is an understanding of teaching content with relevant pedagogical methods and technologies. The seven components are embedded in the TPACK model. They are explained as:

- i. Content Knowledge (CK): This refers to the actual subject matter knowledge that is to be taught or learned (Mishra & Koehler, 1986). Teachers should have adequate knowledge about the content and concepts they are going to teach and how the nature of knowledge is different for various content areas.
- ii. Technology Knowledge (TK): This is the knowledge about various technologies, ranging from low-technology such as pencil and paper to digital technologies such as the internet, digital video, interactive whiteboards, and other software programs.
- iii. Pedagogical Knowledge (PK): These refer to the methods, techniques, and strategies of teaching and includes knowledge in instructional design,

assessment, classroom management, students learning, reflective practices and remedial support.

- iv. Technological Pedagogical Knowledge (TPK): This means the skills and knowledge of how the various technologies can be used in teaching, and to appreciate that using technology may transform teaching and learning. It includes techniques and strategies for planning instructions where technical skills are taught systematically.
- v. Technological Content Knowledge (TCK): This is a situation where technology is employed by teachers in the learning and teaching process but not restricted to how the tools operate.
- vi. Pedagogical Content Knowledge (PCK): This refers to a situation where an instructor can link the pedagogical knowledge with the content knowledge making it suitable for the delivery of that content by blending the two.

Technological Pedagogical Content Knowledge (TPACK): This is the knowledge needed by Social Studies tutors to effectively integrate CBI in instructional process covering any relevant content area. Tutors have an understanding of the complex connections between the three basic components of knowledge (CK, PK, TK) by teaching content employing appropriate methods and technologies. Figure 2.1 below gives details of the TPACK model.

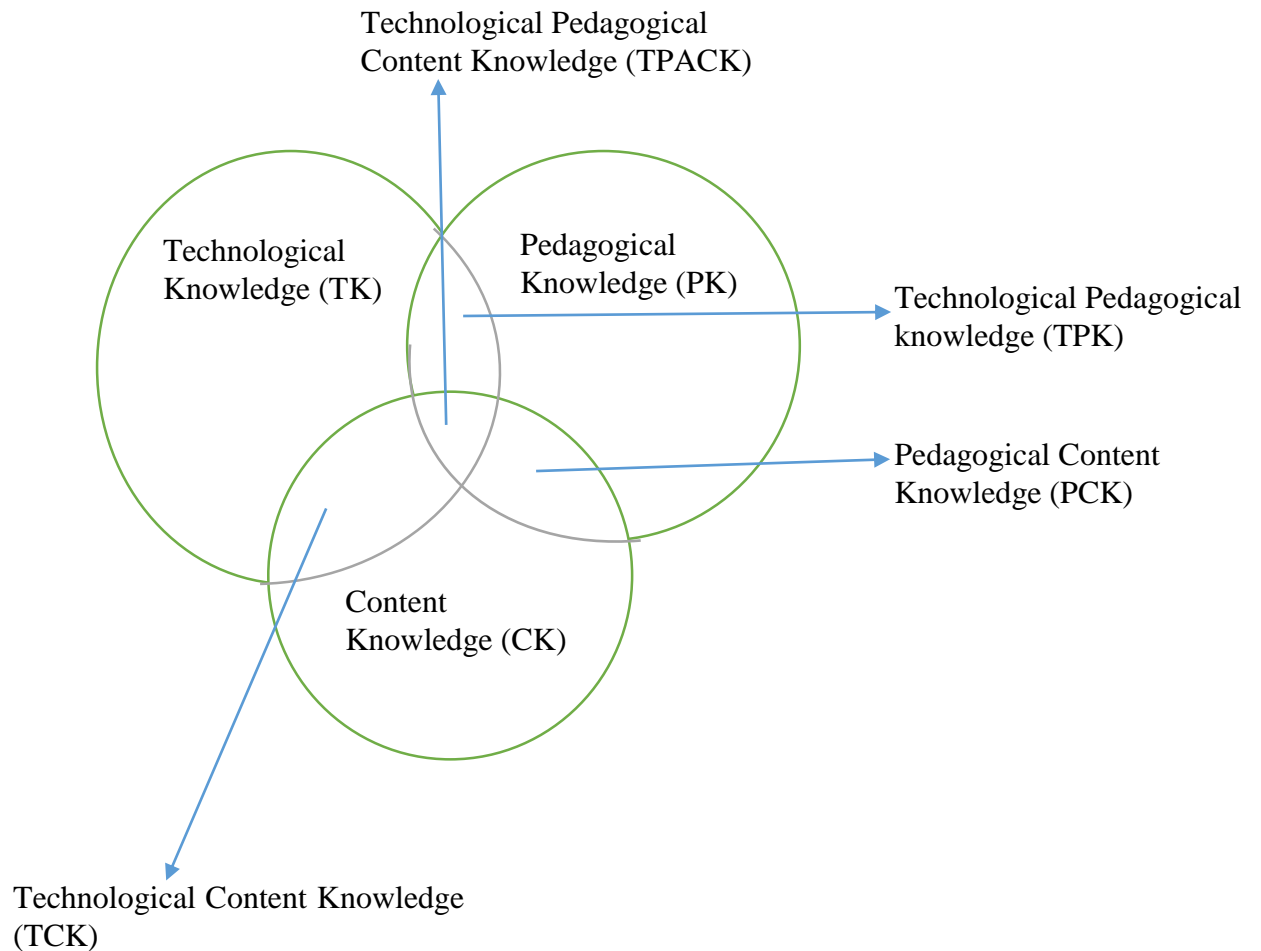


Figure 2.1 TPACK Model developed by Mishra & Koehler (1986)

The integration in this study is the adoption, inclusion, and use of ICT resources and equipment to aid the process of learning and teaching. The TPACK model was employed to assess teachers' level of preparedness for the application of CBI in Social Studies instruction in the sampled schools. Agyei and Voogt (2012) conducted mixed research to evaluate the job training programmes in SHSs in Ghana. Instructors of mathematics were groomed with a collaborative design strategy to acquire skills and knowledge in TPACK for application in instructional processes. The research was grounded on the TPACK model developed by Mishra and Koehler (1986), to determine

the effectiveness of mathematics teachers' application of TPACK in their instructions. The results show that after the implementation of the intervention, instructors integrated the TCK and TPK in their instructions effectively. However, this may not suit other contexts in different areas within the country. Besides the research was limited to only teachers of mathematics.

There are several ways schools in Africa and for that matter Ghana fails teachers in the professional development process, namely; poor or lack of professional development practices in schools, ignoring professional development needs of teachers, limited professional development interventions, and lack of technology-focused professional development programmes. These limit the capacity of teachers to effectively integrate CBI in the instructional processes. Teachers are expected to demonstrate learning activities and not to tell. Teacher professional development should inculcate that same practice in teachers. In agreement (Clarke, 2017) noted that teachers do not use technology to conduct social experiments because such competencies are lacked. To support effective teaching and learning in schools, teachers need to deliver quality instructions effectively and efficiently. But many education systems pay little attention to what teachers know or what they do in the classroom. Focusing on teachers' skills and motivation can pay off (World Bank Report, 2018).

The most appropriate way to build teachers' capacity for quality teaching with technology is to model one for them to observe best practices. Again, for CBI to be an amplifier in the classroom, teachers need the skills to design the teaching and learning

experiences. If you are working with teachers who have only used rote learning techniques and teacher-centered methods of instructions, they need to be exposed to and be trained on new student-centered pedagogies that can empower them to be creative, flexible and adaptable to meet the needs of all students. An appropriate teacher professional development equips teachers with the skills to design their lessons, be creative with technology, reflective on their facilitation techniques and leverage the interests of their students while at the same time meeting learning outcomes. There may be financial issues, but teachers' professional development should not be planned as a one-time event, else it will not have a positive impact. Teacher Professional Development programmes should be incremental, interactive, continuously building on new skills and responsive to teachers' needs and areas for professional growth and career development. This will adequately prepare them to be able to deliver technology driven inclusive, equitable and quality education opportunities for all and lifelong learning.

2.5.3 Time as a factor of Designing of Instructions which Integrate (CBI)

Research has demonstrated that lack of time for CBI training, lack of time for designing CBI resources and lack of time for the actual use of CBI in classrooms and difficulty in accessing ICT resources are the critical issues when integrating CBI in classroom instruction. Galanouli and McNair (2001) noted two key problems experienced by teachers in integrating CBI as an exploitation of their personal time and lack of time provided for training in computer skills. In agreement (Robertson et al., 1996) observed that many teachers explained that it takes a lot of time to design a teaching resource and

if schools have a busy environment, then it would be a constraint for them to familiarize themselves with CBI. If managers of the schools do not provide ample time for teachers to interact with the emerging trends in CBIs, then little or no incorporation of CBIs in Social Studies classrooms will take place.

2.5.4 Availability of School Based ICT policy

Empirical studies showed that effective pedagogical use of ICT in instructional processes can be directly connected to a favourable policy environment. School-based ICT policy introduces the motivation to design a coherent, clear and workable community of practice linked with effective, regular, efficient and consistent use of ICT in instructional processes (Dawes, 2001). Common goods such as infrastructure and internet connectivity must be regulated through institutional policy. Users need to be made aware of the policies, and policies need to be monitored, to ensure that users comply (Cambridge Education, 2017). Additionally, the institution will have certain responsibilities, not least under Ghana's data protection legislation to safeguard personal data of users. The school-based ICT policies are connected to national ICT in education policies and programmes designed by the MoE, Ghana. The MoE facilitates pedagogical use of ICT in all schools but links this directly to the national examination system, the approved school curriculum, and in some situations teacher-centered instructional methods.

A school-based ICT policy itself will not automatically result in the adoption of innovations unless all stakeholders and practitioners involved in schools are aware and

willing to accept and work with these policies. Fullan (2006) reported that the adoption of ICTs in schools largely rest on the type of democratic process involved in designing, planning, and implementation of the change. If all these processes fairly involve all the school stakeholders, the needed change will be smooth. All things being equal if teachers share the vision, values and the aspirations expressed in a school-based ICT policy and its implications, the policy is more likely to positively influence practice.

2.5.5 Teacher Motivation to use CBI to Support Students Learning

Teacher motivation to use CBI to enhance the learning and teaching of Social Studies plays a critical role in the integration of CBIs in Social Studies classrooms. Ertmer (2005) discovered that teachers displayed less motivation to integrate CBIs in teaching and learning when they were not convinced that students will show a desirable outcome in performance during the learning process. Some teachers may also resist change because they do not see the need for changing the old ways of doing things. They assume that the new order must be a tried and tested one. For them, changing from the conventional method of instruction to the use of CBI is not acceptable. The argument some of them put across is that CBI has not proved to make any educational gains where it has been applied. They quickly point to Larry Cuban's argument that CBI is not what contributes to gains where gains were thought to have been recorded with CBI but that was due to effective administration and committed teachers. They think more attention should be given to the supply of better facilities for the schools rather than expensive CBI gadgets.

In disagreement, Zhao and Cziko (2001) cited in Gakime (2016), stated three conditions that are relevant for teachers to incorporate CBI into teaching and learning are first, teachers must hold the view that technology does not compromise the existing educational standards but is used to promote learning at all levels. Second, teachers must not hold a notion that incorporating CBI in their instruction is an addition of lesson workloads but rather should be seen as a resource that enhances quality learning and teaching. Finally, instructors need to be in charge of the classroom and not view technology as a replacement for classroom management. When teachers meet these conditions, they will be encouraged and motivated to integrate CBI in Social Studies lessons.

UNESCO Report (2008) suggested that teachers should have the following competencies to enable them to deliver to expectations of all: Appreciating how, when, where and why CBI strategies will lead to the achievement of instructional goals; and selecting from among a variety of ICT resources suitable to facilitate effective authentic learning among students; selecting CBI strategies and teaching pedagogies that incorporate technology into the entire curriculum; selecting and recommending CBI resources and teaching approaches relevant to individual learners' goals of learning; focusing on the quality of what learners can design and the responsibilities to their own learning goals and levels of achievement; designing learning instruction that permits the integration of CBI approaches and student-centered learning methods as and when needed and selecting resources and instructional approaches that permit teachers and

learners to be well-motivated, actively participate and be responsible for their own learning.

2.5.6 ICT Infrastructure

The availability of digital infrastructure in the school determines to a large extent the rate at which teachers can pedagogically apply digital resources in their instruction. Urwin (2005) cites Infrastructure in Africa as the main challenge to ICTs and CBI integration in classroom teaching and learning. Effective authentic learning cannot take place if transmission channels of communications are weak. Global Education Monitoring Report (2018) reported that Africa has only 22% of elementary schools connected to reliable electricity. In the year 2015, almost 40% of SHS head teachers in Indonesia and Jordan and 25% to 30% in Israel and Italy indicated that insufficient infrastructure significantly affected the effective teaching and learning. In Ghana, access to electricity increased from 83.24% in 2016 to 84.98% in 2020 (GOG Mid-Year Review and Supplementary Estimates, 2020). This presents an opportunity for the utilization of technology in the teaching and learning processes in schools.

Technologies especially the digital ones are transforming the world of work so rapidly. But labour markets have become more polarized and inequality is rising especially in the developed countries, but increasingly in developing countries (World Bank Report, 2016). So digital technologies have been spreading, digital dividends have not due to two reasons. First, almost 60% of the world's population is still offline and cannot actively participate in the activities of the 4th Industrial Revolution in a meaningful way.

Public- sector investments in digital technologies, in most developing countries, is limited. Globally, about 4 billion people lack access to the internet, almost 2 billion people lack access to mobile phones, and nearly half a billion live in geographical locations not connected to mobile signal (World Bank Report, 2016). The cost of setting up data systems in schools, training staff and learners, and maintaining data flows can be cumbersome in the developing countries.

The unfinished business of giving people an easy access to the internet which is one of the Sustainable Development Goals (SDGs) may not be achieved if the trend continues. In Africa, only 22% of primary schools have access to electricity (Global Education Monitoring Report, 2018). Learners with disabilities are reported to encounter challenges such as insufficient mobility equipment, negative social attitudes, lack of appropriate instructional resources, inappropriately designed buildings, lack of teaching aids and unsuitable curricula. In PISA Report (2015), heads of 40% of Senior High Schools in Costa Rica, Columbia, Jordan, Mexico and Indonesia indicated that infrastructure deficits significantly affected instructions. Even in developed countries like Israel, Ireland, Italy and Greece, almost 25% to 30% of schools revealed infrastructure deficits in schools.

In Ghana, some SHSs for instance, lack internet connection to enhance an effective and efficient application of CBI in Social Studies instructions. The supply of computers together with other infrastructure such as Local Area Network (LAN), Open Educational Resources (OER), the internet, and power, among others, to facilitate the effective quality lesson delivery with CBI is required. Teachers and students will have

several options to make in the selection of CBI strategies that can best help Social Studies students to gain the desired knowledge and skills. But in most developing countries, many schools do not have access to these types of ICT facilities due to insufficient investment in ICT by governments (Natia & Al-hassan, 2015). In Thailand, a private supplier of laptops for schools could not deliver 800,000 tablets, declined to pay late fees, terminated the contract and filed for bankruptcy (Global Education Monitoring Report, 2018). Governments should be in a position to strongly enforced education technology contracts better to guarantee equal access and utility.

The integration of CBI in Social Studies instruction must be supported by a corresponding change in the curriculum. However, the Social Studies curriculum for SHSs in Ghana has been silent on the integration of CBI in instructional processes. Again, computer penetration in most schools in developing countries especially in Africa including Ghana is slow and uneven as evidence in Table 2.1.

Table 2.1 Ratio of the Penetration of Computers at Schools in Some Countries in Africa

Country	Number of Schools	Schools with Computers	Percentage %
Ghana	32,000	800	2.5%
South Africa	25,582	6,651	22.6%
Namibia	1,519	350	22.1
Mozambique	7,000	80	1.1%
Total	66,101	7,161	48.3%

Source: NEPAD e- Schools Project, 2015

From Table 2.1, it is clear that none of the four African countries had up to 30% of computer penetration rate in schools. But many governments in Africa including Ghana have realized the positive impact of CBI in education and hence developed national ICT policies and ICT education strategies to guide on its integration for excellent educational outcomes. However, from the literature reviewed, it appears there could be a gap between theory and practice in some countries including Ghana due to the foregoing and other factors. To deliver universal digital access, governments must invest in digital infrastructure and pursue reforms that bring greater competition to telecommunications markets, promote public-private partnerships, and design effective monitoring and regulations. Governments should also listen and collaborate with ICT in education researchers so that words from researches can be translated into policies and policies translated into actions.

2.5.7 The Debate for and against use of Mobile Phones for Learning in Schools

CBI also called online learning requires digital tools such computers, laptops, projectors, television, radio, smart phones among others to flourish. The history of digital education indicated that most countries supplied these resources to educational institutions to support online learning activities. However, due to huge budgetary constraints, a new cost-effective alternative model has been developed and implemented dubbed Bring Your Own Device (BYOD), Bring Your Own Software (BYOS) and Bring Your Own Technology (BYOT) (Parsons, 2017) which allow users to choose and use technology not provided by the educational institution or the workplace where a task is to be carried out (Ghosh, Gajar, & Rai, 2013).

It was against this model that students in some countries were allowed to bring mobile phones to schools to support mobile learning. Mobile learning is the ability, assisted by mobile technologies to carry out learning activities anywhere at any time. Mobile learning heavily rely on the use of mobile technology. Recent data revealed that almost every secondary school student in Sweden have access to a personal mobile phone, in their own possession (Alexandersson & Davidsson, 2016).

But due to fear of change from the traditional methods of instructions, some educational institutions and policy makers have formulated policies banning students from bring mobile phones to schools for online learning (Pachler et al. 2013) cited in (Ott et al, 2017). Conflicts regarding mobile phone use in schools can be seen as tensions. Tensions can happen when two perceived opposing forces meet, brought together, for example, by infrastructure which connects users who hold varied views or by social practices and communities of practice which are not bodies of homogenous participants (Handley, Sturdy, Fincham, & Clark, 2006) cited in (Ott, 2017).

For example, in Sweden, like many other countries, there is expanded legislation permitting teachers and school authorities to implement stricter rules to cope with the presence of mobile phones in schools (Ott, 2014; & Skolinspektionen, 2016). However, some ambiguities have been identified related to the legislation. The legislation tasked schools to totally ban the use of mobile phones during school hours, and at the same time stated that mobile phones could be used in education (Skolinspektionen, 2016;

Skolverket, 2016 b). In Ghana, similar policy exist which prohibit SHS students from bringing mobile phones to schools for learning and other purposes.

Those against the use of mobile phones by students in schools cited the fact that it might create challenges such as access to inappropriate contents for the users' age, addictions, distraction of class activities, mental distress, might expose students to social vices, cyber bullying, and exposure to sexual predators among other factors. Following awareness of the problems mentioned above, various programs have been designed, including NetSpark, which enables the blocking and/or filtering of internet systems. In Israel, the management of schools has installed the program in the mobile phones of most of the students. The aim is, of course, ethical and compatible with the school's ideology: maintaining students' safe use of the internet at home and in school for online learning.

Research on mobile learning indicated teachers and students perceived the disruption of mobile-phone technology in learning environment differently. Mifsud (2014) reported that instructors are challenged by mobile learning as knowledge is distributed beyond the classroom, the space where teachers can exert their authority. Learners do not always accept using mobile phones in school but are generally less hostile towards mobile phones in school than faculty in higher education. Haifa University in Israel carried out a survey and concluded that almost 94% of secondary school students in Israel access social networks in class, and as little as 4% make no use of Smartphones during instructions. They added that the students used their mobile phones to surf the

web and social networks, listen to music, take pictures, play games, send text messages and photographs, and there was no moment during class in which no students were using a Smartphone (Haifa University, 2012) cited in (Davidovitch & Yavich, 2018).

In Ghana, literature abounds on the impact and reasons for mobile phone use but are tailored towards its impact on society rather than on the learning outcomes of SHS students. For instance, a survey by (Frimpong et al, 2016) which evaluated the impact of mobile phone usage on achievement of University students discovered that (93.5%) of respondents ever used phones during instruction (91.8%) used phones in class to facilitate learning of concepts. In addition, (80.5%) responded being distracted by mobile phones during instructions in the form of text messaging (27.6%), receiving phone calls (25.6%) and visiting social media (31.1%). The above data favors mobile phone use in schools. Although more research is needed on the subject, schools should allow students to bring mobile phones to schools to be used for online learning but under the strict supervision by their teachers.

2.6 Gender and Integration of Computer Based Instruction (CBI)

Gender variations and the use of ICT have been researched and documented in several studies. However, research on teachers' gender and ICTs integration have cited female teachers' low levels of computer use due to the possibility of limited access to technology, skills, and interest (Volman & Van Eck, 2001). Global Education Monitoring Report (2018) observed that there were higher gender gaps in ICT skills. Almost 75 women out of every 100 men could use basic arithmetic formulas in a

spreadsheet in the Netherlands, Germany and Italy. As these gender gaps has narrowed in some regions since 2013, it has widened in Africa. Digital Divide (DD) among men and women is a reality.

Presently, there were 4 billion internet users across the globe. However, only 22% of Africans have access to the internet (BBC News, 2020). In 2017, the overall internet penetration rate stood at 50.9% for men, compared to 44.9% for women. Also, the proportion of men making good use of the internet was higher than that of women in two-thirds of the developing countries (European Institute for Gender Equality, 2018).

In 2019, 1.7 billion women in low and middle-income countries did not own mobile phones and only 33% of women do. The Digital Divide in terms of access to and use of the internet is higher than 40% in some countries. The ICT Gender Parity Index (GPI) favours the males. While the mobile phone gender gap matters most, it is particularly problematic because it can exacerbate other significant forms of inequality-in earnings, education, networking, governance, opportunities, decision-making, and access to information. Promoting women's and girls' digital connectivity and literacy is critical to meeting the Sustainable Development Goals and sustaining women empowerment in an increasingly digitized world.

Gee & Umar (2014) in their action research to determine the Effects of Drill and Practice programme on learners' achievement and motivation in learning English discovered that there was no significant difference in the performance between male and female students. The study reported a significant difference in motivation score

between the female and the male learners, and while the female students scored significantly higher than the male students in the areas of relevance, confidence and satisfaction. No significant difference concerning the attention was documented between the learners sampled for the study. All learners should have equal access and opportunity to learn with technology regardless of sex, race, socio-economic background, age or disability. It is important for teachers to be re-oriented on the innovations required in the 21st Century Social Studies classroom management plans and teaching pedagogies that are student-centered, inclusive, fair and equitable to all learners.

Several gender evaluation models have been designed to address power relations between men and women and how these intersect with class, race, disability, religion and other forms of inequalities. Application of CBI in Social Studies education introduces a further dimension in gender relations, which interacts with the above issues in several ways. Issues of content, access, information, use, education, digital skills, language, privacy and security, and other forms of engaging with digital technology reflect and shape social and gender relations. Policies in Ghana over the years have attempted to capture and deal with some of these complexities from a gender equality perspective. However, little has been documented about female teachers' empowerment with digital literacy and skills to effectively integrate CBI in their teaching and learning.

It is significant to also look at gender and its influence on students learning with CBI. Empirical studies on the impact of gender on students learning outcomes have been and

will continue to provoke debates for some time. For instance, in his Quasi-Experimental study that examined the impact of CBI on students' performance in Art and Design in Kenyan Secondary schools, (Kinyua, 2017) found that gender had a significant impact on the performance of learners. The study further revealed that girls' SHSs had superior performance in Art and Design than boys' SHSs with girls' schools scoring 52.77% while boys' schools recorded 49.23%. However, the research was only limited to students' performance in Art and Design and not all subjects in the SHS curriculum. In contrast, Akanmu (2015) research on the impact of GeoGebra Package on learners' achievement in Mathematics discovered there was no significant difference in students' performance based on gender. Akanmu's study, however, failed to indicate whether other variables influence change in students' performance observed. World Bank Report on learning (2018) discovered mixed findings when it concluded that in all countries girls outperformed boys on reading but boys perform better in Mathematics and Sciences. In another Experimental study on the effect of CBI on learner achievement in Chemistry in Kenya, (Nduati, 2015) found that the use of CAI promoted mastery of Chemistry for boys compared to girls ($P=0.023$).

In agreement, a study by Julius, Twoli, and Maundu (2018) that explored Effect of CAI on learners' Achievement in Chemistry among some selected SHSs in Kenya found that there was a significant gender difference in Chemistry performance in favour of girls, with girls achieving higher scores in Chemistry than boys. These findings mean the integration of CAI improves girls' performance in Chemistry than boys. Therefore, girls gain more than boys when taught with CAI, hence are more receptive to stimulus

variations. Girls' SHSs instructors should incorporate CAI in their teaching because of its outstanding impact on bettering girls' performance. The governments in Africa and particularly Ghana should offer adequate ICT facilities to enhance CAI to enhance lifelong learning among students.

Girls are sometimes denied chances to gain ICT related skills and knowledge in some schools, especially in developing nations. This limits their acquisition of digital literacy and confidence that might enable them to access and use CBIs tools in the school context. Due to the crucial role that education has to play in opening-up ICT-related opportunities, access to education is identified by gender equality activists as one critical issue involved in enabling girls of all ages to benefit from the ICT innovations (Patel, 2013). Technologies should be equally accessible to boys and girls. As girls enter adolescence, most of them tend to lose interest in Science, Mathematics, and ICT (Nduati, 2015). This may could be due to different expectations and treatments given to them by instructors, which divert girls from Science and Technology.

Several strategies can be used to address these gender differences in computer attitude and use. The following has been suggested by the American Association of University Women, 2002). Development of a positive computer culture: Teachers need to establish a clear set of rules and behaviours for using computers; a co-operative, supportive atmosphere needs to be emphasized; time for computer use by the children should be strictly monitored and supervised and Girls should be encouraged not to give up too

quickly; teachers should offer thoughtful support and hints instead of doing the task for them (Ndauti, 2015).

In terms of Ghanaian context, there seems to be a gap in the literature on how the gender of public SHSs Social Studies teachers affects their ability and readiness to incorporate CBI in their instructions. A gap also existed on the relationship between teachers' demographic characteristics and their level of CBI integration in Social Studies instruction. This study, therefore, sought to fill these gaps by first of all examining the impact of Social Studies teachers' age, gender, and experience on CBI integration in their instructional processes.

2.7 Age and the Integration of CBI in the Teaching and Learning Process

It is important to take a critical look at age as a variable and how it influences teachers' and students' application of CBI in the process of learning and teaching. Age is assumed to be a factor related to computer use in learning and teaching contexts. Existing findings show mixed results on the existing relationship between the instructor's age and the use of technology tools such as CBI. Age is viewed as one of the independent variables that may likely affect the academic performance of learners at any point in time. The maturity and cognitive development are associated with age and are necessary for learners' academic performance. The age of the individual, as it increases, usually affects the various developmental changes. It also affects every area of human performance. Therefore, it has become incumbent to investigate the extent to which age affects the academic performance of learners learning with CBI.

Pianta and La Paro (2008) presented evidence that older children fare better academically than their younger peers. On the other hand, Gilmore (1985) researched the relationship between age and academic achievement and argued that the older students in a class fare better than younger classmates. In contrast DeMeis and Stearns (1992); Dietz and Wilson (1985) found no significant relationship between age and academic achievement. They found a significantly higher achievement of the oldest as compared to the youngest students at age nine, but this difference disappeared by age seventeen. Academic performance is a result of personal determination, cognitive development and motivation as well as several other positive correlates. Other researches such as Aghadiuns (1992) found that age does not significantly influence academic performance even if other variables such as the method of instruction and the level of motivation do.

In their study on basic schools teachers' use of CBI, Bariham et al (2019) found that the young teachers incorporated CBI in their of Social Studies instructions than older ones. In contrast, Lau and Sim (2008), on their part found out that older teachers were frequent users of ICT tools for classroom instruction than their younger counterparts. In a finding similar to this, Buabeng-Andoh (2012) attributed high rate of ICT application among teachers with more years of experience in teaching. With regards to Ghanaian context, there seems to be a relatively scarce literature specifically on how the age of the public SHS teachers' affects their readiness to incorporate CBI to their instructional processes. This study, therefore, sought to seal this research gap by investigating the

impact of Social Studies teacher's age on CBI application in the teaching and learning of the subject.

2.8. Challenges Teachers Faced when Employing CBI in Social Studies Instruction

The literature on the challenges teachers faced in their desire to integrate CBI in their lessons discovered varied findings. Some scholars have divided these barriers into two categories, extrinsic and intrinsic. In one study, Ertmer (2005) referred to extrinsic as first order and cited access, time, support resources and training. Intrinsic barriers as second-order and cited attitudes, beliefs, practices and resistance to change. In agreement, Asan (2003) asserts that the lack of teachers' and learners' competencies appears to be one of the significant obstacles to the effective utilization of the CBI in learning and teaching settings.

Nikolopoulou and Gialamas (2016) conducted a quantitative study involving 119 secondary school teachers in Greece. The aim was to investigate high school teachers' perceptions of barriers to using computers in class. The finding exposed limited funding, absence of internet access and a large number of pupils in classes were as the major perceived barriers to the use of computers in SHSs. Three barrier-factors were extracted, namely; lack of support, lack of confidence, and lack of equipment as barriers to female teachers application of technology in learning (Nikolopoulou & Gialamas, 2016).

In Africa, empirical studies on barriers to teachers' use of CBI in teaching and learning are derived from primary and secondary education settings. For instance, (Agyei & Voogt 2011; Julius 2018; Tapera & Kujeke 2019; Bariham et al., 2019;) have reported several barriers teachers faced when attempting to integrate CBI in their classrooms such as lack of access to resources, lack of confidence among teachers, lack of time, lack of training opportunities, technical problems, lack of knowledge about ways to integrate CBI in instruction and poor administrative support.

Again, research has discovered that some of the training programmes for teachers relied so much on basic ICT operations rather than the advanced computer skills and subject-specific pedagogical and content knowledge. The effective integration of ICT in education demands new teacher responsibilities, new pedagogies, new resources, and new approaches to instructions to enhance authentic learning among students. For the teacher to accomplish the above, they must have some basic CBI skills, else the teachers will be unable to use technology as a primary tool for teaching and learning across the school curriculum. The learning crisis is real, but very often most educational systems across the globe operate as if it is not. Many policy designers and implementers do not appreciate how low learning outcomes in schools are presently. In some countries, the assumption is that high enrolment and long years in school equal to higher learning which could be faulty in most cases. While some people do not accept the fact that a learning crisis exists in schools, others equate low learning with low resources (World Bank Report, 2018).

Omariba (2016) in her study on teachers' preparedness for the integration of ICT among some selected training colleges in Kenya identified lack of competence, insufficient facilities, limited teachers ICT skills, lack of ICT policies on the integration, and lack of college administrators support as barriers to the effective implementation of ICT in instructional processes. Miima (2014) shared a similar opinion when she pointed out low teachers ICT skills as barriers to the effective utilization of CBI in the instruction of Kiswahili in Kenya secondary schools. However, the above literature focuses more on the teacher relegating the learners to the background.

In Tanzania, Malekani (2018) study involving 60 secondary school students and 20 teachers at Morogoro Municipality reported that though teachers and students seem to be aware of the application of ICTs into teaching and learning, schools did not have enough facilities to make effective utilization of the technology in instructional processes. The teachers revealed that they did not have any in-service training aimed at equipping them with knowledge and skills to pedagogically use ICT to support students learning, poor internet connectivity, absence of standby power, and lack of school-based ICT policies hampered the utilization of technology in teaching and learning in the selected schools. Educators are likely to deliver if held accountable for their decisions rather than outcomes beyond their domain.

In Ghana, Natia and Al-hassan (2015) surveyed Ghanaian basic schools application of ICT for learning and teaching. The findings show an inadequate number of computers at Primary schools (4%), compared to Junior High Schools (10%). They further cited

electricity fluctuations, low technical know-how, and lack of access to the internet as barriers to the effective integration of ICT in instructional processes. However, the study did not capture the situation at senior high schools. In a similar study, (Bariham et al., 2019) discovered a lack of digital resources, insufficient time, lack of technical support, power fluctuations, lack of internet, and lack of school-based ICT policies as barriers to the effective and efficient integration of CBI in Social Studies instructional processes.

2.8.1 Challenges Faced by Students when Integrating CBI in Social Studies Learning

Learners face several challenges when learning with CBI. As teachers integrate CBI into curricula, it is significant to specify the goals for the technology use. The fact is that not all learners will use ICT facilities the same way. Odhiambo (2013) conducted mixed research involving 24 teachers and 320 students to evaluate the application of ICT in instructional processes in SHSs in Homa-bay County, Kenya. The findings discovered that students were motivated and able users of ICT. Their ICT skills were wide, although not necessarily adequate. The students' pedagogical use of ICT was hampered by limited access to the internet and poor digital communication skills. The study falls short of illustrating the impact of the technology-assisted instruction on students' performance.

Malekani (2018) conducted a survey to determine ICTs use among some selected secondary schools in Morogoro municipality, Tanzania. In all, 60 secondary school

students and 20 tutors took part in the research. The findings show that though tutors and students ICTs awareness was high, the schools did not have sufficient facilities to facilitate ICTs application in learning and the few ICT resources available were not properly used. Again, the tutors indicated that they had no in-service training related to ICTs integration in learning activities. It was also observed that low bandwidth (resulting in poor internet connectivity or slow speed), lack of standby power, lack of policy and training schedule hindered the effective utilization of ICTs in the teaching and learning in the sampled schools (Malekani, 2018). The study, however, did not tackle the level of preparedness of school heads to direct the entire process in terms of vision and management. In Ghana, the most difficult issue SHS students face when learning with technology is a regulation that prohibits SHS students from using phones in schools.

2.9 Strategies to Overcome the Challenges faced by Teachers and Students to Enhance the Effective Integration of CBI in Social Studies Instruction

Various scholars have outlined several approaches to overcome the problems faced by students and teachers and to enhance the effective and efficient use of CBI in instructional processes to stimulate lifelong learning. For instance, Miima (2014) carried out mixed research that examined the integration of ICTs in Kiswahili instructions among some selected public SHSs in Kenya. The research recommended the need for government and NGOs to supply schools with ICT tools; in-service training for capacity building on how pedagogically use ICT during instruction; the need for more time for the integration; development of relevant e-content; supply

schools with generators and solar panels; and hire more ICT technicians as strategies to improve the integration of ICT in Kiswahili instruction.

Similarly, Omariba's (2014) study outlined the training of teachers; government to supply schools with ICT tools; government to connect all schools with electricity; equip students' at the lower level with basic ICT skills; teachers should slow down during CBI, and the need for government to hire more experienced ICT teachers as measures to improve teachers' integration of technology in the instructional processes. Kinyua (2017) recommended the need for a national level support aimed at the gradual planning for the application of digital resources in all schools through improving digital infrastructure, and training of teachers to acquire computer skills and competencies for effective integration CBI in instructional processes.

In her study on ICT application by secondary school teachers in Cameroon, (Kennah, 2016) identified the creation of teacher professional development programmes; transforming national curriculum to give room for the integration of CBI in the curriculum framework; drawing flexible time tables that offers adequate time for CBI integration; providing funds for teachers professional development programmes instead of purchasing more computers annually; channeling adequate funds into moving ICT facilities into classrooms as opposed to the building of multimedia centers; making in-service training must for all teaching staff; providing easy access to ICT resources for teachers and students regardless of their areas of specialization; and offering teachers

and students easy access to reliable broadband networks supported by high-speed internet.

In Ghana, Natia and Al-hassan (2015) recommended the need for strong, robust, and sustainable Public-Private-Partnership between the private sector, civil society organizations, and the GoG to fashion out strategies and interventions to deal with the obstacles confronting the smooth implementation of CBI use in educational institutions. Similarly, Yalley (2017) in his position paper on Social Studies education in Ghana suggested the need for periodic capacity building programmes for teachers on CBI integration; the need for the MoE and the GES to monitor and supervise teachers on the integration of CBI in Social Studies instructions; and the need for the teacher training institutions in Ghana to adopt Mishra and Koehler ICT integration model dubbed “TPCK” when designing course content for Social Studies student teachers. This will adequately prepare the teachers for an effective application of CBI in Social Studies instruction.

Since education has varied forms, purposes and components, quality issues may arise on any significant aspect of the system: school blocks, infrastructure, administration, teacher training, learning and teaching resources, quality of teaching, or level of learners’ performance. These variables are directly linked and a deficit in one variable will imply for the quality of the others. The plans about the application of ICTs and their connection with improving quality education can be considered because of overall strategic goals of education development.

2.10 Summary of Existing Gaps in the Literature Reviewed

The integration of CBI into instruction is an ongoing and developing issue. The literature reviewed took an overview of the concept of Social Studies, the Rationale for the inclusion of Social Studies in Ghana's SHS curriculum, and the Place of Secondary Education for national development in Ghana. Other issues discussed include the concept of CBI and its types, and potentials, teachers' perceptions of the integration of CBIs in Social Studies instruction, school preparedness for the integration of CBIs, challenges encountered and the way forward. Finally, the influence of teachers' characteristics such as age, gender, and experience on the integration of CBI was also discussed.

It was clear that the slow rate of application of ICT resources in many schools was due to factors that existed which influenced teachers' use of technology in classrooms. The rationale for integrating CBI in Social Studies instruction has been reviewed in this chapter which discovered factors that affect Social Studies teachers' propensity to adopt technology in their instructions. There seems to be limited literature that explored those factors that influence SHSs teachers' decisions to integrate CBI in Social Studies teaching in the Northern Region, Ghana.

Technology application in education is a relatively new and evolving phenomenon. And teachers' pedagogical practices and philosophies are greatly influenced by their classroom experiences over time. Knowledge gap especially focusing on the integration of CBI in Social Studies instruction among SHSs in Ghanaian context existed. Ghana's

ICT in Education Policy (2015) for instance offered a platform for Mathematics, English and Integrated Science teachers to be trained on how to integrate CBI into learning activities of their respective subjects. However, Social Studies teachers were not included in the project. Again, GES has a policy that bans SHS students from using mobile phones in schools. This and other factors could have been responsible for the limited utilization of CBI in Social Studies instructions. Social Studies curriculum SHSs was also salient on CBI integration in instructional processes.

The existing literature was again silent on the relationship between teacher characteristics such as gender, experience, age, and school location and their integration of CBI in Social Studies instruction. This study, therefore, sought to enrich previous studies and test the interplay between schools and teachers' variables, and their influence on the implementation of CBI in Social Studies instructions in Public SHSs in the Northern Region. Also, the detection of barriers that may be contributing to the slow uptake of integration of ICT in instruction offers useful information to supplement existing literature especially when designing in-service teacher training programs for Social Studies tutors.

The literature reviewed in this section revealed positive and negative school heads, teachers and students' perceptions of CBI globally. Teachers with additional experience using technology reported more positive perceptions of CBI than teachers with limited experience using technology for instruction. Specifically, teachers demonstrated positive perceptions related to using CAI to monitor students' progress and use of

students' data to drive classroom instruction. However, studies on this scenario in Ghanaian senior high schools were relatively scarce. This study has filled that gap in the literature through the identification of SHSs head teachers, teachers, and students' perceptions of CBI as tool for Social Studies instruction.

Schools, teachers, and students' level of preparedness for the implementation of CBI significantly determine whether they will adopt CBI in their instructional processes. Several studies in Ghana has been conducted on these issues. However, those researches limited their scope to the scenarios in the southern part of the country. This study came in to fill that deficit in the literature by assessing SHSs, teachers' and students' level of preparedness for the application of CBI in Social Studies pedagogy in Northern Ghana. The literature reviewed in this section found that teachers and students encounter several challenges when employing CBI in Social Studies classrooms. Several suggestions of strategies to deal with those challenges were outlined.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter of the research describes the kind of methodology employed by the study. It covers the following themes; research design, variables, study area, target population, sampling procedure, sample size determination, instrumentation, piloting the study, validity and reliability, procedures for data gathering, plan for the analysis of the data and ethical and logistical considerations.

3.2 Research Design

The convergent parallel mixed research design was adopted for the study, employing both quantitative and qualitative approaches. A mixed method focuses on collecting, analyzing and mixing both quantitative and qualitative data in a single study or series of studies. Mixed research approaches gather and analyze both quantitative and qualitative data; interpret two forms of data in different ways; provide priority to one or both forms of data; and can be in single study or multiple phases of a study (Bian, 2020). Bian further provided some examples of mixed research designs to include convergent parallel design, embedded design, multiphase design, transformative design, exploratory sequential design, and explanatory sequential design.

The philosophy guiding the selection of the convergent parallel mixed research design for this study was due to the fact that one single approach was not adequate and hence the gathering and analysis of both qualitative and qualitative data was significant so that

one set of data plays a supportive role of the other and also offer a better appreciation of the research problem than either alone. Similarly, Creswell et al (2011) observes that the integration of both qualitative and quantitative strategies generates a variety of data that help to effectively and efficiently address the objectives of the study. Figure 3.1 captured the convergent parallel mixed research design applied for the study.

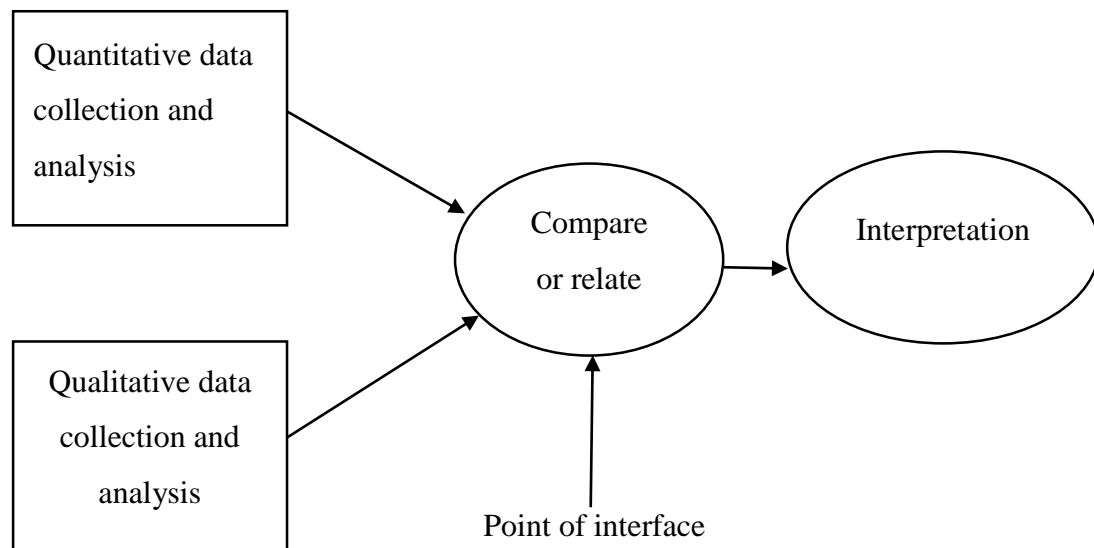


Figure 3.1 Convergent Parallel Mixed Research Design (Adopted from Bian, 2020)

The data collection and analysis of the qualitative or quantitative data types may happen before, during, and or after the application of the data collection and analysis procedures connected with the traditional research design. In this research, both quantitative and qualitative data were collected concurrently and analyzed, results of which were compared as captured by Figure 3.1. Both the qualitative and the quantitative data strands were then mixed for final interpretation and reporting.

The quantitative data were collected and applied in reporting the general demographic characteristics of the participants, their perceptions of CBI, level of preparedness, and extent to which they integrated CBI in Social Studies instruction and also provided a platform to test the hypotheses to ascertain the relationship between the independent variables and the dependent variables. The qualitative data, on the other hand, enabled the researcher to probe further for additional information about the issues under study. The rationale for collecting both quantitative and qualitative data as advised by (Creswell, 2014) was to sustain the strength and improve the weaknesses of the two designs.

3.2.1 Variables

Three main variables namely dependent variables, intervening/extraneous variables and independent/predictor variables were targeted in this study. The independent/predictor variables has three categories thus, school-related preparedness, teacher related preparedness and students' related preparedness. Elements such as teacher's ICT skills, training on the pedagogical use of CBI in teaching, teacher's access to personal computers, teacher's experience, age, gender, teachers perception of CBI and perceived self-confidence in computer use are the teacher related preparedness which may dictate teachers' capacity to use CBI in Social Studies instructions.

Elements of school-level preparedness include encouragement from peers to use CBI, support from school management, technical support, departmental support, and access to relevant software and hardware. The elements of students' related preparedness

consist of students' gender, ICT knowledge/skills, computer ownership, and attitude or perceptions of CBI. The intervening or moderating variables in this study included curriculum content, policy requirements, and teacher's workload. Finally, the extent of application of CBI in teaching and learning of Social Studies were the dependent variable/outcome variable.

3.3 Study Locale

This study was conducted in Public Senior High Schools in the former Northern Region of Ghana. In terms of Geographical space, the former Northern Region was by far the largest in the country. It covers 70, 384 kilometers square. Politically, it consists of twenty-six (26) districts and thirty-one constituencies. Presently, two new regions (North East and Savanna) regions have been carved out of the Northern Region. Northern Region has been chosen for this study because the performance of SHSs students at the WASSCE in the region has not been satisfactory over the years.

Critical indicators of education delivery in the Region are very low and far below the national average. Poor learning outcomes of students have been a major issue in the area. However, performance-based pay linked to students' test scores should be avoided because there is little evidence of its impact on students learning outcomes, and it does not increase the motivation of the educators. Linking learners' performance to teachers' salary reduces equity and quality. Currently, there are 450,000 Out-of-school Children who are mostly from the poorest households and within the five northern regions (Ghana Education Strategic Plan, 2018-2030).

The factors responsible for high number of out-of-school children are early marriages, teenage pregnancies, and long distances to schools, parental illiteracy, and lack of teachers in some school among others. At the SHS level, learning outcomes have been unsatisfactory for some time now. For instance, results from the West African Senior Secondary Certificate Exam (WASSCE) have been poor for both core and elective Science and Mathematics subjects, particularly in 2015. These results diverge substantially across regions, with the five northern regions performing most poorly.

Gender disparities in performance, to the detriment of girls, exist across all regions for Mathematics, English, Integrated Science, and Social Studies in the five northern regions. There are huge disparities even within the same region: in some schools, nearly 100% of students passed grades of A1 to C6, and in others, 0% do so (Ghana Education Strategic Plan, 2018-2030). Weak accountability in the education system allowed the key players in the sector to get away with these abysmal performances. However, citizens can help hold teachers, schools and other key actors of education accountable. But critics argue that using students test scores in summative evaluation to hold schools and teachers to account is unfair, because the results are heavily determined by factors outside the teachers and schools control. However, accountability in education is non-negotiable because accountability determines the way instructors teach, learners learn, and how governments govern. The regulatory and legal frameworks to accountability are the backbone of a well-functioning state and must not be compromised.

Northern regions also house the largest number of illiterates' people in Ghana. For example, out of 1.2 million illiterate adults in Ghana, a large proportion of them are in the five northern regions and within the lowest income quintiles (Ghana Education Strategic Plan, 2018-2030). It was against this backdrop that the Northern Region was sampled out of the then 16 regions in Ghana for the study. The Northern Region is the geographical area where the selected public SHSs are located. The data were amassed from 12 Senior High Schools across eight towns in the region as illustrated in Appendix F.

3.4 Target Population

The target population is a set of people or objects the researcher wants to generalize the results of a particular study (Goko, 2012). In agreement, Kothari (2004) defined the target population as all the members or objects involved in a study. Therefore any category of people or objects with shared characteristics that the researcher can spot and carry out research on is the target population (Creswell, 2012). The target population in a survey describes the total set of units in which the survey data are to be applied to be able to make deductions, inferences, and generalization.

In this study, the target population included students, Social Studies teachers, Northern Regional Director for ICT and heads of SHSs. All the 7,786 form 3 students from the 12 schools, 107 Social Studies teachers, 12 school heads (headmasters/headmistresses) and 1 Ghana Education Service Northern Regional Director of ICT was the target population for this study as illustrated in Table 3.1.

Table 3.1 Target Population for the Study

Schools Coded With Letters	Enrolment of Form Three Students	No. Social Studies Teachers	No. of School Heads
A	586	8	1
B	604	8	1
C	862	8	1
D	812	10	1
E	702	10	1
F	706	10	1
G	666	8	1
H	622	9	1
I	751	9	1
J	512	9	1
K	504	8	1
L	459	10	1
Total	7,786	107	12

Source: Baseline Data (2018)

The total population targeted for the study was 7,906 respondents. The researcher obtained the list of public senior high schools from the Ghana Education Service.

3.4.1 Schools

In this study, the target population of schools included all the 12 public SHSs in the Northern Region of Ghana. According to Ghana Education Service Statistics (2018/2019), there were 55 public SHSs in the Northern Region with a total enrolment of 66,596 students. This population was too large for the study. Therefore, the researcher sampled 12 public SHSs (representing 21.8%) for the study using a simple random sampling technique. This sample was sufficient for the research because it was

far above the minimum of 10% recommended by Amedahe (2002) cited in Israel (2009).

3.4.2 Respondents

All the students, Social Studies teachers, Regional Director for ICT and school heads were targeted for this study. The inclusion of the students was due the fact that they directly received instructions from teachers hence they were in a position to give information on the extent to which Social Studies teachers integrated CBI in instructions, and the challenges they encountered and the way forward. Social Studies teachers were involved in the research to allow the researcher collect data on their perceptions about CBI, their level of preparedness for CBI integration in their instructions, the extent to which they integrated CBI in their instructional processes, challenges encountered and the strategies to overcome the challenges.

The Regional Director for ICT in education was sampled for the study because he was directly responsible for the training and supervision of teachers to ensure they pedagogically use ICT in their instructions to improve on the quality of students learning outcomes. He also had enough knowledge and experience in Ghana's ICT policies and the implementation of CBI in teaching and learning. Due to their peculiar duty as first level supervisors of the Social Studies teachers and students, school heads were sampled to participate in the research. They had sufficient knowledge on the level of preparedness of their schools in terms of digital infrastructure suitable for the application of CBI in instructional processes. They also have knowledge and competencies to offer information on the level of teachers and students perceptions of

CBI integration, the extent of CBI integration in their schools, challenges encountered and the way forward.

3.5 Sampling Techniques and Sample Size

3.5.1 Schools

The sampling procedure is a description of the strategies the researcher employed to select representative subjects or respondents from the target population (Oso & Onen, 2009). At the time of the research, there were 55 public SHSs in the Northern Region. Using random sampling, 12 public SHSs were selected for the study representing (21.8%) of the target population. Cohen, Manion, and Morrison (2011) observed that when working with a smaller population, a sample of 20-30% is acceptable in surveys. This method was, therefore, appropriate for the researcher to generalize the findings of the study for the entire region.

Hat lottery technique was used to randomly select 12 SHSs for the study. The names of all the 55 schools were written on pieces of papers, shuffled and kept on a basket. 12 people were then asked to randomly pick one each. All the 12 schools randomly picked through this method formed part of the study. This technique provided an equal opportunity for all schools to have chances of being selected to participate in the study.

3.5.2 Social Studies Teachers

Out of 107 Social Studies teachers from the 12 SHSs, 84 teachers representing (78.5%) were randomly sampled for the study with 7 teachers from each school. The random

sampling strategy was suitable for the selection of this group of respondents because it permits all teachers within the study to have an equal opportunity of been selected for the research. The findings of the research were representative of the entire target population.

The sample size for teachers was calculated using Yamane (1997) statistical procedure for sample size determination. The formula is stated as:

$$n = \frac{N}{1 + N(e^2)}$$

Where:

n = Sample size;

N = Sample frame

1 = Constant

e = margin of error (considered at 5%)

The sample frame (total population) of Social Studies Teachers was 107. This implies N = 107 and e = 0.05.

Therefore:

$$n = \frac{107}{1 + 107(0.05^2)}$$

$$n = \frac{107}{1.2675}$$

$$n = 84$$

This means that 84 teachers were sampled for the study.

3.5.3 Students

Also, from the target population of 7,786 form three (3) Social Studies students enrolled in the 12 schools, the researcher randomly sampled 972 form 3 students (at least 81 students from each school) for the study. The sample size was estimated using the formula propose by Yamane as:

$$n = \frac{N}{1 + N(e^2)}$$

Where:

n = Sample size;

N = Sample frame

1 = Constant

e = margin of error (considered at 3%)

From the study, total population of Form Three (3) students was 7,786. This implies that N = 7786; e = 0.03

Therefore,

$$n = \frac{7786}{1 + 7786(0.03^2)}$$

$$n = \frac{7786}{8.0074}$$

$$n = 972$$

While taking confidence level of 97% (Isreal, 1992; Yamane, 1997). As Iarossi (2006) observed, using proportional allocation, the 972 respondents were proportionately

distributed among the 12 public Senior High Schools in the Northern Region of Ghana sampled for the study.

A class register was used to support in the selection of the sample size. The odd-even technique was employed whereby every 3rd 5th 7th 9th 11th 13th among others were sampled to participate in the study. The number of students in each class differs between 40-60 or more. The study sampled 972 year (3) students for the study. Form 3 students were sample for the research because they have spent lot of years in the schools and hence are in a better position to offer credible information on the issue under study. Also, research ethics forbid researchers from engaging minors in research. The form 3 students per their years in school are likely to be adults and hence were allowed to participate in the research. The number of participants selected for this research is shown in Table 3.2.

Table 3.2 Sampling Matrix of Participants for the Study

Respondents	Population	No. Sampled	Percentage (%)	Confidence level
Social Studies Techers	107	84	78.5	95
School heads	12	12	100	100
Students	7,786	972	12.4	97
Regional Director of ICT	1	1	100	100
Total	7,906	1,069		

Source: Statistical Unit (GES-Regional Office, Tamale)-2018/2019 Academic Year

3.5.4 School Heads

Purposive sampling was employed to select 12 school heads from each of the 12 sampled schools to take part in the interview. Again, purposive sampling was used to select the Northern Regional Director of ICT to participate in the interview. These people by their status are better placed to provide credible information on the issues under study. The interview enabled the researcher to collect further information on critical issues that may require further clarification from this group of informants.

3.6 Research Instruments

The researcher considered the study objectives and the sources of information that will be available in choosing the methods appropriate for the data collection for the research. Also, the researcher took into consideration how the information will be organized, analyzed, interpreted and then reported to various audiences. The research employed a variety of research instruments as suggested by Creswell (2014) that the use of complementary methods reveals discrepancies since a single method can neither be sufficient nor reliable. Questionnaires, interviews, and checklist were the instruments employed to gather the data for this study.

3.6.1 Questionnaires for Social Studies Teachers and Students

The data for the study were collected using questionnaires. Mugenda & Mugenda (2012) reported that researchers employ questionnaires to some samples of a population to learn about the distribution of characteristics, attitudes or beliefs. In this study, the five points Likert scale questionnaires were designed with several items structured into

response categories. Open-ended questions and closed-ended questions were used which enabled the participants to discuss the issues without their responses being restricted. Closed-ended questions included a variety of choices from which the respondents have to choose from. The items were designed by the researcher and given to the supervisors for correction before been used to gather the data for the study. The questionnaire was modified during the piloting to check its authenticity and reliability.

The questions were examined for the biases, sequence, clarity, and validity of the responses. The questionnaires were administered to Social Studies teachers and students to determine their perceptions toward CBI, their level of preparedness, the extent to which they integrate CBI in their teaching and learning and challenges encountered using CBI in classrooms. Refer to Appendix A and B for details of the questionnaires.

3.6.2 Interview Guide for School Heads and Regional Director of ICT

The Interviews offered the opportunity for the researcher team to obtain clear data on specific issues in the study. In the view of the Cresswell (2012), interviews allow researchers to probe further for more detailed information from respondents. Hence, the researcher focused on the views of fewer people in greater depth (Curry, Nembhard & Bradely, 2009). Glesne (1999) observes that social realities are a construct of the respondents in social contexts. To appreciate these constructed realities, “qualitative researchers interact and talk with participants about their perceptions...to find out the variety of perspectives; they do not try to reduce the multiple interpretations to a norm.”

In this study, the interview offered the researcher team the opportunity to ask for further clarification from the heads of schools and Regional Director of ICT on their perception of CBI, the level of teachers' preparedness for the integration of CBI in instruction, the extent of integration in the teaching and learning of Social Studies, challenges encountered, and the way forward. Two interview schedules-one for 12 head teachers and the other for the Regional Director of ICT were applied in this study. The suitability of interviewing as a research instrument for the data collection was that it helped the interviewer to cover all aspects under inquiry by probing of the respondents. Refer to Appendix C and D for details of the interview schedules.

3.6.3 Checklist

The researcher visited the selected schools to check the conditions and suitability of ICT infrastructure. The researcher also visited ICT laboratories and Social Studies Departments to inspect the conditions of digital resources to determine if they are suitable to support CBI integration. Questions on the checklist were given to the researcher's supervisors to correct errors, biases, and ambiguities before using it for data collection. Refer to Appendix E for the details of the checklist employed to collect data for the study.

3.7 Piloting of the Research Instruments

To establish the validity and reliability of the research instruments, a pilot study was conducted on 2 SHSs randomly sampled in the region on the same phenomenon. The piloting helped the researcher to ascertain whether the research instruments were

connected to the study objectives and to determine the duration needed for responding to the items on the instruments. It also enables the researcher to also identify and rectify inconsistencies, discrepancy, ambiguities and misinterpretation of the research instruments.

During the pilot study, the researcher restated and clarified some items that seemed difficult to the informants. It also helps to establish the clarity of the language used in the items on the research instruments. In all, 160 questionnaires were administered to form three (3) students in the two non-sample schools, 2 school heads were interviewed, 8 Social Studies teachers completed the questionnaires and 2 checklists for school digital infrastructure were used to collect data from the 2 schools during the pilot study.

3.7.1 The Validity of the Research Instruments

Validity refers to the extent to which a test measures what it purports to measure (Orodho, 2004). In other words, validity is the extent to which the scores from a measure represent the variable they are intended to measure. The tests for validity include content validity, face validity, criterion validity, and discriminant validity. For content validity, the survey items should identify specific ICT technologies that could possibly be used by teachers. To ensure content validity, the resulting survey was reviewed for clarity and correlation to research objectives by a statistician, subject expert and researcher's supervisors. In addition to content validity, the subject experts reviewed the survey for face validity. To ensure validity, multiple sources of evidence, namely; a quantitative Likert scale questionnaire and an open-ended questionnaire were

used in order to explore the extent of SHSs' preparedness for the application of CBI in Social Studies instructions and to triangulate the findings.

Triangulation is the combination of different research methods in the study of the same issue. It involve the application of multiple data sources in a particular study to provide a more precise appreciation of the issues under study (Honorene, 2017). Triangulation, therefore, means the use of two or more methods of data collection in a single study. The aim is to obtain the validity of the study by applying different methods to collect the data on the issues which involves different categories of samples as well as techniques of data collection. Triangulation is the most appropriate strategy for illustrating concurrent validity in qualitative and quantitative design (Cohen et al., 2011). Results from the interviews were recorded, transcribed and returned to participants to check for authenticity, accuracy, and resonance with their experiences before acceptance for final analysis. However, the most popular and valid criticisms against qualitative research are three, namely; qualitative research lacks reproducibility; outcomes cannot be generalized because large volumes of the data are obtained from a small population; and is subject to the researchers bias (Atuguba, 2018).

To establish validity or trustworthiness of a qualitative data, Miles et al (2014) cited in Cannon (2017) outlined four key issues to look at, namely; credibility, transferability, confirmability and dependability. Member check also called participants validation and triangulation were used to establish the credibility of the data from the interviews. The researcher achieved triangulation by collecting data from multiple sources by means of

questionnaires, interviews, and checklist. The findings and conclusions from case studies are likely to be more accurate and valid if relied on information from several sources (Yin, 2014). Member check strategy was employed to authenticate the accuracy of the data obtained from the interviews of school heads. Researchers are under obligation to verify and validate research findings, data interpretation and conclusions made from the research respondents (Merriam, 2009).

Transferability of research refers to the extent to which data interpretations and the findings of a qualitative study can be transferred into other contexts or settings (Cannon, 2017). In this study, transferability was achieved through rich, thick description of the settings, and the direct quotations (anecdotal) from the interviews. Direct quotations and thick description of the data in a study can provide an appropriate grounds for, and test of, the conclusions of a study (Maxwell, 2012) cited in Cannon (2017).

Research dependability is the degree to which the researcher's approach is consistent and dependable among previous researches. A typical example of determining dependability is to find out whether or not two or more different researchers coded the same content or items with similar codes (Cannon, 2017). In this study, the researcher's supervisors and two Social Studies content experts assessed each items on the interview guides and questionnaires and established their consistencies and usefulness to the study during the review. Where gaps were spotted, they were corrected immediately. Interview transcripts were carefully and thoroughly reviewed to ensure there were no mistakes committed during the transcription stage of the study.

Confirmability is the extent to which the findings of a study can be authenticated or confirmed by other people (Miles et al., 2014) cited in (Cannon, 2017). Reflectivity, a strategy to promote confirmability of a study, demands self-reflection of the investigator to determine whether there are potential biases that might negatively influence the findings of the study (Merriam, 2009). Issues such as age, gender, history, social status, culture, religion, and socioeconomic background could influence a researcher's interpretation of the findings of a study and the conclusions made. To eliminate my personal biases from this study, I recorded all the interviews, which were later transcribed, and then interpreted within the context of the study.

3.7.2 Reliability of the Research Instruments

Reliability is the measurement of the level to which (Mugunda & Mugunda, 2012) a research instrument produces consistent data or results after repeated trials. Put differently, reliability refers to the consistency of a measure. Psychologists consider three types of consistency: over time (test-retest reliability), across items (internal consistency), and across different researchers (inter-rater reliability). Internal consistency, which is the consistency of people's responses across the items on a multiple-item measure was adopted by this study.

The internal consistency method was employed to determine the reliability of the instruments (questionnaires). The researcher deemed this approach appropriate because the questionnaires were made up of two groups of items to measure different aspects of

the same issue (Social Studies teachers variables and how they influence CBI application, school heads, teachers and students perception of CBIs integration, schools, teachers and students' preparedness to integrate CBI in teaching and learning, the extent of integration and challenges they face). The Cronbach's Alpha formula was employed to scrutinize respondents' views and to explore the extent to which questions on the questionnaires are correlated. Cronbach's Alpha is an appropriate strategy to measure the internal consistency reliability due to the fact that the higher the Cronbach's Alpha, the more the items relate among themselves.

From the pilot study, the questionnaire for Social Studies teachers yielded an alpha of $r=0.89$ and that of the students produced an alpha of $r=0.73$ which were within acceptable standard and were employed to gather the data for the research. McMillan and Schumacher (2010) extrapolated that a reliability coefficient alpha of 0.70 and closer to 1, the more reliable the instrument for a study. In agreement, George and Mallery (2003) maintain that an alpha coefficient greater than 0.9 is considered an excellent, an alpha greater than 0.8 is considered as good, an alpha greater than 0.7 is considered acceptable, that of greater than 0.6 is seen as questionable, while an alpha less than 0.5 is considered poor and unacceptable.

3.8 Data Collection Methods and Procedures

Various strategies were implemented to ensure that relevant and adequate data were gathered for the research. The researcher, first of all, obtained research approval from the School of Graduate Studies, Kenyatta University to guarantee the acceptability of the researcher and proceeded to obtain research authorization from the Northern

Regional Education directorate before proceeding to the field to collect data. This offered an easy entry into the field. The researcher then visited the sampled schools to explain the purpose of the study to the key respondents, its significance, their potential roles in the study and the implication of their participation. Table 3.2 shows the research objectives and the instruments used to collect data for the study.

Table 3.3 Objectives and Data Collection Instruments

Research Objectives	Instrument(s)
1. To establish if there is a significant relationship between teachers variables and their level of integration of CBI in Social Studies instruction.	Questionnaire
2. To assess school heads, teachers and students perceptions towards the integration of CBI in Social Studies instruction.	Questionnaire Interviews
3. To investigate schools, teachers and students level of preparedness for the integration of CBI in Social Studies instruction.	Questionnaire Checklist
4. To establish the extent to which CBIs are integrated by teachers and students in Social Studies instruction.	Questionnaire
5. To explore challenges teachers and students face in using CBI in Social Studies instruction.	Interviews
6. To suggest strategies to deal with the challenges faced by teachers and students when using CBI in Social Studies instruction.	Interviews

Source: Researchers' Construct

As part of the data collection process, the researcher made arrangements with the school authorities and Social Studies teachers the time to collect data to enable the school

administrators to plan appropriately. Phone calls were placed more often to confirm appointments before proceeding to the field for data collection for the study.

3.8.1 Data Management

Data management refers to an administrative process that includes acquiring, sorting, cleaning, storing, protecting and processing the required data to ensure the accessibility, reliability, and timeliness of the data for its users. In this study, after administering the research instruments, the data collected were coded, edited, cleaned and entered into a computer for further analysis. For quality control, data were checked and cleaned in the field to ensure that the information collected was accurately recorded.

3.8.2 Questionnaires for Social Studies Teachers and Students

The researcher, with support from research assistants, self-administered the questionnaires to Social Studies teachers and students. Sufficient time was given to the participants to complete the questionnaires. Sampled students for the study were assembled by Social Studies teachers supported by the researcher and the questionnaires explained clearly to the respondents before they completed/filled them individually. To ensure high returns, the researcher was supported by two research assistants to collect the filled questionnaires from the participants.

3.8.3 Interview Schedule

The researcher conducted face-to-face interviews involving 12 school heads and GES Regional Director for ICT. The researcher met each informant and booked an

appointment for the interview. Guided by the interview schedule (Refer to Appendix A and B for details of the interview Guide), the researcher interviewed each of the informants on different days and recorded their responses into MP3. The interview allows the investigator to probe the respondents for clarifications and elaboration on critical issues pertaining to the study. The responses from the respondents were later transcribed and were sent back to the informants to authenticate and validate before being added to the rest of the data for final analysis.

3.8.4 Checklist

Visits were made to the selected SHSs to examine the conditions and suitability of their digital infrastructure if any. The researcher also visited Social Studies Departments and ICT laboratories in the sampled schools to check the conditions of the digital resources to determine if they could support CBI integration effectively and efficiently (Refer to Appendix E for details of the checklist used to collect data for the study).

3.9 Methods of Data Analysis

Data analysis refers to examining the data collected in the survey and making deductions and inferences. The qualitative data were collected in the form of field notes, and records of interviews in audio files (MP3). The audio records were transcribed and imported to qualitative data analysis software (MAXQDA) for final reporting. The Statistical Package for Social Sciences (SPSS) version 22.0 computer-based program was used as a tool for data analysis. Raw data collected from the field through questionnaires were categorized, coded and analyzed through descriptive (frequencies,

percentages, mean and standard deviation) and inferential statistics (Pearson correlation, regression, and T-test) were employed for data analysis based on the study objectives and the hypotheses.

Each item score was subjected to inferential statistics. For example, Pearson moment-product correlation and regression were adopted to find the relationship between teachers' characteristics and their level of CBI integration in Social Studies lessons. According to Bluman (2009), when data is tabulated in table form in terms of frequencies, several types of hypotheses can be tested by using the correlation, regression, T-test or chi-square test. One such test is the independence of the variables test. The test of independence of variables is used to determine whether two variables are independent of or related to each other when a single sample is selected. Respondents' indications of their extent of CBI integration were cross-tabulated with teachers' ICT perceptions to produce a table of a contingency necessary for the computation of the T-test statistical value.

Furthermore, the impact of teachers' ICT perceptions on their level of integration was analyzed using the t-test. The test value of the t-test is stated as follows:

$$t = \frac{(\bar{X}_1 - \bar{X}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

Where

t = t-test value, \bar{X}_1 = sample mean of the first sample, \bar{X}_2 = sample mean of the second sample, μ_1 = population mean of the first sample, μ_2 = population mean of the second sample, S_1^2 = variance of the first sample, S_2^2 = variance of the second sample, n_1 = sample size of the first sample, n_2 = sample size of the second sample. The critical value is examined at $t_{(\frac{\alpha}{2}, n-1)}$; where α is the significance level (considered at 1%, 5% or 10%) and $n-1$ is the degree of freedom. The decision will be to reject the null hypothesis if t-test value is $>$ t-critical value.

The quantitative data from the questionnaires and the ICT infrastructure checklist were triangulated with that of the interview responses for further discussions in the form of common thematic areas. Tables, pie charts, graphs, frequencies, standard deviation, percentages, correlation and multiple regressions were used to present the findings in relation to research objectives, questions and the hypothesis. Table 3.4 gives further illustrations on the objectives of the study, category of data collected, methods applied for data collection and the statistical techniques employed for data analysis.

Table 3.4 Data Analysis Matrix

Objective	Type of Data	Data Collection Procedure	Data Analysis Procedure
Relationship between teachers variables and CBI Integration	Numerical	Questionnaires	Pearson Regression, Correlation
			Percentages, Frequencies
Schools heads, Social Studies teachers and students perceptions of CBI	Numerical	Questionnaires	Frequencies, Mean, Standard deviation, T-test
	Qualitative	Interviews	Descriptive
Schools and Social Studies teachers preparedness for CBI integration	Numerical	Questionnaires Checklist	Percentages, Frequencies, and Mean
	Qualitative	Interviews	Descriptive
Extent of integration of CBI by Social Studies teachers and students	Numerical	Questionnaires	Frequencies, mean and standard deviation
Constraints Social Studies teachers and students faced during CBI integration	Qualitative	Interviews	Descriptive
Strategies to overcome the challenges faced by Social Studies teachers and students during CBI integration	Qualitative	Questionnaires	Descriptive

Source: Researcher's Construct

3.10 Logistical and Ethical Considerations

Ethical behaviours and ethical considerations are as relevant in research as they are in any other aspect of human endeavor (Welman, Kruger, Mitchell & Huysamen, 2005) cited in Bariham et al (2019). Research ethics refer to all actions taken by the researcher in a study to protect the interest of the participants without compromising the quality of the study. According to Cresswell (2014), ethical roles are categorized into two main strands, namely; individual protection requirements and research requirements. Each respondent and the general community have the right to insist that high quality research

is carried out and that the issue studied is adequately captured, covered, analyzed, and verified with reliable findings. Also, participants' protection which consists of confidentiality, safety, consent, information, and utilization requirements are vital throughout any study.

There were ethical and logistical considerations made during this research. For instance, sampled schools were coded with alphabets to hide their identity. Also, during the study, permission was obtained from the heads of various SHSs early enough before fieldwork for data collection. Informed consent was sought from all the respondents so that they participated voluntarily. Before the actual data collection, the significance of the study and the items on the research instruments were clearly explained to each respondent. Respondents have informed the information to be provided was to be applied strictly for research purposes only and that the information was going to be treated with a high level of confidentiality.

Additional time was given to respondents to ask questions for clarifications on the grey areas concerning the issue under investigations before the interviews and questionnaires were administered. Participants were also given the option to freely take part in the study and with the rights to pull out of the study any time they so wish. The information collected was kept confidential and used for the purpose of this study only. Pseudonymization and anonymization were used to protect the identity of the participants who took part in the study. There were no monetary or financial

inducements to respondents who participated in the study, and there were no threats or victimization to the respondents who declined or withdrew from the study.

Participants were not induced financially or materially to participate in the study. The research was approved by the Northern Regional Director, GES as no potential harm to participants was identified. An information sheet was integrated into the questionnaire and completing the questionnaire implied consent to participate in the study. Finally, the author declared no conflict of interest. There were no funding sponsors who had a role(s) in the design of the study; in the data collection, analyses, or interpretation of data; in the writing of the final report.

CHAPTER FOUR

REPORTING, INTERPRETATIONS AND DISCUSSION OF FINDINGS

4.1 Introduction

The study aimed at assessing public SHSs preparedness for the application of CBI in Social Studies instruction in the Northern Region of Ghana. Data were amassed from four main sources, namely; Social Studies teachers, students, school heads, and the Northern Regional Education Director of ICT. This chapter presents the findings, interpretations, and discussions according to the objectives, research questions, and the hypothesis designed to direct the research. The data generated from the research have been analyzed with inferential and descriptive statistics. Pearson correlation and multiple regressions were the main inferential statistics used to test the null hypothesis of the study. The descriptive statistics employed frequencies; percentages, mean and standard deviations. The findings were illustrated using tables, graphical methods, and their interpretation thoroughly discussed thereafter. The findings of the study were directly linked to the study objectives which seek to:

- i. Establish the relationship between teachers' demographic characteristics and their application of CBI in Social Studies teaching and learning.
- ii. Establish a) school heads, b) teachers and c) students' perceptions of the integration of CBI in Social Studies instruction.
- iii. Assess a) school, b) teachers and c) students' level of preparedness for the integration of CBI in Social Studies instruction.
- iv. Investigate the extent to which CBIs are integrated by a) teachers and b) students during Social Studies instruction.

- v. Explore challenges a) teachers and b) learners face when using CBI in Social Studies instructions.
- vi. Suggest strategies to deal with the challenges faced by teachers and students when using CBI in Social Studies instruction.

4.2 General and Demographic Information

In this section, general and demographic information on return rates of the instruments administered to the participants and the demographic characteristics of the informants are presented.

4.2.1 Return Rates of Instruments

The rate of return of the research instruments is the ratio of the selected sample that took part in research as anticipated in the research process. There were two categories of questionnaires for various categories of participants, namely; Social Studies teachers (N=84) and Students (N=972). The questionnaires were administered to a sample of 95 Social Studies teachers, of which 84 represents (88.4%) were duly filled and returned. Also, 1,000 questionnaires were administered to students, of which 972 represents (97.2%) were completely answered and returned to the research team. Therefore, the return rate for the questionnaires was far above average hence making the study effective and credible in line with (Pagano & Ganvreau, 2000) who suggested that questionnaires return rate of 60% and above is enough to be employed in a study.

Two categories of interviews for different types of respondents comprising heads of all the 12 SHSs involved in the study and a Director of ICT. All the 12 school heads (100%) were interviewed. Also, the regional Director for ICT was interviewed successfully. Table 4.1 shows a summary of the return rates of the instruments administered to gather data for the research.

Table 4.1 Return Rates of Instruments

Respondent	Sampled	Returned	Percentage
Teachers	95	84	88.4
Students	1000	972	97.2
School Heads	12	12	100
Director of ICT	1	1	100
Total	1, 108	1,069	96.4

Source: Field survey (2018)

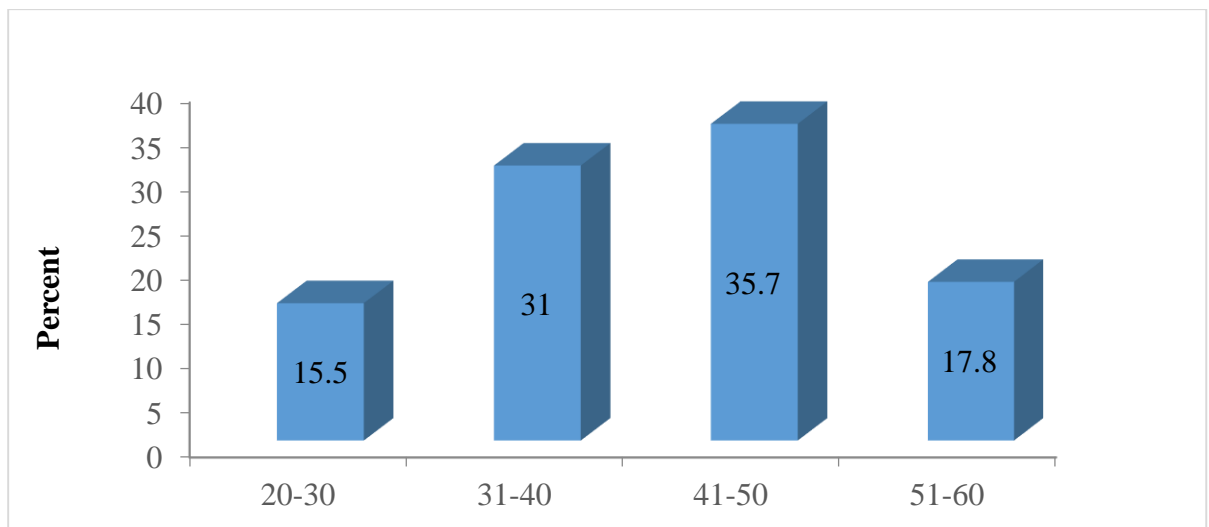
From Table 4.1, the return rate of the questionnaire for the students stood at 972 (97.2%) which was higher compared to that of the Social Studies teachers which stood at 84 (93.3%). However, in both cases, the response was above average.

4.3 Demographic Characteristics of Respondents

The general demographic information of the informants such as their age, gender, experience, qualification and location of schools are captured in this section. This was to check for normality of the data collected based on the number and representation of informants per group and gender because the data were collected from intact groups.

4.3.1 Teachers Age

The age of Social Studies Teachers was recorded and categorized into cohorts consisting of those within 20-30 years, 31-40 years, 41-50 years and 51-60 years. It was discovered that 13 respondents, representing (15.5%) fell within the age category of 20-30, 26 respondents representing (31%) were within the age category of 31-40, 30 respondents (35.7%) were within the age category of 41-50. The result further indicates that 15 respondents, representing (17.8%) had their ages within 51-60 years. The age distribution of the respondents is shown in Figure 4.1.



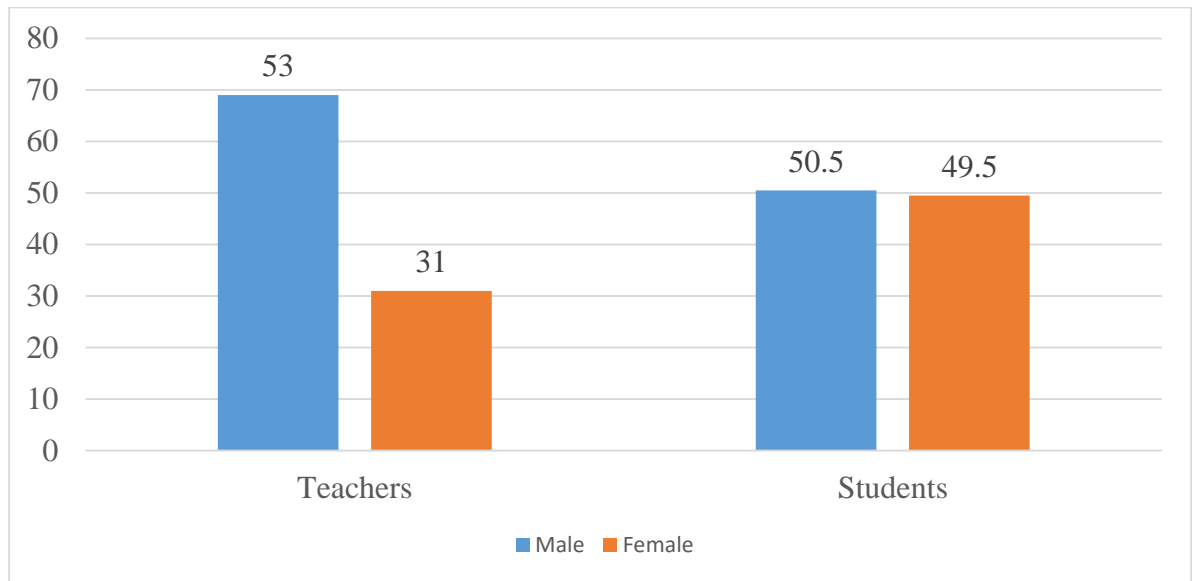
Source: Field survey (2018)

Figure 4.1 Age Distribution of Social Studies Teachers

This implies that more than half of Social Studies teachers in the study area were getting old. There should be a plan in place by GES to train more teachers to take over from the existing teachers in the near future.

4.3.2 Sex Distribution of the Teachers and Students

The data on participants' gender were collected using the questionnaires for the selected teachers and students. Figure 4.2 shows the proportion of female and male Social Studies instructors and students who participated in the study.



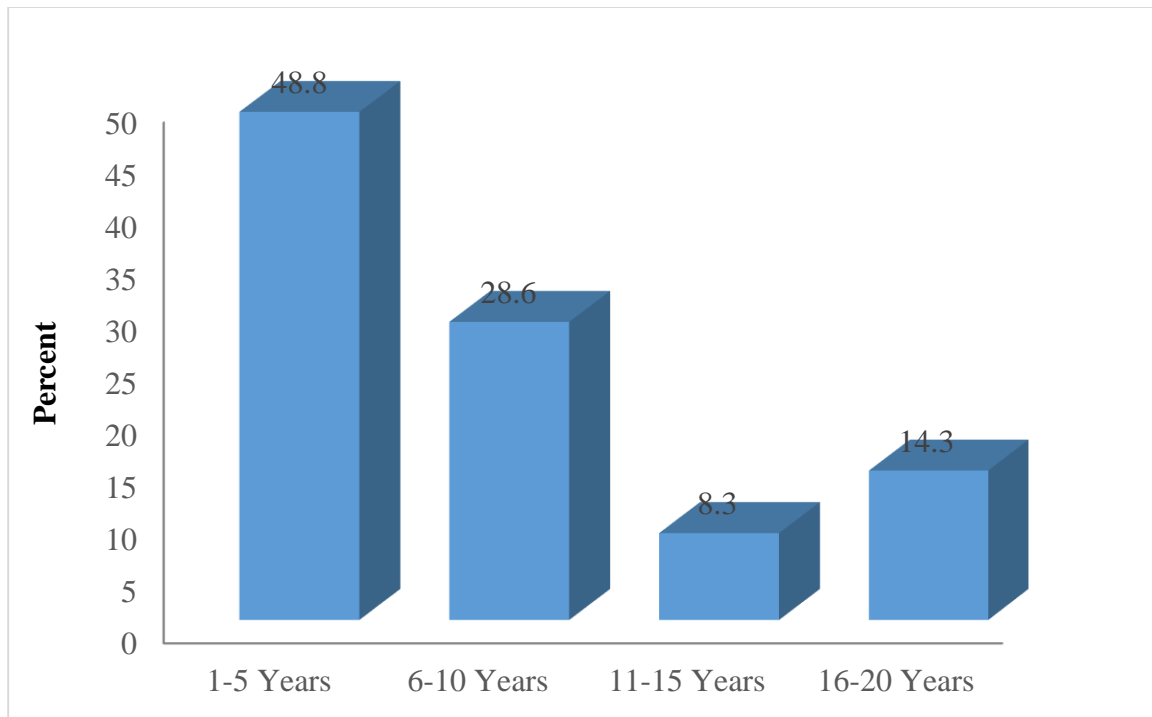
Source: Field survey (2018)

Figure 4.2 Sex Distribution of Teachers and Students

From Figure 4.2, fifty-three (53) respondents representing (63%) of teachers were males while the remaining 31 respondents representing (37%) of teachers were females. This implies that the majority of Social Studies teachers in the region were males. Clearly, there should be a plan in place to address this gender gap in the near future. In terms of students, 491 respondents representing (50.5%) were males whereas 481 students representing (49.5%) were females. Gender gap again exists among students in the study schools.

4.3.3 Teaching Experience of Teachers

It was discovered from the study that the Social Studies teachers had different levels of teaching experience. From Figure 4.3, 41 respondents representing (48.8%) had 1-5 years of teaching experience, 24 respondents representing (28.6%) had 6-10 years of experience. Besides, 7 respondents representing (8.3%) had teaching experience between 11-15 years, while 12 respondents who represent (14.3%) had 16-20 years of teaching experience.



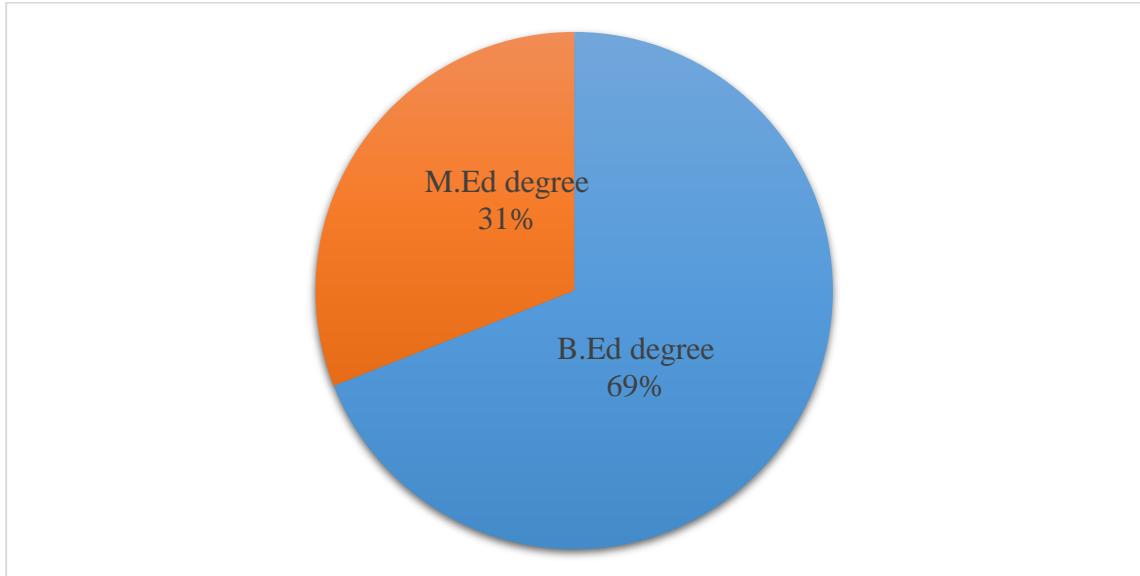
Source: Field survey (2018)

Figure 4.3 Teaching Experience of Teachers

4.3.4 Teachers' Professional Qualification

The results of the study indicated that the Social Studies Teachers had two types of professional qualification: B.Ed degree and M.Ed degree. The result in Figure 4.4

reveals that 58 respondents (69%) had B.Ed degrees while the remaining 26 respondents (31%) had M.Ed degrees.



Source: Field survey (2018)

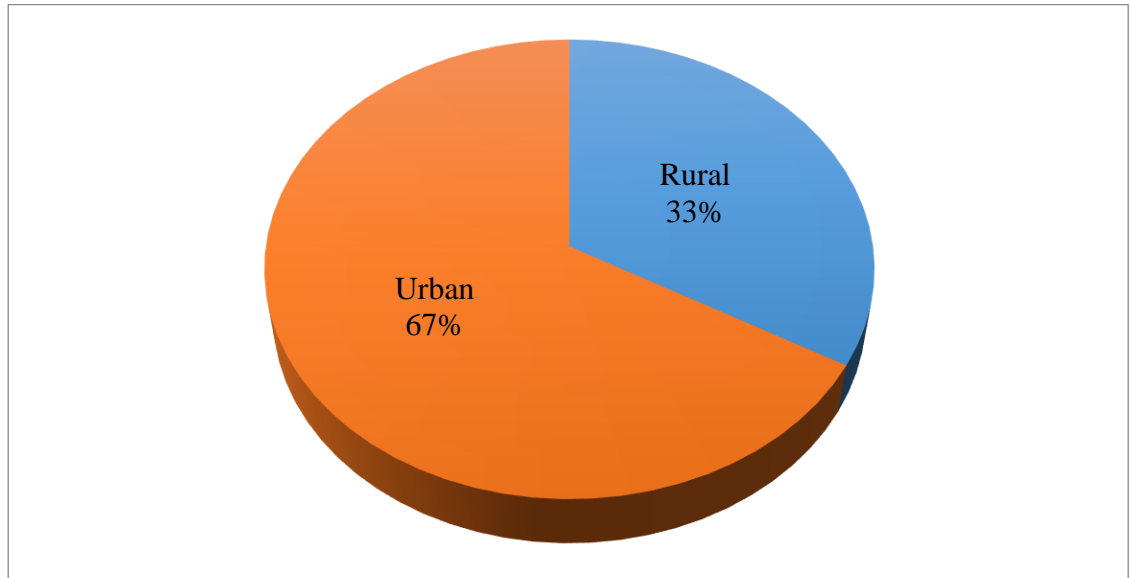
Figure 4.4 Distribution of Social Studies Teachers Professional Qualification

The results suggest in line with the GES requirements; that the majority of the teachers had acquired professional degrees relevant to teach at SHSs. This implies that their high level of professionalism would enable them to apply the required pedagogy that combined technology with student-centered differentiated inclusive instruction to improve the learning outcomes of all students.

4.3.5 Location of Schools

The study schools were found to have been located either in rural or urban settings. The results indicated that 56 respondents (67%) have indicated that the location of their schools were in urban areas while 28 respondents representing (33%) indicated location

of their schools was in rural settings. Figure 4.5 illustrates the details of the location of the schools that participated in this study.



Source: Field survey (2018)

Figure 4.5 Location of Schools

The results of the respondents' schools' location imply that the majority (67%) of the schools were located in urban areas while (33%) were located in rural areas. The proportion of rural schools were relatively lower. The results suggest that rural areas also had access to SHS education but more need to be done to expand secondary education to the rural areas to bridge the rural-urban divide. However, the location of the SHSs in rural areas can pose as a challenge regarding access to some basic educational infrastructure including ICT tools and resources and hence could make it difficult for teachers to incorporate CBI in Social Studies instructions.

Research Objective 1: To establish the relationship between teachers' demographic variables such as age, sex, experience, qualification and school location on their application of CBI in Social Studies instructions.

4.4 Testing of Hypotheses

A null hypothesis was formulated and tested to determine if there was a significant relationship between teachers' demographic characteristics such as age, sex, experience, qualification, and location of schools and their level of CBI integration in Social Studies. The hypothesis was tested at 0.01 and 0.05 levels of significance and is stated below.

Ho1 There is no significant relationship between teachers' demographic characteristics such as age, sex, experience, qualification and school location and their application of CBI in Social Studies instruction.

4.4.1 Correlation Analysis on the Demographic Characteristics of Teachers and CBI Integration

Correlation describes the relationship between two continuous variables, in terms of both the strength of the relationship and the direction. Correlation deals with linear relationships, and with two variables: both continuous, or one continuous and the other dichotomous (two values) variables (Fuseini, 2018). In this study, the relationship between the demographic characteristics of Social Studies teachers and their rate of integration of CBI in teaching and learning was measured using Pearson product-moment correlation coefficient. Preliminary analysis was conducted to ensure there

were no violations of the assumptions of normality, linearity and homoscedasticity. The details are captured by Table 4.2.

Table 4.2 Correlation Analysis on the Demographic Characteristics of Teachers and CBI Integration

Variables	Correlation	Rate of CBI Integration
Age	Pearson R	.168
	Sig. (2-tailed)	.127
Sex	Pearson R	.020
	Sig.	.0859
Experience	Pearson R	.042
	Sig.	.707
Qualification	Pearson R	.062
	Sig.	.575
School location	Pearson R	.035
	Sig.	.749

Source: Field survey (2018)

The results in Table 4.2 show that there was no significant relationship between Social Studies teachers rate of CBI integration and the following demographic characteristics; (Age, Sex, Experience, Qualification, and School location) with correlation coefficients of ($r= 0.16, 0.02, 0.04, 0.06$ and 0.03) respectively. The evidence above failed to reject the null hypothesis of no significant relationship between teachers' demographic characteristics and their level of CBI integration in Social Studies teaching and learning.

Cohen (1988) advised that a correlation of $r=0.10$ to 0.29 represent a weak relationship and $r=0.50$ to 1.0 indicate a strong relationship. The above results concur with Ngatia (2015) whose study on Kenyan secondary schools preparedness for ICT integration observed that teachers age was found to have a statistically significant effect on ICT

integration ($P = 0.002$) with young teachers embracing integration of ICT in their lessons more than old teachers.

4.5 Exploratory Analysis

An exploratory analysis was needed to determine contribution of each of the independent variables on the level of CBI integration in Social Studies instructional processes.

4.5.1: Predicting rate CBI Integration in Social Studies Instruction from Demographic variables of Teachers

To predict the rate of CBI integration in Social Studies instructions (dependent variable) from the demographic characteristics of teachers (independent variables), regression analysis was conducted. This was to determine the best linear combination for predicting the rate of CBI integration in Social Studies teaching and learning. The results have been presented in Table 4.3.

Table 4.3 Regression Analysis of CBI Integration from Teachers Demographic Variables

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.319	.348		3.788	.000
Age	.113	.069	.237	1.639	.105
Sex	.039	.117	.038	.331	.742
Experience	-.052	.062	-.121	-.829	.410
Qualification	.037	.126	.035	.296	.768
Location of school	.022	.115	.021	.187	.852

Note: Dependent variable: Average CBI integration

Source: Field survey (2018)

Table 4.3 shows regression coefficients of the independent variables on integration of CBI in Social Studies instruction. The regression coefficients represent the contribution of each independent variable to ICT integration in instruction. The results show that teachers age did not significantly influenced CBI integration in instruction ($t = 1.639$, $p = .105$). The regression coefficient of teachers experience and CBI integration in instruction was negative and not significant ($t = -.829$, $p = .410$). The regression coefficient of teachers sex and CBI integration in Social Studies instruction was not significant ($t = .331$, $p = .742$), teachers qualification and CBI integration recorded ($t=.296$, $p=.768$) which was not significant. Location of schools and CBI integration in teaching and learning recorded ($t=.187$, $p=.852$) which was not significant.

The above results imply that teachers' demographic characteristics were not predictor variables for CBI integration in Social Studies instruction. Qasen and Viswanathappa (2016) report that teachers' technology integration in teaching and learning heavily rely on their general perception of ICT abilities. The findings of the study support that of Usman (2015) who did a study on e-learning acceptance among secondary school teachers in Nigeria and concluded that teachers' perceived ICT abilities was found to significantly influence their level of ICT integration in teaching and learning process with a $p < 0.05$. The results are again similar to those of Makhoha and Mutisya (2016) who reported that majority of lecturers in Kenya lacked sufficient skills in advanced ICT tools and as a result could not competently handle online courses since they were not conversant with their universities LMSs.

Research Objective 2: To establish; a) school heads, b) teachers and c) students' perceptions towards the integration of CBI in Social Studies instruction.

4.6 School Administrators', teachers' and Students' Perceptions of the Integration of CBI in Social Studies Instruction

The respondents, namely; school heads, teachers and students were asked about their perceptions of CBI application in Social Studies instructions. They offered varied opinions which are discussed below.

4.6.1 School Administrators Perception of Computer Based Instruction (CBI)

To determine the perception of school heads on CBI as tools for Social Studies learning and teaching, the researcher interviewed SHSs head teachers. The majority of the head teachers demonstrated a positive attitude and perception towards CBI integration. For instance, one school head remarked that:

I must say that it is a very laudable idea to have CBI integrated into teaching and learning of not only Social Studies but all subjects in Senior High Schools' curriculum. We need to catch up with the rest of the world which is now digitized. The world indeed is a global village. We need to prepare our students in schools to acquire critical and creative thinking, collaboration, digital literacy and problem-solving to enable them to contribute not only to national development but also to become global citizens capable of measuring up international standards. We need to prepare our students to become competitive globally. Therefore, incorporating ICT into teaching and learning is very critical this time than before. In teaching and learning of Social Studies, several issues often come up ranging from Economics, Geography, Government, and History. For instance, in teaching the Geography concepts, CBI can help teachers and students to research online for current information. CBI can be used to create models to support students to learn Geography related concepts in Social Studies. In teaching historical concepts, ICT can be used for cross-referencing and to support teachers and students' zone places for archeological works.

This demonstrated that most of the school heads had a positive attitude towards the use of CBI in teaching and learning of Social Studies. However, that alone cannot guarantee the effective application of CBI in Social Studies instructions unless other variables are tackled. Means and Olson (1997) noted that school heads, instructors and the entire school management involving all stakeholders should have a vision before spending financial resources on software and hardware. Users and consumers of ICT in education should have confidence that pedagogical application of ICT can improve quality of instructions and stimulate lifelong learning among students otherwise the innovation is likely to fail.

The effective integration of CBI in learning requires school-based ICT policies to coordinate and guide the entire process. However, it was clear from the varied responses from the informants that the sampled schools did not have ICT policies, goals or vision to drive the application of CBI in the instructional processes. Although sampled schools had vision and mission statements, they were not directly connected with the use of technology during instructional processes. This was evident as one school head opines that:

I can say on authority that we have vision and a set of goals, but as school we do not have specific goals for ICT integration in teaching and learning. I think that is a fair enough point and is something that we can learn as a challenge and set a goal for technology integration in various subjects including Social Studies.

The above discourse demonstrated that school heads are becoming more knowledgeable with the introductions of technology application in education. Higher level of Commitment was observed among majority of heads of schools in terms of supporting

the integration of CBI in learning and teaching. The majority of the heads of schools indicated their willingness to plan and supervise in-service training in their schools; willing to motivate teachers to attend those in-service trainings, and further use their power to influence the communities to invest in ICT resources in their schools. This however depends on the SHSs communities' perceptions of CBI integration and their willingness to support the process.

4.6.2 Teachers' Perceptions of the Integration of CBI in Social Studies Instruction

Perception means a process of receiving information and making sense of the world around us. It entails deciding which information to receive, record, how to categorize information, and how to interpret it within the framework of our existing knowledge, skills and experiences (McShane & Glinow, 2008). In this study, Social Studies teachers' perception of CBI was measured with a five points Likert scale designed with ten closed-ended items. Below was the key: SD=Strongly Disagree, D=Disagree, U=Undecided, A=Agree, and SA=Strongly Agree.

Teachers' attitude and perception had a significant correlation with their adoption of technology in their instructional processes and vice versa. Social Studies teachers perceptions of CBI integration were measured by rating certain perceived attitudes on a five-point Likert scale format (from 1-strongly disagree to 5-strongly agree) in such a way that higher scores indicated a more positive attitude towards CBI and vice versa as captured in Table 4.4.

Table 4.4 Teachers' Perception of CBI Integration in Social Studies Instruction

Integration of CBI in Social Studies Instruction	SD	D	N	A	SA	Total
CBI provides conducive environment students learning.	0 (0.0%)	0 (0.0%)	0 (0.0%)	47 (56%)	37 (44%)	84 (100%)
CBI is good for teacher lesson preparations and not for instructions.	12 (14.3%)	28 (33.3%)	12 (14.3%)	10 (11.9%)	22 (26.2%)	84 (100%)
CBI offers useful resources to enhance students' learning.	0 (0.0%)	4 (4.8%)	2 (2.4%)	39 (46.4%)	39 (46.4%)	84 (100%)
CBI helps learners to access authentic and current information in Social Studies.	0 (0.0%)	0 (0.0%)	2 (2.4%)	22 (26.2%)	60 (71.4%)	84 (100%)
Integration of CBI makes me productive and enhances effective learning	0 (0.0%)	1 (1.2%)	2 (2.4%)	36 (42.9%)	45 (53.6%)	84 (100%)
I need more knowledge and skills on CBI application in Social Studies instruction.	1 (1.2%)	1 (1.2%)	2 (2.4%)	24 (28.6%)	56 (66.7)	84 (100%)
CBI integration is cumbersome and delays my syllabus coverage	14 (16.7%)	32 (38.1%)	18 (21.4%)	13 (15.5%)	7 (8.3%)	84 (100%)
I am unable to integrate CBI into my teaching because of lack of ICTs facilities in my school.	7 (8.3%)	19 (22.6%)	7 (8.3%)	34 (40.5%)	17 (20.2)	84 (100%)
Integration of CBI is scaring and am reluctant to adopt it	32 (38.1%)	34 (40.5%)	11 (13.1%)	4 (4.8%)	3 (3.6%)	84 (100%)
Integration of CBI helps learners acquire critical thinking, creativity and collaboration.	2 (2.4%)	2 (2.4%)	4 (4.8%)	38 (45.2%)	38 (45.2%)	84 (100%)
CBI helps to accommodate varying learning styles of students	0 (0.0%)	1 (1.2%)	7 (8.3%)	51 (60.7%)	25 (29.8%)	84 (100%)
CBI helps to introduce new pedagogy in Social Studies teaching and learning	0 (0.0%)	0 (0.0%)	5 (6.0%)	37 (44%)	42 (50%)	84 (100%)
Social Studies curriculum should integrate CBI	0 (0.0%)	0 (0.0%)	2 (2.4%)	35 (41.7%)	47 (56%)	84 (100%)
CBI is not appropriate for learning because it is difficult to operate a computer	44 (52.4%)	27 (32.1%)	2 (2.4%)	11 (13.1%)	0 (0.0%)	84 (100%)
Social Studies Teachers training should incorporate CBI	2 (2.4%)	2 (2.4%)	19 (22.6%)	0 (0.0%)	61 (72.6%)	84 (100%)

The findings from Table 4.4 discovered that SHS teachers had a positive perceptions of CBI as a tool for Social Studies instruction (Agreed and Strongly Agreed): included CBI provide conducive environment for students learning (56%+44%)=100% agreed, CBI provide valuable facilities to enhance students learning (46.4%+46.4%)=92.8% agreed, CBI help learners to access current information (26.2%+71.4%)=97.6% agreed, CBI introduces new pedagogy into Social Studies teaching and learning (44%+50%)=94% agreed, Social Studies curriculum should incorporate CBI (41.7%+56%)=97.7% agreed, CBI stimulate critical thinking and collaboration among learners (45.2%+45.2%)=90.4% agreed to the submission. These implies that the majority of SHS teachers have developed a positive perception of CBI as tool for Social Studies instruction.

The above results contradicts those by Ngatia (2015) which concluded a negative attitude of Kenyan teachers towards ICT use in schools with percentage ranging between 18.8% to 38.4% with mean score of 30.9%. In contrast, Omariba (2016) study on teacher preparedness for the integration of ICT in training teachers in public primary Teacher Training Colleges in Central Region Kenya concluded that (86%) of tutors had a positive attitude towards the integration of ICT in teaching and learning. Molenje, Mukwa and Too (2017) study on Kenya secondary school teachers' perception recorded a positive perception of teachers towards CAI. The success of the application of ICT into classroom instructional processes hinges on the perception of teachers towards technology. Teachers likely to incorporate CBI in classroom instructions are those that who developed a positive attitude towards technology use in classrooms.

Further analysis was carried out by computing and categorizing individual mean scores for the differences in the perception of teachers towards CBI as shown in Table 4.5.

Table 4.5 Mean Scores of Social Studies Teachers Perception of CBI Integration

Computer Based Instruction	N	Minimum	Maximum	Mean	Std. Deviation
CBI offer rich environment within which to create activities for Social Studies Students	84	4	5	4.44	.499
CBI is good for teacher lesson preparations and not for classroom teaching	84	1	5	3.11	1.448
CBI provides valuable facilities to support students learning	84	2	5	4.30	.803
CBI help learners to access authentic and current information during teaching and learning of Social Studies	84	3	5	4.62	.558
Integration of CBI makes me more productive and facilitates students learning	84	2	5	4.43	.664
I will like to learn more about CBI integration in learning and teaching of Social Studies	84	1	5	4.48	.828
CBI integration is cumbersome and delays my syllabus coverage	84	1	5	2.35	1.103
I am unable to integrate CBI into my teaching because of lack of ICT facilities in my school	84	1	5	3.48	1.266
Integration of CBI is scaring hence am reluctant to adopt it	84	1	5	1.89	.932
Integration of CBI helps learners acquire critical thinking, creativity and collaboration which are essential in Social Studies	84	1	5	4.23	.855
CBI helps to accommodate varying learning styles of Social Studies students	84	2	5	4.20	.690
CBI help to introduce new pedagogy in Social Studies teaching and learning	84	3	5	4.40	.623
Social Studies Curriculum should integrate CBI	84	3	5	4.51	.549
CBI is not suitable for students learning because computers are not easy to operate	84	1	4	1.81	1.000
Social Studies teachers training should incorporate CBI	84	1	5	4.56	.869

From Table 4.5, individual items with Means scores that ranged 1 to 2.5 indicated a negative perceptions of CBI integration by the teachers while items with means that ranged between 2.6 to 5 indicated a positive perceptions of CBI integration. The above results demonstrated the most of the selected SHSs Social Studies tutors had a positive perceptions of CBI. The total teachers' perceptions of CBI integration mean score was (Mean=3.8, SD=0.8458) which was high above average. Specifically, CBI helps to accommodate the varying learning styles of students (Mean=4.20, SD=.690), CBI help learners to access authentic and current information during Social Studies instructions (Mean=4.62, SD=.558), Social Studies curriculum should incorporate CBI (Mean=4.51, SD=.549), Social Studies teacher training should incorporate CBI (Mean=4.56, SD=.869), I will like to learn more about CBI (Mean=4.48, SD=.828), CBI provide rich environment within which to create activities for Social Studies students (Mean=4.44, SD=.499), integration of CBI makes me more productive and facilitates students learning (Mean=4.43, SD=.664).

The above findings concurs with those from Gulbahar & Guven, (2008) surveyed on ICT integration by Social Studies Teachers in Turkey concluded that although teachers were willing to use ICT resources and were aware of the existing potential, they are facing problems of accessibility to ICT resources and lack of in-service training opportunities. Similarly, Mahdum, Hadriana and Safriyanti (2019) survey involving 616 SHSs teachers in Indonesia extrapolated that teachers had a good perception and motivation towards ICT integration in teaching and learning. However, they faced several challenges related to facilities and technical skills.

4.6.3 Impact of Teachers' ICT Perceptions on their level of integration of CBI in Social Studies Instruction

To determine the effect of computer perceptions on CBI integration by teachers, the scores of teachers' computer perceptions were banded into two categories, namely; those with high (positive) perceptions and those with low (negative) perceptions and the effect tested by means of independent t-tests with ICT perceptions as the independent variable and integration of CBI being the dependent variable. Preliminary analysis was conducted to ensure there were no violations of linearity, assumptions of normality, and homoscedasticity. The results are presented in Table 4.6.

Table 4.6 Descriptive Statistics of Impact of Teachers' ICT Perceptions on CBI Integration

Group Statistics					
	Perception Status	N	Mean	Std. Deviation	Std. Error Mean
Total Integration Score	Low Perception	11	31.89	10.273	1.202
	High Perception	73	35.36	18.250	5.503

Source: Field survey (2018)

The extent of integration under this was measured using the total scores computed from the five point Likert scale. The descriptive statistics were reported in Table 4.6 above. From Table 4.6, the mean score of teachers with high perception was 35.36 with a standard deviation of 18.250. On the other hand, teachers with low perception recorded a total score of 31.89 with a standard deviation of 10.27. Further analysis was done to

determine if there was a significant difference between the mean scores of teachers' perception and how it impacted on their integration of CBI in teaching process. The analysis was done using the t-test. The result in Table 4.7 below shows the t-test value, degree of freedom (df), significance level, the mean difference, standard error of the difference and the confidence interval at 95%.

Table 4.7 T-Test on Impact of Teachers' ICT Perception on CBI Integration

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower		Upper
Total Integration score	Equal variances assumed	11.062	0.001	0.93	82	0.355	3.473	3.734	-3.95	10.90
	Equal variances not assumed			0.61	109.7	0.550	3.473	5.632	-8.92	15.87

Source: Field survey (2018)

From Table 4.7, the mean difference was 3.734 and this is not significant at 0.01, 0.02 or 0.05. The insignificance of the mean difference implies that Social Studies teachers' perception of CBI has no statistically significant impact on their level of integration in Social Studies instructional processes. The above findings contradicted study by Ngatia (2015) which concluded that teachers' computer attitude has a significant influence on their level of integration of ICT in instructions, and that a 100% positive perceptions of teachers towards ICT can improve teachers' adoption and application of ICT in their instructional processes by 28.1%. The findings also contradict Gakime (2016) whose

research concluded that the success of the integration of ICTs in instruction depends on the teachers' attitudes and perception towards the ICTs. However, resources, time and energy should be invested into teacher training and equipping schools with adequate digital tools for online learning.

4.6.4 Students' Perceptions of CBI Integration in Social Studies instruction

Perceptions of students on CBI integration in Social Studies instruction are presented by Table 4.8.

Table 4.8 Students' Perception of CBI Integration in Social Studies Learning

General Statement on ICTs integration	SD	D	N	A	SA	Total
CBI makes me participate actively in the teaching and learning process.	111 (11.4%)	64 (6.6%)	42 (4.3%)	308 (31.7%)	447 (46%)	972 (100%)
There are no computers in my school to support CBI	273 (28.1%)	238 (24.5%)	49 (5%)	217 (22.3%)	195 (20.1%)	972 (100%)
Use of CBI in teaching helps me to perform well in my exams	114 (11.7%)	81 (8.3%)	62 (6.4%)	348 (35.8%)	367 (37.8%)	972 (100%)
CBI promotes collaborative learning	153 (15.7%)	139 (14.3%)	69 (7.1%)	342 (35.2%)	269 (27.7%)	972 (100%)
CBI promotes a better understanding of concepts and easy application of knowledge gained	67 (6.9%)	56 (5.8%)	34 (3.5%)	362 (37.2%)	453 (46.6%)	972 (100%)
I enjoy learning when the teacher uses CBI during Social Studies lessons	82 (8.4%)	72 (7.4%)	49 (5%)	331 (34.1%)	438 (45.1%)	972 (100%)
Our teachers does not allow us to use computers and hence I have no idea how to use them	256 (26.3%)	181 (18.6%)	54 (5.6%)	216 (22.2%)	265 (27.3%)	972 (100%)
CBI helps me to access authentic and current information in Social Studies	108 (11.1%)	9 (9.5%)	58 (6%)	335 (34.5%)	379 (39%)	972 (100%)
I am scare of computers and hence I do not follow the instruction when my teacher uses CBI in Social Studies instruction	482 (49.6%)	272 (28%)	55 (5.7%)	70 (7.2%)	93 (9.6%)	972 (100%)
I do not have enough computer skills to use during CBI	232 (23.9%)	199 (20.5%)	87 (9%)	247 (25.4%)	207 (21.3%)	972 (100%)

Source: Field survey (2018)

Table 4.8 shows the main ways students perceived the integration of CBI in Social Studies instruction (Agree and Strongly Agreed) included: CBI makes me participate actively in Social Studies instruction (31.7%+46%)=77.7% agreed, CBI helps me to perform well in my exams (35.8%+37.8%)=73.6% agreed, CBI enhances collaborative learning (35.2%+27.7%)=62.9% agreed, CBI foster better understanding and application of knowledge (37.2%+46.4%)=83.6% agreed to the assertion, CBI bring joy to teaching and learning (34.1%+45.1%)=79.2% agreed, CBI help me to access current information on issues in Social Studies education (34.5%+39%)=73.5% agreed with the statement. These findings confirm Atta (2015) whose study concluded that students in Ghanaian basic schools had a positive attitude toward CBI, and that CBI had a positive impact on individuals' performance than Conventional Methods of Instruction. Adenkule (2016) survey in Nigeria involving 7,500 secondary school students concluded that students had a positive perception of ICT application in education.

However, (23.9%+20.5%) =44.4% of the students indicated that they did not have ICT skills to use during CBI. This concurs with Odhiambo (2013) whose mixed research comprising 320 secondary school students in Kenya observed that although students had a positive attitude towards ICT application in instructional process, their ICT skills were not adequate. A survey involving Irish primary school pupils found that over 30% were not able to print a document or go on the internet, (47%) were not able to create a word document by themselves; and the majority lack competencies to create a presentation (72%), correctly use a spreadsheet (86%), or attach a document to an e-mail message and send (88%) (Department of Education and Science, 2008).

Further analysis was conducted by computing and categorizing individual mean scores for the differences in the perception of students towards CBI as shown in Table 4.9.

Table 4.9 Mean Scores of Students Perception of Computer Based Instruction

Computer Based Instruction	N	Minimum	Maximum	Mean	Std. Deviation
CBI makes me participate actively in the teaching and learning process	972	1	5	3.94	1.339
There are no computers in my school to support CBI	972	1	5	2.82	1.537
Use of CBI in teaching helps me to perform well in my exams	972	1	5	3.80	1.338
CBI facilitates collaborative learning in teaching Social Studies	972	1	5	3.45	1.426
CBI promotes better understanding of concepts and application of knowledge	972	1	5	4.11	1.158
I enjoy learning with CBI	972	1	5	4.00	1.248
Our teachers does not allow us to use computers and therefore I have no idea	972	1	5	3.05	1.598
CBI helps me to access authentic and current information in Social Studies	971	1	5	3.81	1.339
Computers scare me and therefore I do not follow the instruction when my teachers uses CBI in Social Studies instruction	972	1	5	1.99	1.305
I do not have enough computer skills to use during CBI	972	1	5	3.00	1.506

Source: Field survey (2018)

From Table 4.9, the individual items on the Likert scale with Means scores that ranged 1 to 2.5 indicated a negative perceptions of CBI integration by the students while items with means that ranged 2.6 to 5 indicated a positive perceptions of CBI integration. The above results demonstrated that the majority of SHSs students had a positive perceptions of CBI integration. Notably, CBI makes me participate actively in teaching and learning (Mean=3.94, SD=1.339), CBI facilitate better understanding of concepts and easy application of knowledge gained (Mean=4.11, SD=1.158), I enjoy learning when teachers use CBI (Mean=4.0, SD=1.248), CBI support me to access current and authentic information on issues in Social Studies (Mean=3.81, SD=1.339), and CBI helps me to perform well in my exams (Mean=3.80, SD=1.338). The students' total perceptions of CBI integration mean score was (Mean=3.4, SD=1.3794) which was very high because it exceeded the average. This means the students had a positive perceptions of CBI integration in Social Studies instructions. These results confirms those from Atta (2015) which concluded that students had a positive perceptions of CBI and that those who study with CBI showed superior academic achievement than the control group taught with traditional methods of instruction. However, from Table 4.9, (Mean=3.0, SD=1.506) did not have skills to use during CBI. This implies that the majority of the students do not have ICT skills to use during CBI.

On further analysis of the data, it was observed that the majority of SHS students has a positive perception of CBI (Mean=3.0) as they perceived CBI as a strategy which help them to collaborate with friend to learn during Social Studies instructions. Collaborative learning enable the students to acquire emotional intelligence, communication skills, team work, and creativity which are required in the 21st information age economy. This

however depends on the perceptions students and teachers have towards the pedagogical use of ICT in education.

Research Objective 3: To assess a) schools, and b) teachers' level of preparedness for the integration of CBI in Social Studies instruction.

4.6 Teachers Preparedness for the Integration of CBI in Social Studies Instruction

The preparedness of the sampled SHSs in terms of digital infrastructure suitable for CBI integration was assessed using 10 items. Social Studies teacher preparedness regarding their Technological Pedagogical Content Knowledge (TPCK) was also evaluated using five-point Likert scale as can be seen in the subsequent pages.

4.6.1 Schools Preparedness for the Integration of CBI in Social Studies Instruction

A checklist comprising 10 items was used to assess the digital infrastructure of the sampled schools results of which are illustrated in Table 4.10.

Table 4.10 Results from Assessment of Schools' Digital Infrastructure

Availability of ICT Resources/Infrastructure	Frequency (YES)	Percent (%)
The school has a computer laboratory to facilitate CBI	12	100.0
The school has enough computers to support the integration of CBI in instructional processes	0	0.0
The main location of computers and other ICT tools are accessible to teachers and students	12	100.0
The school has an ICT policy to guide the implementation of CBI	0	0.0
School has other telecommunication facilities including reliable internet	1	8.3
The school has electricity to power the ICT tools	12	100.0
The school has a stand-by generator for power back up	0	0.0
All classrooms in the school are connected to power to support the integration of CBI in teaching and learning	4	33.3
The school has a TV set and DVD player to support video lessons	4	33.3
The school has a Smart Board to facilitate the integration of CBI in Social Studies lessons	1	8.3

Source: Field survey (2018)

Results from Table 4.10 revealed that all the 12 schools (100%) confirmed they had computer laboratories to enhance the application of CBI in Social Studies instruction. They also confirmed all the ICT laboratories were connected to electricity from the national grid and that they were accessible to all Social Studies teachers and students, which confirms (GOG Mid-Year Review and Supplementary Estimates, 2020) conclusion that in Ghana, access to electricity as at 2020 stood at 84.98%, second highest in Sub-Saharan Africa. However, all the 12 sampled schools (100%) did not have school-based ICT policies, and standby generators for power backup to facilitate the implementation of CBI in the teaching and learning processes. They also mentioned inadequate computers and projectors for teachers and students to use during teaching and learning. Although data from (Digital Ghana, 2020) shows internet penetration rate in the country stood at 48% by January 2020 with 14.76 million internet users, only 1 school representing (8.3%) was connected to the internet to facilitate online learning.

These findings concur with those from Malekani (2018) whose study reported poor internet connectivity, absence of standby generators and lack of school-based ICT policies as barriers to technology use in Tanzania secondary schools. Only 4 schools representing (33.3%) responded that all their classrooms were connected to electricity and with TV sets and DVD players to enhance the application of CBI in teaching and learning of Social Studies. Additionally, only 1 school representing (8.3%) confirmed they had Smart Board to support the integration of CBI in the teaching and learning of Social Studies. However, during the time of the visit by the research team, the Smart Board had broken down and hence not in use. The above findings were at variance with

the international standard which established the appropriate student-to-computer ratio be 4:1 in all public schools (Babette & Reitzes, 2011).

4.6.2 Teachers Preparedness (ICT Skill) for the Integration of CBI in Social

Studies Instruction

Teachers' ICT skills suitable for the integration of CBI in Social Studies instruction was evaluated using 10 items on a five-point Likert scale format (from 1-strongly disagree to 5-strongly agree) shown in Table 4.11 below.

Table 4.11 Teachers ICT Skills Preparedness for CBI Integration in Social Studies Instructions

Teachers Knowledge and skills of ICT	SD	D	N	A	SA	Total
I can use computer games and drills to teach	7 (8.3%)	17 (20.2%)	21 (25%)	34 (40.5%)	5 (6%)	84 (100%)
I can create, use and delete PowerPoint presentation slides.	5 (6%)	16 (19%)	11 (13.1%)	29 (34.5%)	23 (27.4%)	84 (100%)
I can add video clip to PowerPoint during lesson delivery	5 (6%)	21 (25%)	17 (20.2%)	23 (27.4%)	18 (21.4%)	84 (100%)
I can use Smart Board to support students' learning	31 (36.9%)	38 (45.2%)	15 (17.9%)	0 (0.0%)	0.0 (0.0%)	84 (100%)
I can Save PowerPoint Presentations	3 (3.6%)	16 (19%)	6 (7.1%)	29 (34.5%)	30 (35.7%)	84 (100%)
I can change the background for PowerPoint	5 (6%)	21 (25%)	9 (10.7%)	28 (33.3%)	21 (25%)	84 (100%)
I can deliver video lessons	2 (2.4%)	16 (19%)	8 (9.5%)	34 (40.5%)	24 (28.6%)	84 (100%)
Download images for instructional use	0 (0.0%)	17 (20.2%)	7 (8.3%)	37 (44%)	23 (27.4%)	84 (100%)
Using web-based resources during instruction	2 (2.4%)	11 (13.1%)	18 (21.4%)	34 (40.5%)	19 (22.6%)	84 (100%)
I can use the internet to search for information	0 (0.0%)	4 (4.8%)	7 (8.3%)	45 (53.6%)	28 (33.3%)	84 (100%)

Source: Field survey (2018)

Results from Table 4,11 above provided mixed conclusions on whether teachers were adequately prepared with ICT skills to enable them integrate CBI into Social Studies instructions or not. For instance, I can use computer games and drills to teach in class (40.5%+6%) =46.5%, I can save PowerPoint presentation (34.5%+35.7%) =70.2%, I can use video during Social Studies instructions (40.5%+28.6%) =69.1%, use web-based resources during instructions (40.5%+22.6%) =63.1%, go the internet for information (53.6%+33.3%) =86.9%. However, (36.9%+45.2%) =82.1% of the teachers indicated they did not have competencies to use Smart Boards to support students learning, (6%+19%) =25% could not create, use and delete PowerPoint slides, and 20.2% could not download images from the internet for instructional purposes. This could be as a result of the fact that the teachers were not trained on how to pedagogically use these resources to support students learning. One school head opines that:

Ever since I took over this school, Social Studies teachers have never attended any in-service training aimed at building their capacity to integrate CBI in their instructions. However, all my Social Studies teachers are trained. Therefore, in their respective Universities their might have been trained on how to incorporate CBI in their instructions.

These findings concur with Musyoki (2016) whose research on the influence of ICT on Geography instructions in public secondary schools in Kenya concluded that insufficient ICT infrastructure, low ICT skills among teachers, lack of school ICT policies and limited access to technical support were the main barriers that hinder ICT integration in Geography instructions. Cambridge Education (2017) survey on CoEs in Ghana which concluded that low levels of ICT capacity in most CoEs resulted from

limited ICT infrastructure, tutors limited ICT skills and absence of college based ICT policies.

4.6.3 Teachers Preparedness (TPCK) for CBI Integration in Social Studies Teaching and Learning

Teachers' preparedness on Technological Pedagogical Content Knowledge (TPCK) for CBI integration was examined using 12 items on a five-point Likert scale as shown in Table 4.12.

Table 4.12 Teachers Preparedness (TPCK) for CBI Integration in Social Studies Teaching and Learning

Teachers Technological Pedagogical Content Knowledge (TPACK)	SD	D	N	A	SA	Total
I know how to solve my own technical challenges during CBI.	9 (10.7%)	37 (44%)	14 (16.7%)	21 (25%)	3 (3.6%)	84 (100%)
I have technical skills needed to use CBI.	7 (8.3%)	27 (32.1%)	12 (14.3%)	35 (41.7%)	3 (3.6%)	84 (100%)
I can plan a lesson that incorporate CBI	7 (8.3%)	27 (32.1%)	13 (15.5%)	28 (33.3%)	9 (10.7%)	84 (100%)
I have sufficient subject matter knowledge in Social Studies content	0 (0.0%)	1 (1.2%)	3 (3.6%)	30 (35.7%)	50 (59.5%)	84 (100%)
I know how to select teaching styles suitable for different learners.	0 (0.0%)	2 (2.4%)	2 (2.4%)	36 (42.9%)	44 (52.4%)	84 (100%)
I know how to assess students' in Social Studies instruction	0 (0.0%)	0 (0.0%)	2 (2.4%)	32 (38.1%)	50 (59.5%)	84 (100%)
I know how to manage CBI classroom for effective learning	0 (0.0%)	0 (0.0%)	1 (1.2%)	28 (33.3%)	55 (65.5%)	84 (100%)
I can select approaches to guide students' thinking and learning	0 (0.0%)	1 (1.2%)	6 (7.1%)	31 (36.9%)	46 (54.8%)	84 (100%)
I can download images from YouTube and use in class	0 (0.0%)	10 (11.9%)	14 (16.7%)	35 (41.7%)	25 (29.8%)	84 (100%)
I can use web-based resources in class	0 (0.0%)	13 (15.5%)	13 (15.5%)	32 (38.1%)	26 (31%)	84 (100%)
I can integrate video into my lessons	2 (2.4%)	12 (14.3%)	9 (10.7%)	36 (42.9%)	25 (29.8%)	84 (100%)
I can offer leadership for CBI use in my school.	0 (0.0%)	8 (9.5%)	17 (20.2%)	34 (40.5%)	25 (29.8%)	84 (100%)

Source: Field survey (2018)

From Table 4.12, the results indicated that SHS Social Studies teachers had a varied Technological Pedagogical Content Knowledge. For example, I know how to solve my own technical challenges during CBI (10.7%+44%) =54.7% disagreed with the statement meaning they did not have skill to do so. I have technical skills needed to use during CBI (8.3%+32.1%) =40.4% disagreed with the assertion meaning they lack skills to integrate CBI into their lessons. This therefore implies that the majority of SHS Social Studies teachers lack Technological skills needed for an effective use of CBI in Social Studies instruction. This could partly be one of the factors responsible for low integration of CBI in Social Studies instruction in the selected schools. The above findings are consistent with Mwunda (2014) whose research concluded that pedagogical use of ICT among secondary schools in Machakos Sub-county in Kenya was still low due to teachers' low ICT technical skills.

In terms of Pedagogical Knowledge, the following responses were recorded. I can plan a lesson that incorporate CBI (33.3%+10.7%) =44% agreed, meaning majority of the teachers could not design CBI. I know how to select teaching styles suitable for different learners (42.9%+52.4%) =95.3% agreed, meaning they could use differentiated instructions to meet the varying learning needs of students. I know how to assess students' performance during Social Studies instructions (38.1%+59.5%) =97.6% agreed, meaning they could competently assess their students' performance during Social Studies instructions. I can select appropriate teaching approaches to guide students thinking and learning (36.9%+54.8%) =91.7% agreed to the assertion. This therefore implies that apart from instructional design of CBI, teachers had appropriate

pedagogical knowledge suitable for the integration of CBI in their instructions. On the contrary (GEM Report, 2018) concluded that teachers pedagogical knowledge in five OECD countries found that assessment, research and data use was the least emphasized part of pre-service education.

In terms of Content Knowledge, I have sufficient subject matter knowledge in Social Studies content (35.7%+59.5%) =95.2% agreed to that assertion, meaning they have enough content knowledge to use during CBI. I can offer leadership on content, technologies, and pedagogy in my school (40.5%+29.8%) =70.3% agreed to the statement meaning there is the will to support the implementation of technology during Social Studies instructions to support students learning. A school head indicated that:

The school sometimes organizes school based in-service training to build the capacity of the teachers to improve on their teaching. For instance, last term, the Languages Department in the school organized one training for all staff within the department. However, for the past 3 years since I came to this school, we never had a national in-service training workshop organized for Social Studies teachers to build their capacity on how to integrate technology in their lessons.

Another head added:

Ever since I took over this school, Social Studies teachers have never attended any in-service training aimed at building their capacity to integrate CBI in their instructions. However, all my Social Studies teachers are trained. Therefore, in their respective Universities their might have been trained on how to incorporate CBI in their instructions.

The above revelations imply that though the selected SHSs Social Studies teachers had content and pedagogical knowledge, they lacked technical knowledge required for effective application of CBI in their instructional processes. This could be due to the absence of periodic in-service training for teachers' professional development. As more

funds are been channeled into the implementation of the new standard based curriculum, teachers professional development should be adequately catered for.

4.6.4 Training Needs Assessment (TNA) of Teachers on the Integration of CBI in Social Studies Instruction

The Training Needs Assessment (TNA) of Social Studies teachers on the integration of CBI in Social Studies instruction was measured using 10 items on a five-point Likert scale format (from 1-strongly disagree to 5-strongly agree) as in Table 4.13.

Table 4.13 Training Needs Assessment of Teachers on CBI Integration in Social Studies Instruction

Teachers Knowledge and skills of ICT	SD	D	N	A	SA	Total
I need support in basic ICT skills.	26 (31%)	0 (0.0%)	0 (0.0%)	5 (6%)	53 (63.1%)	84 (100%)
I need training on how to integrate CBI Social Studies lessons.	9 (10.7%)	1 (1.2%)	0 (0.0%)	16 (19%)	58 (69%)	84 (100%)
I need training on how to incorporate computer simulations and games	10 (11.9%)	2 (2.4%)	0 (0.0%)	11 (13.1%)	61 (72.6%)	84 (100%)
I need training on how to prepare slides and use them during instruction	16 (19%)	10 (11.9%)	0 (0.0%)	12 (13.3%)	46 (54.8%)	84 (100%)
I need training on how to integrate video into Social Studies lessons	11 (13.1%)	10 (11.9%)	0 (0.0%)	3 (3.6%)	60 (71.4%)	84 (100%)
I need training on how to use Smart Board to support students' learning	12 (14.3%)	8 (9.5%)	0 (0.0%)	8 (9.5%)	56 (66.7%)	84 (100%)
I need training on how to use YouTube and WhatsApp to support students' learning in class	21 (25%)	10 (11.9%)	0 (0.0%)	10 (11.9%)	43 (51.2%)	84 (100%)
I need training on how to use a computer to prepare and store assessment items for examination	17 (20.2%)	5 (6.0%)	0 (0.0%)	7 (8.3%)	55 (65.5%)	84 (100%)
I need training on how to download images from the internet and use them during Social Studies lessons	2 (2.4%)	3 (3.6%)	0 (0.0%)	13 (15.5%)	66 (78.6%)	84 (100%)
I need training on how to integrate student-centered pedagogy into my video lesson	3 (3.6%)	0 (0.0%)	0 (0.0%)	17 (20.2%)	64 (76.2%)	84 (100%)

Source: Field survey (2018)

Training Needs Assessment (TNA) is a gradual investigation of an issue or innovation using data and views from different sources to be able to design an effective intervention(s) or recommendation(s) on what should be done next (Dweh, Agarwal, Oppong, Darko, & Gagakuma, 2016). The aim of TNA is to ensure that the training programmes are well focused and relevant to meet the needs of the trainees. From Table 4.13, sampled SHSs Social Studies teachers training needs were assessed based on 10 different CBI strategies the results of which are as follows. I need training on basic ICT skills (6%+63.1%)=69.1% agreed, I need training on how to incorporate computer simulations and games in my lessons (13.1%+76.2%)=89.3% agreed, I need training on how to use Smart Boards to support students learning (9.5%+66.7%)=76.2% agreed with the assertion, I need some training on how to use YouTube and WhatsApp to support students learning (11.9%+51.2%)=63.1% agreed, I need some training on how to prepare and store assessment items for examination (8.2%+65.5%)=73.3%, and I need training on how to integrate student-centered pedagogy into my video lessons (20.2%+76.2%)=96.4% agreed. This implies that the majority of the SHS Social Studies teachers did not have the requisite ICT skills and competencies to effectively integrate CBI in their instructional processes and hence requires further training on those specific areas.

These findings concur with those from Musyoki (2016) whose study in Kenya cited limited ICT skills among teachers as a challenge to the effective application of ICT in Geography education. In agreement, Cambridge Education (2017) survey on CoEs in Ghana concluded that low levels of ICT capacity in most CoEs resulted from tutors

limited ICT skills. Natia and Al-Hassan (2015) shared similar views. Steps should be taken to train, enhance, and develop the inherent skills, knowledge and competencies of the teachers to enable them use technology to facilitate authentic learning in schools.

4.6.5 Teachers Views on Whether Content in Social Studies Curriculum requires the Integration of CBI

Teachers views on whether Social Studies content require the application of CBI during instructions was measured using 10 topics from the school curriculum. Participants were supposed to select either Yes or No on whether those content requires the integration of CBI during teaching and learning or not. Table 4.14 illustrate responses from the teachers.

Table 4.14 Teachers’ Views on CBI Integration into Social Studies Content

Social Studies Content/Topics	No	Yes	Total Percent of Yes (%)
Our Culture and National Identity	4	80	95.2
Resource Development and Utilization in Ghana	5	79	94.0
The world of Work and Entrepreneurship	8	77	91.7
Sustainable Development	9	76	90.5
Peace building and Conflict Resolution	10	75	89.3
Population Growth and Development	11	74	88.1
Socialization and Our Social Environment	12	73	86.9
Our Constitution, Democracy and Nation Building	12	73	86.9
Education and Social Change	13	72	85.7
Rights and Responsibilities of the Individual	16	69	82.1

Source: Field survey (2018)

From Table 4.14 above, as many as 80 teachers representing 95.2% agreed that the topic “Our Culture and National Identity” should be taught with CBI pedagogy. Similar responses were recorded on other topics in the Social Studies curriculum. This has reinforced the earlier findings that the perception of Social Studies teachers towards CBI is positive and should be sustained.

Research Objective 4: To investigate the extent to which teachers and students integrate CBI Social Studies instructions

4.7 The Extent to which Teachers and Students Integrate CBI in Social Studies Instruction

The extent to which students and teachers incorporated CBI into Social Studies instruction was evaluated by means of a five-point Likert scale using 12 items the results of which was analyzed using simple frequencies, percentages, mean and standard deviation as can be seen in subsequent pages.

4.7.1 The Extent to which Teachers Integrate CBI in Social Studies Instruction

The extent of CBI integration in teaching and learning depend on a plethora of factors including learners and teachers ICT skills, level of teacher training, teachers and learners computer attitude, availability of ICT resources, time, level of support from school management, presence of school based ICT policies, among other factors. In this study, the extent to which teachers integrated CBI in Social Studies instructions was analyzed using 12 items on a five point Likert scale format (from 1-not at all to 5-every day) as illustrated by Table 4.15.

Table 4.15 Extent to which Teachers Integrate CBI in Social Studies Instructions

ICT Tools	Not at all	Rarely	Once a week	Several times per week	Every day	Total
Use of computer tutorials in class	45 (53.6%)	30 (35.7%)	5 (6.0%)	4 (4.8%)	0 (0.0%)	84 (100%)
Use of multimedia eg educational CDs such as a set of books	33 (39.3%)	22 (26.2%)	17 (20.2%)	9 (10.7%)	3 (3.6%)	84 (100%)
Use of computer instructional simulations to enhance learning	27 (32.1%)	24 (28.6%)	10 (11.9%)	17 (20.2%)	6 (7.1%)	84 (100%)
Use of video for demonstrations in class.	41 (48.8%)	32 (38.1%)	5 (6%)	4 (4.8%)	2 (2.4%)	84 (100%)
Use of computer intelligent tutoring systems	32 (38.1%)	26 (31%)	11 (13.1%)	7 (8.3%)	8 (9.5%)	84 (100%)
Use of PowerPoint presentation with animations	57 (67.9%)	25 (29.8%)	0 (0.0%)	0 (0.0%)	2 (2.4%)	84 (100%)
Use of WhatsApp, and YouTube during instructions	38 (45.2%)	30 (35.7%)	7 (8.3%)	7 (8.3%)	2 (2.4%)	84 (100%)
Use of Mobile phones to support learning in class	20 (23.8%)	23 (27.4%)	9 (10.7%)	22 (26.2%)	10 (11.9%)	84 (100%)
Use of computers for examination storage and preparation	18 (21.4%)	25 (29.8%)	7 (8.3%)	12 (14.3%)	22 (26.2%)	84 (100%)
Use of computer to preparations report cards	23 (27.4%)	31 (36.9%)	2 (2.4%)	14 (16.7%)	14 (16.7%)	84 (100%)
Use of computer drill and practice to foster critical thinking among students	49 (58.3%)	22 (26.2%)	6 (7.1%)	6 (7.1%)	1 (1.2%)	84 (100%)
Use of the internet to access information during instructions	25 (29.8%)	17 (20.2%)	7 (8.3%)	19 (22.6%)	16 (19%)	84 (100%)

Source: Field survey (2018)

The results from Table 4.15 indicated the extent to which Social Studies teachers integrated CBI into their instructional processes. For instance, $(54.6\%+35.7\%)=90.3\%$ of the teachers hardly use computer tutorials in class; $(32.1\%+28.6\%)=60.7\%$ of the respondents hardly use computer instructional simulations to enhance students learning;

(48.8%+38.1%) =86.9% hardly use video for demonstrations during Social Studies lessons; (38.1%+31%) =69.1% of the respondents hardly use of computer intelligent tutoring systems in Social Studies classes; (67.9%+29.8%) =97.7% of the teachers hardly use PowerPoint with animation during Social Studies instructions. Also, (45.2%+35.7%) =80.9% of the teachers were not using WhatsApp and YouTube during Social Studies lessons; (23.8%+27.4%) =51.2% of the respondents hardly apply mobile phones during instructions to enhance students learning; and (29.8%+20.2%) =50% of the teachers were not using the internet to access information during lesson delivery. These could be as a result of challenges the teachers encountered.

This observation find support from Miima (2015) whose research in Kenya concluded that the pedagogical application of ICT in Kiswahili instruction was not effective. The teachers of Kiswahili language recorded a low mean score of (2.88) on the application of ICT in their instructional processes such as lesson development, conclusions and giving assignments. The studies by (Miima, 2015; Omariba, 2016; & Bariham et al., 2019) also revealed similar results. Maybe beyond training and supply of schools with the needed ICT tool, teachers need to be well motivated and closely supervised. Teachers should leverage the potentials of social media to enhance quality lesson delivery and to stimulate lifelong learning among students.

Further analysis was conducted by calculating and categorizing individual mean scores for the differences of CBI integration in Social Studies instructions. Items with Means that ranged 1 to 2.5 indicated low (below average CBI integration) while items Means

that ranged 2.6 to 5 indicated high (above average CBI integration). The results have been shown in Table 4.16.

Table 4.16 Teachers Mean Scores of CBI Integration in Social Studies Instruction

Computer Based Instruction	N	Minimum	Maximum	Mean	Std. Deviation
Use of computer tutorials in class	84	1	5	1.62	.805
Use of multimedia eg educational CDs such as set of books	84	1	5	2.13	1.159
Use of instructional simulations to enhance learning	84	1	5	2.42	1.319
Use of video for demonstration in class	84	1	5	1.74	.946
Use of computer intelligent tutoring systems	84	1	5	2.20	1.297
Use of PowerPoint presentations with animations	84	1	5	1.39	.728
Use of WhatsApp and YouTube to support students learning	84	1	5	1.87	1.039
Use of Mobile phones to support learning in class	84	1	5	2.75	1.387
Use of computer problem solving approach	84	1	5	1.95	1.260
Use of Computers for Examination preparation and storage	84	1	5	2.94	1.539
Use of Computers for preparation of students report cards	84	1	5	2.58	1.466
Use of Smart Boards to enhance students learning in class	84	1	5	2.05	1.307
Use of Computer drills and practice to foster critical thinking among students	84	1	5	1.67	.974
Use of Computer storage devices in class to store students work	84	1	5	2.23	1.476
Use of internet to access information in class during instructions	84	1	5	2.81	1.540
Total Integration Score				32.35	11.536

Source: Field survey (2018)

The data from Table 4.16 indicated total means scores for the CBI integration by Social Studies teachers were (2.2) which was low (below average). For instance, teachers incorporated CBI in Social Studies instructions notably for exams preparation and storage (Mean=2.94, SD=1.593), use of the internet to access information during

instructions in class (Mean=2.81, SD=1.540) and use of mobile phones to support learning in class (Mean=2.75, SD=1.38), use of video (Mean=1.74, SD=.946), use of computer drills and practice to foster critical thinking among students (Mean=1.67, SD=.944).

On further scrutiny, it was discovered that on average, sampled SHSs Social Studies teachers integrated CBI in their lessons through the use of multimedia, use of instructional simulations, use of computer intelligent tutoring systems, and the use of storage devices in class to store students work. However, the total mean score of teachers CBI integration was (Mean=2.2, SD=1.217) which was low and below average. Comparing these findings to the channels of Diffusion of Innovations as advocated by Rogers (1995), it showed that the teachers were in the early stage of technology adoption. In this stage, majority of individuals in an organisation doubt the benefits of innovation and may avoid changing from their long-held traditional ways of doing things.

This observation is consistent with those from Buabeng-Andoh (2012) who study discovered that most Ghanaian teachers were averagely competent in the application of basic ICT tools in instructions (Mean=3.02, SD=0.99). In support of these results, similar studies by Jegede (2006) in Nigeria and Lau and Sim (2008) in Malaysia revealed that teachers integrate elementary ICT tools in their instructional processes. Several factors could be responsible for this conundrum such as limited ICT technical

skills among teachers, inadequate teacher professional development programmes, among others.

4.7.2 The Extent to which Students' Integrate CBI into Social Studies Learning

Analysis of the level of CBI use by students in the learning of Social Studies was analyzed as captured in Table 4.17.

Table 4.17 The Extent to which Students Integrate CBI in Social Studies Learning

Computer-Based Instructional Strategies	Not at all	Rarely	Once a week	Several times per week	Every day	Total
Use of computer tutorials to learn in class	870 (89.5%)	27 (2.8%)	49 (5%)	18 (1.9%)	8 (0.8%)	972 (100%)
Use of multimedia eg educational CDs	785 (80.8%)	71 (7.3%)	37 (3.8%)	33 (3.4%)	46 (4.7%)	972 (100%)
Use of computer instructional simulations	613 (63.1%)	155 (15.9%)	82 (8.4%)	55 (5.7%)	67 (6.9%)	972 (100%)
Use of video for learning	873 (89.8%)	54 (5.6%)	24 (2.5%)	14 (1.4%)	7 (0.7%)	972 (100%)
Use of computer intelligent tutoring systems	664 (68.3%)	124 (12.8%)	64 (6.6%)	41 (4.2%)	79 (8.1%)	972 (100%)
Use of PowerPoint during instructions	808 (83.1%)	77 (7.9%)	41 (4.2%)	26 (2.7%)	20 (2.1%)	972 (100%)
Use of WhatsApp, and YouTube in class	866 (89.1%)	46 (4.7%)	24 (2.5%)	16 (1.6%)	20 (2.1%)	972 (100%)
Use of Mobile phones to support learning	782 (80.5%)	83 (8.5%)	56 (5.8%)	31 (3.2%)	20 (2.1%)	972 (100%)
Use of computer problem-solving approaches	737 (75.8%)	89 (9.2%)	63 (6.5%)	38 (3.9%)	45 (4.6%)	972 (100%)
Use of ICT for examination	618 (63.6%)	145 (14.9%)	52 (5.3%)	48 (4.9%)	109 (11.2%)	972 (100%)

Source: Field survey (2018)

The results from Table 4.17 were analyzed using a five-point Likert scale of the frequency of use of CBI by SHS students; measured by not at all, rarely use, use once a week, use several times per week, and using it every day. For example, $(89.5\%+2.8\%) = 92.3\%$ hardly used computer tutorials, $(80.8\%+7.3\%) = 88.1\%$ of the students hardly used multimedia to learn, $(89.8\%+5.6\%) = 95.4\%$ of the respondents hardly use WhatsApp and YouTube, $(80.5\%+8.5\%) = 89\%$ were not learning with mobile phones. The GES policy that prohibit students from using phones in secondary schools could be partly responsible for that. Also, $(63.6\%+14.9\%) = 78.5\%$ of the respondents were not using computers to prepare for exams.

Above findings was in line with conclusions by Bariham (2019) whose study on CBI application among basic schools teachers in Tamale Metropolis reported low usage of ICT by teachers during Social Studies instructions. More investments need to be done to supply schools with the relevant digital resources to enable the teachers and students utilize them effectively to improve on their learning outcomes. The rate of ICT integration was found to be high at the Irish secondary schools in the science, applied sciences, and Social Studies subjects (Department of Education and Science, 2008). To deliver free quality SHS education, more investments should be made to adequately resource schools with relevant infrastructure coupled with well-equipped teachers to deliver quality instructions in schools that integrate technology.

Further analysis was done by grouping and calculating individual mean scores for the differences in CBI integration in Social Studies learning among students. Items with

Means that ranged 1 to 2.5 indicated low (below average CBI integration) while items Means that ranged 2.6 to 5 indicated high (above average CBI integration) as illustrated in Table 4.18 below.

Table 4.18 Students Mean Scores on CBI Integration in Social Studies Learning

Computer Based Instruction	N	Minimum	Maximum	Mean	Std. Deviation
Use of Computer tutorials in class	972	1	5	1.22	.694
Use of multimedia eg educational CDs	972	1	5	1.44	1.047
Use of computer instructional simulations to enhance learning	972	1	5	1.77	1.230
Use of video for demonstration in class	972	1	5	1.18	.607
Use of computer intelligent tutoring systems to enhance learning	972	1	5	1.71	1.252
Use of PowerPoint presentation with animation to promote learning	972	1	5	1.33	.844
Use of WhatsApp and YouTube to support learning in class	972	1	5	1.23	.756
Use of mobile phones to support students learning in class	972	1	5	1.38	.889
Use of computer problem solving approach during Social Studies instructions	972	1	5	1.52	1.082
Use of computers for examination preparation	972	1	5	1.85	1.370

Source: Field survey (2018)

Results from Table 4.18 indicated that the total mean marks for CBI integration in Social Studies learning by students was (Mean=1.2, SD=0.9771) which was very low. Specifically, use of computer tutorials in class (Mean=1.22, SD=.694), use of

multimedia in learning (Mean=1.44, SD=1.047), use of video to learn during Social Studies instructions (Mean=1.18, SD=.607), use of WhatsApp and YouTube to support learning (Mean=1.23, SD=.756), use of computer problem solving approach during Social Studies lessons (Mean=1.52, SD=1.082), and use of computers to prepare for exams (Mean=1.85, SD=1.370).

The above results concurs with Charles and Yidana (2015) whose research on ICT in Ghanaian secondary schools reported that although the students used ICT to communicate with their friends, their use of ICT for learning was below average. In agreement, Belal (2011) in his qualitative study concluded that despite the widespread global use of ICT to transform higher education teaching and learning, findings in this study revealed that interviewees' use of Computer Assisted Learning courseware was rather low and restrictive. Similarly, Melekani (2018) research in Tanzania cited limited schools ICT facilities, absence of in-service training, and poor internet connection as factors that hampered teachers' pedagogical application of ICT in classrooms.

Research Objective 5: To explore challenges a) teachers and b) students face in using CBI in Social Studies instruction.

4.8 Challenges Faced by Teachers and Students When Employing CBI in Social Studies Instruction

Although the selected SHSs had computer laboratories, it was significant to discover that learners and teachers faced challenges in incorporating CBI in Social Studies lessons. These findings reinforced the assertion that the mere presence of a computer

laboratory does not guarantee the effective utilization of technology in Social Studies classrooms. For clarity, the challenges were categorized into two thematic areas, namely; challenges teachers faced and challenges faced by the students.

4.8.1 Challenges Teachers faced when employing CBI in Social Studies Instruction

Evidently, access to and the availability of digital infrastructure remain the most significant issue that influence teachers' use of CBI in learning processes. The teachers were therefore asked to mention challenges and constraints militating against their effective utilization of CBI in Social Studies instruction. For clarity, the researcher categorized the views from the informants into three. Namely, teacher-related challenges, school infrastructure-related challenges, and policy-related challenges. In terms of teacher-related challenges, the teachers listed challenges such as limited teachers' technical and pedagogical knowledge on how to use CBI to support students learning, limited access to computers by individual teachers and students, lack of teachers access to the internet after school, negative perception of some teachers towards CBI, difficulty in accessing information from the internet and insufficient training for teachers on how to apply CBI to enhance students learning.

These findings concurs with Natia and Al-hasssan (2015), Julius (2018) Bariham et al (2019) and Tapera & Kujeke (2019) whose findings listed lack of internet, lack of computer skills among teachers, time constraints, resistance to change, insufficient training and negative attitudes towards ICT as challenges to the effective utilization of CBI in learning and teaching. For school infrastructure related challenges, the teachers

listed lack of internet/poor internet connections, unreliable power supply/frequent power outages, poor electrical connections in classrooms, ICT laboratory is not large and conducive enough to accommodate students during teaching and learning, insufficient ICT tools such as computers, projectors, TV sets and DVD players, SMART Boards, and laptops, lack of relevant digital content, lack of access to electricity supply in classrooms, and poor maintenance of ICT infrastructure due to limited funding. The above findings are consistent with those from (Toprakci, 2006; Atta, 2015; Ghavifekr et al, 2015; Nikolopoulou & Gialamas, 2016; & Bariham, 2019).

Again, attempts to develop a literacy phone application to support non-formal education in Ghana have been negatively affected by insufficient financial resources (Ghana Education Strategic Plan, 2018-2030).

One school head remarked that:

Our challenges are many but I will mention the key ones. Lack of enough computers. The whole school can only boast of 40 computers and 1 projector meant for over 3,000 students. This affects teachers' ability to employ technology during instruction. Also, the lack of a reliable internet in the school is another challenge. This affects attempts by Social Studies teachers to incorporate CBI into their lessons.

Policy-related challenges were listed by Social Studies teachers to include insufficient time for the integration of CBI, GES policy does not allow students to use phones in schools, lack of incentives from school management to motivate teachers, large class sizes due to the free SHS policy, lack of governmental will to commit funds to facilitate the integration of CBI in schools, and the lack of school-based ICT policies. This

discovery concurs with (Ramorola, 2013) whose study discovered that most secondary schools in South Africa do not have ICT policies. Again, Murithi, Gitonga and Kimanthi (2013) opine that schools with ICT policies were able to fully implement ICT effectively in instruction. The curriculum-related gaps were listed as the silence by Social Studies curriculum for SHSs on technology integration in the teaching and learning, and teacher training curriculum that did not train teachers on how to incorporate technology in their instructions. Similar findings were discovered by (Omariba, 2016; Miima, 2014; Tapera & Kujeke, 2019; Bariham et al 2019).

4.8.2 Challenges faced by Students when employing CBI in Social Studies Learning

The students listed the challenges they face when learning with CBI as poor attitudes of some students towards the use of CBI during Social Studies instruction, poor computer skills among students, large class sizes resulting in pairing students with computers, lack of motivation and support from teachers, insufficient time, lack of enough storage devices, insufficient qualify Social Studies teachers, teachers absenteeism, difficulty in operating ICT tools, poor internet connection, GES policy which ban students from using phones in schools, and lack of access to computers by students to practice what is learned.

One school head reported that:

I can say my school have computers enough for one class to use at a time. However, the computers are not enough if more than one class is to integrate CBI in their teaching and learning. Again, the school don't have internet.

Although the internet infrastructure exists in the school, it does not function. Government has plans of coming in to support us in that aspect.

Similarly, another head noted that:

The school has total enrollment of about 2,700 students. The 40 computers at the ICT laboratory is not enough. Two or more teachers cannot use Computer Base Instruction at the same time. Secondly, the school also lack enough projectors. The projectors for the school are only 6 which is woefully inadequate to support effective teaching and learning that incorporate technology. Also, though we have internet, I was told the network is not reliable. Again, the school has no TV set with relevant educational CDs to support video lessons. The school also lacks SMART Board to enhance the integration of technology in instruction of not only Social Studies but all the subjects in the curriculum. Finally, inadequate technical and pedagogical skills among Social Studies teachers could also negatively affect their ability to incorporate CBI in their lessons. This is as a result of lack of in-service training.

These findings concur with Pephrah (2016) whose research revealed that lack of computers, lack of internet access, lack of quality teachers and limited practical after teaching were listed by basic school students in Ghana as barriers to their desire to learn with ICT. More support is required from the Government of Ghana and other partners in the education to design and implement interventions to overcome all the challenges students faced in their attempt to learn with technology in Ghanaian schools.

Research Objective 6: Suggest strategies to deal with the challenges faced by teachers and students when using CBI in Social Studies instruction.

4.9 Strategies to Overcome the Challenges faced by Teachers and Students when Integrating CBI in Social Studies Lessons

Social Studies teachers and students suggested various strategies to overcome the challenges they faced with the integration of CBI in the teaching and learning as captured in the following headings.

4.9.1 Teachers' Suggestions on Strategies to overcome the Challenges faced with CBI Integration

Heads of schools and teachers were asked what they think the Government of Ghana and other stakeholders in the education could do to enhance the application of CBI in schools to enhance students learning outcomes.

One of the schools head observed that:

I think one of the most appropriate strategies to use to enhance the integration of CBI in SHSs instructions is subsidizing the cost of computers by the Ministry of Education to enable teachers and students acquire them for educational purposes. Another thing that can be done by the Ministry of Education is to ensure that each school has sufficient ICT tools and technicians because the problem we face here is that we need technicians to maintain the ICT tools and facilities.

The following were the Social Studies teachers' views on strategies to overcome the challenges they faced when integrating CBI in their lessons:

- i. The government in collaboration with private sector and Parent Teacher Associations should invest financial resources to procure and maintain ICT tools in Senior High Schools in the country
- ii. Head teachers should guide teachers to develop school-based ICT policies to guide the implementation of technology in the teaching and learning.

- iii. In-service training workshops should be organized to build the capacity of teachers to effectively incorporate CBI into their lessons to enhance students learning outcomes.
- iv. The Ghana Education Service policy that bans students from using phones on campuses should be lifted to enable students to use phones in schools to support online learning.
- v. All Senior High Schools should be connected to the internet, and equipped with TV sets and White Interactive Boards to support the integration of CBI in Social Studies instruction.
- vi. All classrooms must have enough furniture and functional electrical fittings to enable teachers integrate CBI to improve students' learning outcomes.
- vii. SHSs instructional time tables should be flexible to allow for the integration of CBI in instructional processes. The two hour period per week for Social Studies lessons should be increased to four hours for effective implementation of CBI in instructional processes to foster lifelong learning.
- viii. Social Studies teachers and students should be given laptops to support their preparation for computer based lessons.
- ix. Social Studies curriculum for Senior High Schools and that of teacher training institutions should be revised to make room for the integration of CBI in instruction to enhance students learning.
- x. The MoE in collaboration with the NaCCA should establish an e-content development center charged with the responsibility of developing digital content

for all schools in the country to support the application of CBI in the instructional processes.

- xi. More computer labs and classrooms should be constructed to accommodate the increasing number of Senior High School students in the country.
- xii. More ICT teachers should be trained and posted to Senior High Schools to teach and offer CBI related technical support to other teachers when the need arises.
- xiii. Social Studies teachers should be motivated in every way possible to stimulate them to incorporate technology in their instruction to enhance students learning.

In agreement, Kennah (2016) identified the creation of teachers professional development programmes; undertaking national curriculum reforms that makes room for pedagogical application of technology in instruction; designing flexible time tables that provide enough time for CBI integration; allocating adequate funds for teachers in-service training as opposed to purchasing more computers annually; investment more into moving ICT facilities into classrooms instead of building multimedia centers; ensuring in-service training becomes a must for all staff; offering tutors and pupils easy access to ICT facilities; and providing teachers and students an easy access to a reliable high speed internet connection. Additionally, similar suggestions were given in studies by (Adekunle 2016; Sarfo & Anshong-Gyimah 2010; Mulunje, Mukwa & Too 2017; Bariham 2019). Social Studies classroom computer integration and the spread of CBI programmes in SHSs are progressing steadily in the country. The successful

implementation of CBI in SHSs is critical. Various stakeholders in the field of education including the GoG have a critical role to play.

4.9.2 Students' Suggestions of strategies to overcome the Challenges faced with CBI Integration

To overcome the challenges identified earlier, students were asked to list various ways of overcoming those challenges. Below were the strategies suggested by students to overcome the challenges they faced when learning with Computer Based Instruction. The GES should rethink of the policy that prohibits SHS students from using mobile phones to allow students' access to phones for online learning activities to improve their learning outcomes; more conducive computer labs should be provided in all SHSs to support integration of CBI to enhance students learning; more computers, laptops, projectors, Smart Boards, TV sets, and relevant digital content should be supplied in all schools to promote the application of technology in instructions; there should be regular maintenance of ICT tools and infrastructure in SHSs to make the equipment available to facilitate online learning; the Ghana Education Service should train and post more qualify Social Studies teachers to schools to teach with ICT to improve students' learning outcomes; encouraging and provision of support and rewards to students to motivate them to learn with the technology; the Government of Ghana in collaboration with the private sector should provide generators to all Senior High schools to guarantee a regular power supply to support learning with technology; enough funding should be given to schools quarterly for procurement and maintenance of ICT tools and facilities to support teaching and learning with CBI; the Government of Ghana should build more

computer labs in Senior High schools to accommodate increasing number of students; SHSs teachers and students should be given laptops to support preparation before computer-based lessons; teachers should incorporate CBI in their instructions to improve students learning outcomes and all SHSs should be connected to reliable internet to support online learning.

The above results are in line with those from Miima, (2014) whose findings suggested the need for government and NGOs to supply schools with ICT tools; in-service training on how to integrate ICT in instruction; the need for more time for the integration; capacity building for the older teachers to change their negative perceptions of ICT integration; development of relevant e-content; supply schools with generators and solar panels; and hire more ICT technicians as strategies to improve the integration of ICT in Kiswahili instruction. Similarly, Omariba (2014) outlined the training of teachers; government to supply schools with ICT tools; government to connect all schools with electricity; equip students' at the lower level with basic ICT skills; teachers should slow down during CBI; and the need for government to hire more experienced ICT teachers as measures to improve teachers' integration of technology in the instructional processes.

Kinyua (2017) recommended the need for national-level support aimed at systematic planning for the application of CBI in all schools, by improving digital infrastructure, and training of teachers to acquire relevant ICT skills and competencies for an effective integration. The results serve as a wakeup call to educational technology advocates,

researchers, educational planners, and the government of Ghana to factor in on how to design appropriate policies for effective and efficient application of CBI in instructional processes for quality education for all.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This section summarizes the research findings, presents the conclusions and makes policy recommendations. Finally, the chapter presents suggestions for further research to be carried out as emerged from the study.

5.2 Summary

This unit offers a summary of the results of the research in connection with the readiness of SHSs for the application of CBI in Social Studies instruction in the Northern Region of Ghana.

5.2.1 The relationship between Demographic Characteristics of Teachers and their Integration of CBI in Social Studies Instruction

The study objective one was to establish the relationship between the demographic variables of teachers and their integration of CBI in Social Studies teaching and learning. A null hypothesis was formulated to measure this objective. From the data analyzed, it was discovered that teachers' demographic variables such as age, sex, experience, qualification, and location of schools had no significant relationship with their level of integration of CBI in Social Studies teaching and learning. There was no sufficient evidence to reject the null hypothesis. Therefore, it can be safely concluded that teachers' demographic variables such as age, sex, experience, qualification, and

location of schools had no significant relationship with their level of integration of CBI in Social Studies teaching and learning.

5.2.2 Heads of Schools, Teachers and Students Perceptions of CBI

The second focus of the study was to explore heads of schools', teachers' and students' perceptions of CBI as tools for Social Studies instructions. The findings of the study revealed that most SHSs heads had a positive attitude and perceptions towards CBI integration. Also, the majority of Social Studies tutors and learners had a positive perceptions of CBI integration. This made them develop a favorable attitude toward learning CBI. They advocated for Social Studies curriculum reforms to allow for the integration of CBI to all content of the subject.

5.2.3 Schools', teachers' and students' level of Preparedness for the Application of CBI in Social Studies Instruction

The study objective three was to assess schools', teachers' and students' level of preparedness for the application of CBI in Social Studies instructions. From the findings, it was noted that sampled SHSs had computer laboratories which were all connected to the national grid to enhance CBI integration in instructional processes. The location of the computer laboratories and other ICT tools were accessible to teachers and students. However, the schools lacked internet connectivity to support online learning. They also lacked school-based ICT policies to guide the application of CBI in classrooms. It was also observed that the schools did not have enough computers, projectors, TV sets, DVD players, digital content, and Smart Boards to enhance the

application of CBI in learning activities. Therefore, in terms of digital infrastructure, the sampled schools were not sufficiently prepared for the implementation of CBI in Social Studies instruction.

Again, the majority of Social Studies teachers did not have adequate ICT technical skills required for effective integration of CBI in instructional processes. It is, therefore, safe to conclude although the teachers were pedagogically prepared, they were not technologically prepared for effective integration of CBI in Social Studies instructional processes. However, results from the Training Needs Assessment discovered that most teachers were willing to participate in teacher training programs to build their capacity for effective integration of CBI in learning process.

5.2.4 The Extent to which CBI is Integrate by Teachers and Students in Social Studies Instructions

The objective four of the study was to investigate the extent to which CBIs are integrated by teachers and students in Social Studies instructions. From the data analyzed, it was discovered that most Social Studies tutors did not integrate CBI in their lessons due to several problems, namely; insufficient number of computers, lack of internet in schools, inadequate ICT skills, lack of personal computers for practice, poor digital infrastructure, among others. Similarly, the students were not also integrating CBI in their learning of Social Studies because of several issues such as inadequate number of computers, lack of internet, insufficient ICT skills, limited support from teachers, and limited digital infrastructure in schools, among others. It can, therefore, be

concluded that SHSs Social Studies teachers and students did not incorporate CBI in the teaching and learning of Social Studies.

5.2.5 Challenges Teachers and Students Faced in using CBI in Social Studies instruction

The fifth study objective aimed to examine the problems tutors and learners encounter when using CBI in Social Studies instructional processes. The results from the research discovered that Social Studies teachers faced several challenges in using CBI for Social Studies instructions. They include limited teachers' ICT technical knowledge, limited access to computers by teachers and students, lack of teachers access to the internet after school, difficulty in accessing information from the internet, insufficient training for teachers, absence of internet connections, unreliable power supply/frequent power outages, poor electrical connections in classrooms, ICT laboratories are not large and conducive enough to accommodate students during teaching and learning, insufficient ICT tools such as computers, projectors, TV sets and DVD players, SMART Boards, and laptops, lack of relevant digital content, lack of access to electricity supply in classrooms and lack of school-based ICT policies.

With reference to the challenges students face in using CBI during the learning of Social Studies, the study discovered that students faced a number of challenges. They include poor computer skills among students, large class sizes resulting in pairing students with computers, lack of motivation and support from teachers, insufficient time, lack of enough storage devices, insufficient qualified Social Studies teachers,

teachers absenteeism, difficulty in operating ICT tools, lack internet connection in schools, GES policy which prohibits students from using phones in schools, and inadequate number of computers resulting in students inability to practice what is learned after classes.

5.2.6 Suggestions by Respondents on Strategies to overcome the Challenges

The last objective for the study was to suggest the strategies to overcome the challenges Social Studies teachers and students faced when using CBI in Social Studies instructional processes. The results from the research revealed the various strategies to overcome the challenges and improve the CBI application in the teaching and learning process. Among them include: providing funding to SHS to run and sustain CBI; in-service training for teachers; training of SHSs students on basic ICT skills; supply of schools, teachers, and students with computers and laptops; lifting the ban on students use of phones in SHSs; connection of schools with the internet; making SHSs time table flexible to allow for the integration of CBI in Social Studies instruction; establishment of e-content development center to be responsible for the development and supply of digital content to schools; constructions of more ICT laboratories for SHSs; adoption of gender-inclusive teaching strategies by SHSs teachers; motivation of teachers who teach with CBI; supply SHSs with video, Smart boards, and relevant e-content; and the development of school-based ICT policies by SHSs.

5.3 Conclusions

Based on the research findings, it could be safely concluded that:

- i. From the data analyzed, it was discovered that teachers' demographic variables such as age, sex, experience, qualification, and location of schools had no significant relationship with their level of integration of CBI in Social Studies teaching and learning. There was no sufficient evidence to reject the null hypothesis. Therefore, it can be concluded that teachers' demographic variables such as age, sex, experience, qualification, and location of schools had no significant relationship with their level of integration of CBI in Social Studies teaching and learning.
- ii. The results of the research revealed that SHSs heads, teachers, and students had positive attitudes and perceptions towards the integration of CBI in Social Studies learning and teaching. This made the head teachers, teachers, and students develop a favorable attitude toward learning CBI. However, teachers' perceptions of CBI had no significant influence on their level of integration of CBI in Social Studies instruction.
- iii. It was noted from the results of the research that, sampled SHSs had computer laboratories which were all connected to the national grid to enhance CBI integration, the location of the computer laboratories and other ICT tools that were accessible to teachers and students. However, the schools lacked internet connectivity to support online learning; and a lack of school-based ICT policies to guide the application of CBI in classrooms. It was also observed that the schools did not have enough computers,

projectors, TV sets, DVD players, digital content, and Smart Boards to support the integration of CBI in instructional processes. Therefore, in terms of digital infrastructure, it can be concluded that the sampled schools were not prepared for the integration of CBI in Social Studies instructional processes. Again, the majority of Social Studies teachers and students did not have ICT technical skills required for effective integration of CBI in instructional processes. It can, therefore, be concluded that teachers and students were not technologically prepared for the application of CBI in Social Studies instruction.

- iv. It was also revealed that Social Studies teachers and students were not integrating CBI in their lessons due to a number of constraints such as lack of computers, lack of internet in schools, lack of ICT skills, poor digital infrastructure, and lack of support from teachers, limited budgetary support, and limited digital infrastructure, among others. It can, therefore, be concluded that SHSs Social Studies teachers and students were not incorporating CBI in their instructions.
- v. Teachers of Social Studies and students were saddled with various challenges that impeded their ability to incorporate CBI instruction. These included lack of computers, lack of internet connectivity in schools, lack of ICT skills, poor digital infrastructure, poor ICT skills, lack of access to personal computers by teachers and students, lack of support from teachers, lack of school-based ICT policy, GES Policy that bans students from using

phones in schools, lack of power supply in classrooms, lack of training for teachers, the limited number of furniture in ICT laboratories, among others.

5.4 Recommendations

This unit outlined the recommendations based on the findings as directed by the study objectives, with the goal of facilitating teachers' application of CBI in Social Studies instructional processes to improve students' learning outcomes. The recommendations were directly connected to policy, practice, and suggestions for further research.

5.4.1 Policy Recommendations

Based on the findings, the study provides some recommendations as follow:

- i. The MoE through the GES should re-think social media and mobile phone policies in SHSs to allow the students to use them to support online learning in schools. Our educational system must train innovative kids.
- ii. The MoE through the GES in partnership with other stakeholders in education should equip all SHSs in the country with internet, computers, projectors, Smartboards, tablets, and smartphones to train smart kids who will be able to cope with the digitized economy and digitized work culture. The future of work will be determined globally by a contest between automation and innovation. The children we train from schools today should not be left behind.
- iii. The MoE through the National Council for Curriculum and Assessment (NaCCA) should set up a unit similar to Edustore in Finland to develop e-

content for senior high and basic schools in the country in line with the curriculum. This will enable teachers and students have access to relevant digital content to effectively and efficiently utilize them to support students' learning outcomes in line with the Sustainable Development Goal 5 which focuses on quality education for all and lifelong learning.

- iv. The MoE through the GES should set up Social Studies training centers in all the regional capitals equipped with competent staff to periodically organize in-service training for Social Studies teachers to build their capacity on how to pedagogically incorporate CBI in their instructions to improve students' learning outcomes.
- v. The GoG through the MoE in collaboration with Public-Private Partnership should supply laptops to all Senior High Schools teachers in the country. This will enable the teachers to have access to computers so they can use them effectively when designing their CBIs.
- vi. The GoG through the MoE should provide enough financial resources so that CBI projects can be adequately funded by schools. Part of the funds can be used by SHSs to acquire relevant digital facilities and infrastructure and also meet the recurrent expenditure of CBI such as the purchase of software, data for the internet and hiring of technical staff.

5.4.2 Recommendations on Practice

In line with the findings, the research recommends that:

- i. The GES should ensure that all SHSs in the country develop their school-based ICT Policies. These policies will guide them on how to implement CBI in their instructional processes to enhance quality education in connection with the Sustainable Development Goal 4.
- ii. Heads of SHSs in Ghana should set up incentives to reward teachers who incorporate CBI in their instructional processes. Extrinsic motivation like certificates of appreciation, donation of new computers, and sponsorship for conferences can be given to teachers who employ technology in their instruction. These incentives will motivate the teachers to effectively integrate technology in their instructions to improve students' learning outcomes.
- iii. The GES should organize special in-service training for Social Studies teachers to build their capacity to enable them to effectively implement CBI in teaching and learning to enhance students' learning.
- iv. The GES should ensure all Senior High Schools design checklists and use them for monitoring to ensure all teachers integrate CBI in their instructional processes to improve students' learning outcomes.
- v. The GoG through the GES should employ ICT specialists for SHSs to provide technical support and coaching of teachers on the effective CBI integration in instructional processes of all subjects in the school curriculum including Social Studies.

5.4.3 Suggestions of Areas for Future Research

The research suggests future studies be carried out in the following areas:

- i. The current study focused on the level of public SHSs preparedness for the integration of CBI in Social Studies instruction in the Northern Region, Ghana. Therefore, the study suggests further research in private SHSs to provide data for comparisons, so as to inform educational managers and policymakers on sustainable and workable strategies to improve the quality of instruction through the integration of CBI in learning and teaching process.
- ii. This research again advocates for a research to be carried out in other metropolis, municipals and districts within the Northern Region of Ghana to provide a full picture of the levels of SHSs preparedness for the integration of CBI in instruction, to influence educational policy makers on specific measures to design and implement to enhance the application of CBI in schools to improve students' learning outcomes.
- iii. This study suggests that a quasi-experimental study should be carried out to determine the impact of CBI on students' performance in Social Studies. The findings from such a study will provide a strong justification for the need for continuous investment in digital infrastructure in SHSs by the GoG to support improve the quality of education and lifelong learning.
- iv. This research and the findings were limited to the preparedness of SHSs for the integration of CBI in Social Studies instructions. The study, therefore,

suggests that future researchers who may be interested in this area of study should broaden the study to cover the other subjects within the SHS curriculum to obtain a holistic picture to inform policy reforms.

REFERENCES

- Adams, N.B. (2002). Educational Computing Concerns of Postsecondary Faculty. *Research on Technology in Education*, 34(3), 285-303.
- Adekunle, S. E. (2016). Perception of Secondary Schools' Students on Computer Education in Federal Capital Territory (FCT-Abuja), Nigeria. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*, 10(1), 2016.
- Aghaduins, M. C. K. (1992). *A Path-Analytic Study of Cognitive style Understanding of Science and Attitudinal Variables as Correlates of Achievement in Secondary School Chemistry*. Doctoral Thesis, Unpublished. Ibadan: University of Ibadan.
- Agyei, D. D., & Voogt, J. (2012). Developing Technological Pedagogical Content Knowledge in pre-service mathematics teachers, through Teacher Design Teams. *Australasian Journal of Educational Technology*, 28(3), 547–564.
- Agyemang-Fokuo, A. (1994). *Social Studies teaching: Issues and problems*. Accra: Ghana Universities Press.
- Ajzen I, Holmes W.H. (1976). Uniqueness of behavioural effects in causal attribution. *Journal of Personality*, 44(1).
- Akanmu, I. A. (2015). *Effect of Geogebra Package on learning outcomes of mathematics (secondary schools) students in Ogbomoso North Local Government Area of Oyo State, Nigeria*. Unpublished Master's Thesis. Obafemi Awolowo University, Ile-Ife, Nigeria.
- Akpinar, Y. (2003). The Effect of Higher Education on Teachers' Technology use: The case of Istanbul's schools. *Turkish Online Journal of Educational Technology*.
- Alexanderson, K., & Davidsson, P. (2016). *The Students and Internet 2016: Swedish school-kids internet habits*. Stockholm: Sweden.
- Amedahe, F. K. (2002). *Introduction to Educational Research*. Accra: Mercury Press.
- American Association of University Women (2002). Gender gaps: Where schools still fail our children. Retrieved: December 1, 2018 from <http://www.aauw.org/research/GGES.pdf>
- Ameyaw, Y. & Agbotse, S. (2016). Computer-Assisted Instruction (CAI) as an Alternative Instructional tool for Improving the teaching and learning of Blood Circulation in Humans. *International Journal of Advanced Biological Research*, 6(2), 210-218.

- Anderson, R. E., & Dexter, S. L. (2000). *School Technology Leadership: Incidence and Impact (Teaching, Learning, and Computing: 1998 National Survey Report No. 6)*. Irvine, CA: Center for Research on Information Technology and Organizations, University of California, Irvine.
- Andoh, B. C., & Issifu, Y. (2015). Implementation of ICT in Learning: A study of Students in Ghanaian Secondary Schools. *Procedia-Social and Behavioral Sciences* 191 (2015) 1282-1287.
- Asan, A. (2003). Computer technology awareness by elementary school teachers: A case study from Turkey. *Journal of Information Technology Education*, 2(4), 153-162.
- Atta, E. (2015). *Impact of Computer Based Instruction (CBI) on Students' Performance in Mathematics: A Case Study of Public Basic Schools in Kasoa*. Cape Coast: Master of Education Thesis. University of Cape Coast.
- Atuguba, J. A. (2018). *Environmental Education in Colleges of Education in Ghana: Experiences and Perceptions of Environmental Educators*. Unpublished Doctoral Thesis. University of Birmingham, United Kingdom.
- Ayot, H. O. & Patel, M. M. (1992). *Instructional Methods: General methods*. Nairobi: Kenyatta University.
- Ayot, H. O. (1986). *Social Studies for Lower Primary Teachers*. Nairobi: Kenyatta University.
- Babette, M., & Reitzes, T. (2011). Education Development Center, Inc. (EDC). *Integrating technology with student-centered learning*. Quincy, MA: Nellie Mae Education Foundation.
- Bariham, I. (2019). Influence of Teachers' Gender and Age on the Integration of Computer Assisted Instruction in Teaching and Learning of Social Studies among Basic Schools in Tamale Metropolis. *Global Journal of Arts, Humanities and Social Sciences*, 7(2), 52-69.
- Bariham, I., Ayot, H. O., Ondigi, S. R., Kii, M. N., & Nyamemba, N. P. (2019). An Assessment of Basic Schools Teachers' Integration of Computer Based Instruction Into Social Studies Teaching in West Mamprusi Municipality; Implications for Further Development of Computer Based Instruction use in Ghanaian Schools. *International Journal of Research and Innovation in Social Science*, 3(5), 2454-6186.
- Bariham, I. (2015). Influence of Teachers' Variables for the Utilization of Fieldtrips for Environmental and Social Studies Instruction in Colleges of Education in

- Northern Ghana. *International Journal of Education, Learning and Development* 3(6), 13-35.
- Baker, A. (2014). *The relationship between class works and Georgia state testing*. (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Full Text database. (UMI No. 3617054).
- Barr, R. D., Barth, J. L., & Shermis, S. S. (1977). *Defining the Social Studies*. Arlington, VA: National Council for the Social Studies.
- Barker, L. J., and Aspray, W. (2006). *The state of research on girls and IT. Women and information technology: Research on underrepresentation*, 3-54.
- Becta. (2004). *A Review of the Research Literature on Barriers to the Uptake of ICT by Teachers*. British Educational Communication and Technology Agency.
- Beggs, T. A. (2000). *Influences and Barriers to Adoption of Instructional Technology*. A paper presented at the proceedings of the Mid-South Instructional Technology Conference, Murfreesbon, TN.
- Belal, A. R. (2011). Students' perceptions of Computer Assisted Learning: an empirical study. *International Journal of Management in Education*, 5(1), 63-78. DOI: 10.1504/IJMIE.2011.037755 <http://www.inderscience.com/offer.php?id=37755>
- Bell, J. (2005). *Doing your research project: a guide for first-time researchers in education, health and social science*, 4th edition, Open University Press, Berkshire, England.
- Berson, M. J., & Balyata, P. (2004). Technological Thinking and Practice in the Social Studies: Transcending the Tumultuous Adolescence of Reform. *International Society for Technology in Education*, 20(4), 141-150.
- Biggs, J. (1987). *Student Approaches to Learning and Studying*. Hawthorn: Australian Council for Educational Research.
- Binfo, S. N. (2020). *But for the Introduction of the Educational Reforms of 1987, Social Studies would not Have Seen Development in Ghana*. Cape Coast: University of Cape Coast, Unpublished Masters of Education Team Paper.
- Bluman, A. G. (2009). *Elementary Statistics: A Step By Step Approach (Seventh Ed.)*. McGraw-Hill Companies, Inc.
- Buabeng-Andoh, C. (2012). An exploration of teachers' skills, perceptions and practices of ICT in teaching and learning in the Ghanaian second-cycle schools. *Contemporary Educational Technology*, 3(1), 36-49.

- Cambridge Education. (2017). *A Survey of ICT Capacity in Ghana's Public Colleges of Education*. London: United Kingdom.
- Cannon, G. C. (2017). *Teacher and Student Perceptions of Computer-Assisted Instructional Software to Differentiate Instruction*. Published PhD Thesis: Walden University.
- Carnoy, M. (1972). *Education as Cultural Imperialism*. New York: David McKay Company, Inc.
- Cavanaugh, C. (1999). *The effectiveness of interactive distance education technologies in K-12 learning: A meta-analysis*. (Report No. IR 019580). (ERIC Document Reproduction Service No. ED430547) Retrieved October 16, 2008, from ERIC database.
- CEO. (1999). *Professional Development: A link to better learning*. The CEO Forum school technology and readiness report. Available at <http://ceoforum.org/reports.cfm?CID=2&RID=2>
- Chandler, H. (2003). Concept mapping & webquest in Social Studies. *Media & Methods*. 39(3), 1.
- Charles, B. A. & Yidana, I. (2015). Implementation of ICT in Learning: A Study of Students in Ghanaian Secondary Schools. *Procedia - Social and Behavioral Sciences*, 191(2015), 1282 – 1287.
- Chigona, A., & Chigona, W. (2010). *An Investigation of Factors Affecting the use of ICT for teaching in the Western Cape schools*. 18th European Conference on Information Systems.
- Clarke, E. Y. (2017). Investigating the technological pedagogical content knowledge of social studies teachers in the senior high schools in the Kumasi Metropolis of Ghana. *Journal of Education and Practice*, 8(4).
- Cobb, A. (2010). To differentiate or not to differentiate? Using internet-based technology in the classroom. *Quarterly Review of Distance Education*, 11(1), 37-45. Retrieved from EBSCOhost database.
- Cohen, L., Manion, L. & Morrison, K. (2011). *Research Methods in Education*. (7th Ed). London: Routledge.
- Conor, B. (2008). *Measuring the 21st Century Skills/Derells*. London: Block-Core Education.

- Coughlan, S. (2016). Could robots be marking your homework?. BBC News. Retrieved from <http://www.bbc.com/news/business-38289079>.
- Creswell, J. W. (2014). *Research Design Qualitative, Quantitative, and Mixed Methods Approaches*. Thousand Oaks, CA: SAGE Publications.
- Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Upper Saddle River, N.J: Pearson/Merrill Prentice Hall.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative and mixed methods approaches* (3rd Ed.). Thousand Oaks, CA: SAGE Publications.
- Cuban, L. (2001) *Oversold and Underused Computers in the Classroom*, Harvard: Harvard University Press.
- Curry, L. A., Nembhard, I. M. & Bradley, E. M. (2009). Key issues in outcomes of research. *Circulation*, 119, 1442-1452.
- Dawes, L. (2001). *What stops Teachers from using New Technology?* In M. Leask (ed.), *Issues in Teaching using ICT* (London: Routledge), 61-79.
- Davidovitch, N., & Yavich, R. (2018). Usage of Mobile Phone Applications and Its Impact on Teaching and Learning. *International Journal of Higher Education*, 7(1). 1927-6044.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of computer Technology: A comparison of two theoretical models. *Management Science*. 35(8). 982-1003.
- Daweh, A., Agarwal, S., Oppong, D., Darko, E. O., and Gagakuma, W. (2016). Importance of Training Needs Assessment at the Radiation Protection Institute of the Ghana Atomic Energy Commission. *Research on Humanities and Social Sciences*, 6(14), 2225-0484.
- Delva, M. D., Kirby, J. K., Knapper, C. K., and Birtwhistle, R. V. (2002). Post surveys of approaches to learning among Ontario Physicians: Implications for continuous medical education. *British Medical Journal*, 325, 1218-1222.
- DeMeis, J. L., & Stearns, E. S. (1992). Relationship of school entrance age to academic achievement. *Journal of Educational Research*, 86 (1), 20-27.
- Demetriadis, S., Barbas, A., Molohides, A., Palaigeorgiou, G., Psillos, D., Vlahavas, I., Tsoukalas, I. & Pombortsis, A. (2003). Cultures in negotiation: teacher's

acceptance/ resistance attitudes considering the Infusion of Technology into Schools. *Computers and Education*, 41, 19-37.

Demirci, C., & Gumus, N. (2017). The Application of Active Learning Strategies in a Multicultural Class. *European Journal of Education Studies* 3(12) 2017 ISSN 2501-1111.

Department of Education and Science. (2008). *ICT in schools: Promoting the quality of learning*. Dublin: Brunswick Press.

Donlan, L. (1999). Come dream with us: online projects teach more than technology. *Learning and Leading with Technology*, 26(7), 42–45.

Douglas, N. A. (2000). *Computer Aided Instruction*. Microsoft Encarta online Encyclopedia, 1997-0220. <http://encarta.msc.com>. Microsoft Corporation.

Dwomoh, R. (2018). Social Studies/History Curricula in Ghana. 2018 Awards for Excellence in Student Research and Creative Activity – Documents. 2. https://thekeep.eiu.edu/cgi/viewcontent.cgi?article=1001&context=lib_awards_2018_dos

Earle, L. (2002). *The Integration of Instructional Technology in our Classrooms*. NYU. EFA Global Monitoring Report. (2002). http://www.unesco.org/education/efa/monitoring/pdf/Monitoring_2002/EFAGM_1_2_chapter2.pdf.

EdSurge. (2016). *Decoding adaptive*. London, England: Pearson.

Ellis, R. A., Goodyear, P., Calvo, R. A., & Prosser, M. (2008). Engineering students' conceptions of and approaches to learning through discussions in face-to-face and online contexts. *Learning and Instruction*, 18(3), 267-282.

Encyclopedia Britannica. (2017). *Computer Assisted Instruction (CAI)*. Retrieved June 3, 2018 at <https://www.britannica.com>.

Ertmer, P. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? *Educational Technology Research and Development*, 53(4), 25–39.

European Institute for Gender Equality. (2018). *The underlying Causes of the Digital Gender gap and possible solutions for enhanced digital inclusion of women and girls*. European Parliament: Directorate General for Internal Policies.

Fishbein, M. & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to Theory and Research*. Reading, MA: Addison-Wesley.

- Frazer, B. J. & Walberg, H. J. (1995). *Improving Science Education. International Perspectives*. USA. NSSE.
- Frimpong, K. O., Otoo-Arthur, D., & Asare, S. (2016). The Effects of Mobile Phone Usage on the Academic Performance of Ghanaian Students, a Case of Presbyterian University College Asante-Akyem Campus. *International Journal of Innovative Research and Advanced Studies (IJIRAS)*, 3(11), 2394-4404.
- Frye, B., & Frager, A. M. (1996). Civilization, colonization, SimCity: Simulations for the Social Studies classroom. *Learning and Leading with Technology*, 24(2), 21–23.
- Ford, D. M., (2007). Technologizing Africa: On the bumpy information highway. *Computers and Composition*, 24 (3), 302-316.
- Forcheri, P., Molfino, M. T., & Alfonso, Q. (2000). Implications for Individual learning resulting from the use of Information and Communication Technology (ICT). *Educational Technology & Society* 3(1) 2000 ISSN 1436-4522.
- Fullan, M. (2006). *Change Theory. A force for School Improvement*. Centre for Strategic Education. Seminar Series Paper No 157, November 2006.
- Gakime, R. G. (2016). *Factors Influencing Integration of Digital Resources in Science teaching and learning in Secondary Schools of Murang'a County-Kenya*. Masters' Thesis report. Kenyatta University.
- Galanouli, D. R., & McNair, V. (2001). Students' perceptions of ICT related support in teaching Placement. *Journal of Computer Assisted Learning*, 17,396-408.
- Gambari, A. I. (2010). *Effects of computer supported cooperative learning strategy on the performance of senior secondary students in physics in Minna, Nigeria*. Doctoral Dissertation. University of Ilorin, Ilorin.
- Garcia, J., & Michaelis, J. U. (2001). *Social studies for children*. By Allyn & Bacon. Needham Heights, MA: A Pearson Education Company, 264-292.
- Gee, Y. T., & Umar, I. N. (2014). The Effects of Drill and Practice Courseware on Students' Achievement and Motivation in Learning English. *World Academy of Science, Engineering and Technology International Journal of Educational and Pedagogical Sciences*, 8(12).
- George, D. & Malley, P. (2003). *SPSS for Windows step by step: A Simple guide and reference*. 11.0 update, 4th ed. Boston, MA: Alln & Bacon.

- Ghana Education Service. (2010). *Social Studies Syllabus for Senior High Schools*. Accra: Curriculum Research and Development Division.
- Ghavifekr, S., & Mohammed S. I. (2015). Effectiveness of ICT Integration in Malaysian Schools: A Quantitative Analysis. *International Research Journal for Quality in Education*, 2(8), 1- 12.
- Gibson, D. C., Knezek, G., Redmond, P., & Bradley, E. (2014). *Handbook of games and simulations in teacher education*. Chesapeake, VA: AACE.
- Gilmore, P. (1985). "Gimme room": School resistance, attitude, and access to literacy. *Journal of Education*, Boston.
- Giussani, L. (1995). *The Risk of education: Discovering our Ultimate Destiny*. New York: The Crossroad Publishing Company.
- Glesne, C. (1999). *Becoming qualitative researchers: An introduction (2nd ed)*. New York, NY: Addison Wesley Longman.
- Global Education Monitoring Report. (2019). *Migration, Displacement and Education: Building Bridges, Not Walls*. France: UNESCO.
- Global Education Monitoring Report. (2018). *Accountability in Education: Meeting our Commitments*. France: UNESCO.
- Goko, A. K. (2012). *Factors affecting the use of Information and Communication Technologies in Teaching and Learning in Secondary Schools in Kaugema-Murang'a County, Kenya*. Published Master's thesis: Kenyatta University.
- Gomleksiz, M. N. (2004). Use of Education Technology in English Classes. *Turkish Online Journal of Educational Technology*. 3 (2). Retrieved May 10, 2018, from [http:// www.tojet.sakarya.edu.tr](http://www.tojet.sakarya.edu.tr).
- Government of Ghana Budget. (2019). *Budget Statement and Economic Policy of the Government of Ghana for the 2020 Financial Year*. Accra: Ministry of Finance.
- Government of Ghana Budget. (2020). *Mid-Year Review of the Budget Statement and Economic Policy of the Government of Ghana & Supplementary Estimate for the 2020 Financial Year*. Accra: Ministry of Finance.
- Government of Ghana. (2003). *Ghana ICT for Accelerated Development (ICT4D) Policy*. Accra: Republic of Ghana.
- Government of Ghana. (2015). *ICT in Education Policy*. Accra: Ministry of Education.

- Gulbahar, Y. (2008). A Survey on ICT Usage and the Perceptions of Social Studies Teachers in Turkey. *The Need for ICT Integration in Schools Teachers' ICT Usage*. 11, 37–51.
- Gunton, T. (1993). *Dictionary of information technology*. London: Penguin.
- Hartley, M. & Treagust, D. (2014). Learner perceptions of the introduction of Computer Assisted Learning in mathematics at a peri-urban school in South Africa. *Learning Environments Research*. 17 (1), 95-111.
- Heafner, T. (2004). Using technology to motivate students to learn Social Studies. *Contemporary Issues in Technology and Teacher Education*, 4(1), 42-53.
- Higgins, S. (2003). *Does ICT Improve Learning and Teaching in Schools?* Nottingham: British Educational Research Association.
- Honorene, J. (2017). Understanding the role of Triangulation in research. *Scholarly Research Journal for Interdisciplinary Studies*, 4(31), 2278-8808.
- Hoper, S., & Rieber, L. P. (1999). Teaching, instruction, and Technology. In A. C. Ornstein & L. S. Behar-Horenstein (Eds.), *Contemporary issues in curriculum* (pp.252-264). Boston: Allyn and Bacon.
- Hoque, Z. (2002). Using journal articles to teach public sector accounting in higher education. *Journal of Accounting Education*, 20(3), 139-161.
- Hunsinger-Hoff, S. (2016). Personalized learning with digital devices. Center for Innovations and Learning. Philadelphia, PA: Temple University. Retrieved from: <http://www.centeril.org/publications/PL%20With%20Digital%20Devices.pdf>.
- Hunter, A. E. (2012). *The effects of computer assisted instruction and structured curriculum on struggling mathematics students*. UMI dissertation publishing, Proquest LLC.
- Isman, A.Caglar, M. Dabaj, F. Altinay, Z., & Altinay, F. (2004). Attitudes of Students towards Computers. *Turkish Online Journal of Educational Technology*. 3 (1). Retrieved July 22, 2004, from <http://www.tojet.sakarya.edu.tr>.
- Israel, G. D. (1992). Determining Sample Size. *Working Paper*. University of Florida. PEOD6. Retrieved from <http://edis.ifas.ufl.edu/pd006>.
- Jamieson-Proctor, R. M., Burnett, P., Finger, G., & Watson, G. (2006). ICT Integration and Teachers' Confidence in Using ICT for Teaching and Learning in

- Queensland State Schools. *Australian Journal of Educational Technology*, 22(4), 511-530.
- Jung, E. H. (2016). *Social Studies Teachers' Views of ICT Integration*. RIGEO, 6 (1), 32-48. Retrieved from <http://www.rigeo.org/vol6no1/Number1Spring/RIGEO-V6-N1-2.pdf>.
- Julius, J. K. (2018). *Influence of Computer Aided Instruction on Students' Achievement, Self-Efficacy and Collaborative Skills in Chemistry in Secondary Schools of Tharaka-Nithi County, Kenya*. Doctoral Thesis. School of Education, Kenyatta University.
- Julius, J. K., Twoli, N. W., & Maundu, J. N. (2018). Effect of Computer Aided Instruction on Students' Academic and Gender Achievement in Chemistry among Selected Secondary School Students in Kenya. *Journal of Education and Practice*, 9(14), 2222-1735.
- Kankam, B. (2016). *Social Studies education in Ghana: A historical perspective (1940-Present)*. Proceedings of INCEDI 2016 Conference, Accra, Ghana. <http://www.incedi.org/wp-content/uploads/2016/11/SOCIAL-STUDIESEDUCATION-IN-GHANA-A-HISTORICAL-PERSPECTIVE-1940-PRESENT-BOADU-K..pdf>
- Kareem, A. A. (2015). Effects of computer assisted instruction on students' academic achievement and attitude in Biology in Osun State, Nigeria. *Journal of Emerging Trends in Educational Research and Policy Studies*, 6(1), 69-73.
- Kay, R. (2006). Addressing Gender Differences in Computer ability, attitudes and use: The laptop Effect. *Journal of Educational Computing Research*, vol. 34, no. 2, pp. 187-211.
- Kennah, M. R. (2016). *The Use of ICT in the Teaching and Learning Process in Secondary Schools: A Case Study of Two Cameroonian schools*. Master's Thesis. Department of Education, Institute of Educational Leadership, University of Jyväskylä.
- Khan, & Khine. (2006). *The Importance of Teachers in Integrating ICT into Science*. Korea.
- Kocoglu, C., & Koymen, U. (2003). *The effect of the hypertext learning environment on creative thinking of the students involving as hypertext designers*. Turkish Online Journal of Educational Technology. 2 (3). Retrieved May 7, 2018, from <http://www.tojet.sakarya.edu.tr>

- Kohlberg, L. (1973). Moral development and the new social studies. *Social Education*, 14(1), 35-49
- Kothari, C. R. (2005). *Research Methodology*. New Delhi: New age International publishers Ltd.
- Koo, A. C. (2008). Factors affecting teachers' perceived readiness for online collaborative learning: A case study in Malasia. *Educational Technology & Society*, 11 (1), 266-278.
- Kumar, K. (1999). Conducting key informant interviews in developing countries, *A.I.D Program design and evaluation methodology report NO. 13*.
- Lapowsky, I. (2015). This robot tutor will make personalizing education easy. *Wired Magazine*. Retrieved from: <https://www.wired.com/2015/08/knewton-robot-tutor/>.
- Lau, B. T., & Sim, C. H. (2008). Exploring the extent of ICT adoption among secondary school teachers in Malaysia. *International Journal of Computing and ICT Research*, 2(2), 19-36.
- Lewis, R. (2010). *The effectiveness of computer-assisted instruction on student math achievement (Doctoral dissertation)*. Retrieved from ProQuest Dissertations and Theses Full Text database. (UMI No. 3441943).
- Mahdum, M., Hadriana, H., & Safriyanti, M. (2019). Exploring Teachers Perceptions and Motivations to ICT use in learning activities in Indonesia. *Journal of Information Technology Education: Research*, 18, 293-317.
- Malekani, A. A. (2018). Access to, use and challenges of ICTs in secondary schools in Tanzania: a study of selected secondary schools in Morogoro Municipality. *Information Impact: Journal of Information and Knowledge Management*, 9(2), 44-57.
- Marilyn, K. S., & Geos, J. (2013). *Dissertation and Scholarly Research: Recipes for Success*. Seattle, WA: Dissertation Success LLC.
- Marton, F., & Saljo, R. (1976). On Qualitative Differences in Learning-1: Outcome and Process. *British Journal of Educational Psychology*, Vol. 46, pp. 4-11.
- Martorella, P. (1997). Technology and the Social Studies: Which way to the sleeping giant? *Theory and Research in Social Education*, 25(4), 511-514.
- Martorella, P. (1994). *Social Studies for Elementary School Children; Developing Young Citizens*. Eagle ward Cliffs, NJ: Printice-Hall.

- Martorella, P. (1985). *Elementary Social Studies: Developing reflective competent and concerned citizens*. Boston, Mass: Little Brown and Company.
- Maxwell, J. A. (2013). *Qualitative research design: An interactive approach*. Thousand Oaks, Calif: SAGE Publications.
- McMillan, J. H. & Schumacher, S. (2010). *Research in education: a conceptual introduction*. 5th Edition. New York: Longman.
- Mehmet, A., & Erdinc, D. (2005). The use of Computer Technologies in the Social Studies Classroom. *The Turkish Online Journal of Educational Technology-TOJET*, 4(2), ISSN: 1303-652.
- Mellanby, J., Cortina-Borja, M., & Stein, J. (2009). Deep learning questions can help selection of high ability candidates for universities. *Higher Education*, 57(5), 597-608.
- Merriam, S. (2009). *Qualitative research: A Guide to design and implementation*. San Francisco, CA: Jossey-Bass.
- Miima, F. (2014). *Integration of information and communication technologies in teaching and learning of Kiswahili language in public secondary schools in Kakamega County, Kenya*. Unpublished Doctoral Thesis: Kenyatta University.
- Ministry of Education. (2003). *Information and Communication Technology for Accelerated Development*. Accra: Ghana.
- Ministry of Education. (2018). *Education Sector Miduim-Term Development Plan*. Accra: Ghana.
- Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative data analysis: A methods source book* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Mishra, P., & Koehler, M. J. (2006). *Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge*. *Teacher College Record*, 108(6), 1017–1054.
- Molenje, M., Mukwa, C., & Too, J. (2017). Teacher perception in Computer Assisted Instruction, adoption for education support in public secondary schools in Kenya. *IJRDO-Journal of Educational Research*, 2(9), 2456-2947.
- Mua, R. K. (2016). *The use of ICT in Teaching and Learning Process in Secondary Schools: A case Study of two Cameroonian Schools*. Published Master's Thesis.

- Mugenda, O.M & Mugenda, A.G (2012). *Research Methods: Qualitative and Quantitative Approaches*. Nairobi: ACTS Press.
- Musyoki, B. M. (2016). *Influence of the Integration of ICT on Teaching and Learning Geography in Public Secondary schools in Mwala Sub-County, Kenya*. University of Nairobi: Postgraduate Thesis Report.
- Mwunda, M. N. (2014). *A framework for integration of ICTs in teaching and learning processes in secondary schools in Machakos sub-county*. Master thesis report. University of Nairobi.
- Natia, A. N. & Al-hassan, A. (2015). Promoting Teaching and Learning in Ghanaian Basic Schools through ICT. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 11(2), 113-125.
- National Council for Social Studies. (1994). *Curriculum Standards for Social Studies: Expectations of excellence*. Retrieved March 18, 2018, from <http://www.socialstudies.org/standards/stitle.html>.
- Ndongfack, M. (2015). Mastery of Active and Shared Learning Processes for Techno Pedagogy (MASLEPT): A Model for Teacher Professional Development on Technology Integration. *Creative Education*, 6, 32-45.
- Nduati, C. S. (2015). *Effect of Computer Assisted Learning on secondary school students' achievement in Chemistry in Murang'a South sub – County, Murang'a County, Kenya*. Unpublished Master's Thesis. Nairobi: Kenyatta University.
- Ngatia, P. K. (2015). *Preparedness of Public Secondary Schools on the use of ICT in Teaching and Learning in Mukurweini, Nyeri County-Kenya*. Unpublished Master's Thesis: Kenyatta University.
- Nikolopoulou, K., & Gialamas, V. (2016). Barriers to ICT use in high schools: Greek Teachers Perceptions. *J. Comput. Educ.* (2016) 3(1): 59-75.
- Nut, J. (2010). Professional educators and the evolving role of ICT in schools: Perspective. Retrieved Aug 12, 2018 from <http://www.ictliteracy.info/rtf/ICTinSchools.pdf>.
- Odhiambo, O. S. (2013). *Use of Information Communication Technology in teaching and learning processes in secondary schools in Rachuonyo South District, Homa-bay County, Kenya*. University of Nairobi: Master of Education Thesis.
- Oduro, K. E. K. (2019). *The Place of Secondary Education in National Development*. A paper presented at Public Policy Dialogue by the Progressive Intellectuals at Commonwealth Hall, University of Ghana.

- OECD, (2007). *Giving knowledge for free: The emergence of open educational resources*. Paris: OECD Publishing.
- Olakanmi, E. E., Gambari, I. A., Gbodi, E. B. & Abalaka, E. A. (2016). Promoting intrinsic and extrinsic motivation among chemistry students using Computer Assisted Instruction. *International Journal in Education Science*, 12(2), 155-168.
- Ondigi, S., Ayot, H., Mueni, K., & Nasibi, M. (2011). Vocationalization of education in Kenya: the Classroom Practice and the Learners' Responsibilities for Change in the 21st Century. *International Journal of Learning & Development*, 1(1), 2164-4063.
- Orodho, J. O. (2004). *Techniques of Research Proposal and Report*. Nairobi. Masola Publishers.
- Oso, Y., & Onen, D. (2009). *A General Guide to Writing Research*. Jomo Kenyatta Foundation.
- Ott, T. (2017). *Mobile Phones in School From disturbing objects to infrastructure for learning*. Doctoral Thesis. Sweden: University of Gothenburg.
https://gupea.ub.gu.se/bitstream/2077/53361/1/gupea_2077_53361_1.pdf
- Ott, T., Grigic Magnusson, A., Weilenmann, A., & Hård af Segerstad, Y. (2017). It must not disturb, it's as simple as that: Students' voices on mobile phones in the infrastructure for learning in Swedish Upper Secondary School. *Education and Information Technologies*. <https://link.springer.com/article/10.1007/s10639-0179615-0>
- Ott, T. (2014). A historical materialist analysis of the debate in Swedish print media on mobile phones in school settings. *International Journal of Mobile and Blended Learning*, 6(2), 1–14.
- Pachler, N., Bachmair, B., & Cook, J. (2013). A sociocultural ecological frame for mobile learning. In Z. Berge & L. Muilenburg (Eds.), *Handbook of mobile learning* (pp. 35-46). New York, NY: Routledge.
- Parsons, D. (2017). Stakeholder, corporate, and policy perspectives. In J. Traxler (Ed.), *Capacity building in a changing ICT environment 2017*. Geneva, Switzerland: International Telecommunication Union.
- Partnership for 21st Century Learning (2017). P21 Definitions. Retrieved from <http://www.p21.org>.

- Parush, A., Hamm, H., & Shtub, A. (2002). Learning Histories in Simulation-based Teaching: the Effects on Self-learning and Transfer. *Computers and Education*, 39(4), 319-332.
- Patel, D. B. (2013). "Construction and effectiveness of Computer Aided Instruction (CAI) Programme for the units of science and technology of standard VIII", *International Journal of Research in Education*, Vol. 2, Issue 1, pp. 112–115.
- Peprah, M. O. (2016). ICT Education in Ghana: An Evaluation of Challenges Associated with the teaching and learning of ICT in basic schools in Atwima Nwabiagya District in Ashanti Region. *European Journal of Alternative Education Studies*. 1(2), 2016, ISSN 2501-5915.
- Pekerja, P., Kelapa, P., & Bagerpang, S. (2017). 1 , 2 , 2 2. *British Journal of Education*, 5(9), 45–68.
- Pianta, R. C., La Paro, K. M., & Hamre, B. K. (2018). *Classroom assessment scoring system*. Baltimore: Paul H. Brookes.
- Ragasa, C. Y. (2018). A comparison of computer-assisted instruction and the traditional method of teaching basic statistics. *Journal of Statistics Education*, 16(1).
- Ramsden, P. (2003). *Learning to Teach in Higher Education*. London: Routledge.
- Rathmell, B. R. (2018). *Computer-Assisted Instruction in Elementary Classrooms: Student-Teacher Relationships and Teacher Role through the Implementation of Computer-Adaptive Instruction Programs*. Doctoral Dissertation, School of Education, University of Portland.
- Rice, M. L., & Wilson, E. K. (1999). How technology aids Constructivism in the Social Studies classroom. *Social Studies*, 90 (1), 28-33.
- Ritzhaupt, A., Higgins, H., & Allred, B. (2011). Effects of modern educational game play on attitudes towards mathematics, mathematics self-efficacy, and mathematics achievement. *Journal of Interactive Learning Research*, 22(2), 277-297. Chesapeake, VA: AACE.
- Robertson, S. I., Calder, J., Fung, P., Jones, A., O’Shea, T. & Lambrechts, G. (1996). Pupils, Teachers and Palmtop Computers. *Journal of Computer Assisted Learning*, 12(6), 194-204.
- Rodriguez, C. M. (2009). The impact of academic self-concept, expectations and the choice of learning strategy on academic achievement: the case of business students. *Higher Education Research & Development*, 28(5), 523-539.

- Rogers, E. M. (1995). *Diffusion of innovations* (4th ed.). New York: Free Press.
- Ross, E. W. (2006). *The Social Studies Curriculum: Purposes, Problems and Possibilities*. 3rd (Ed), New York: State University of New York.
- Rose, S. A., & Ferlund, P.M. (1997). *Using Technology for Powerful Social Studies Learning*. *Social Education* 61(3), 160-166.
- Sad, N. S., & Ozhan, U. (2012). Honeymoon with IWbs: A qualitative insight in primary students' views on instruction with interactive whiteboard. *Computers and Education*, 59(4), 1184-1191. doi: 10.1016/j.compedu.2012.05.010
- Samson, M., Kiio, M., & Lazarus, M. (2015). *Educational Instruction: Goals, Resources, Methods and Assessment*. Nairobi: Oxford University Press East Africa Limited.
- Sandholtz, J. H., & Reilly, B. (2004). *Teachers, not technicians: Rethinking Technical Expectations for Teachers*. *Teachers College Record*, 106(3), 487–512.
- Sarfo, F. K., Ansong-Gyimah, K. (2011). Ghanaian Senior High School students' access to and experiences in the use of Information and Communication Technology. *Education In technological world: Communicating Current and Emerging Research and Technological Efforts*, 216-222.
- Saunders, M. P. & Thornhill. (2007). *Research Methods for Business Students*. 4th edition, Prentice Hall.
- Shaver, J. P., Davis, O. L., & Helburn, S. W. (1980). *An interpretive report on the status of precollege Social Studies Education based upon three NSF-funded studies*. In what are the needs in precollege science, mathematics, and social studies education. Washington, DC: National Science Foundation.
- Schoppek, W., & Tulis, M. (2010). Enhancing arithmetic and word-problem solving skills efficiently by individualized computer-assisted practice. *The Journal of Educational Research*, 103(4), 239-252. Retrieved from EBSCO host database.
- Sinko, M. (2002). *Factors Influencing Implementation of ICT in Higher Education. Networking the learning*. Computers in education. Seventh IFIP World conference on computers I Education WCCE 2001. Kluwer academic publishers. Boston/ Doedrecht / London. 887-894.
- Skolinspektionen. (2016). Report concerning local policy at Bergetskolan in Orsamunicipality.412016,2758http://www.orsa.se/wk_custom/documents/%7B89d1589-4f67-4402_bd80-f68142544e93%7D_skolinspektionen_mobilforbud.pdf

- Skolverket. (2016a). IT use and IT competence in the school. Rapport Skolverket: 2015:00067.
- Slaten, M., Rice, M., & Emfinger, K. (2013). Using technology as an intervention tool for struggling kindergarteners. *Proceedings of Society for Information Technology & Teacher Education International Conference 2013*(pp. 4420-4423). Chesapeake, VA: AACE.
- Spradley, J. (1980). *Participant observation*. New York: NY: Holt, Rinehart and Winston.
- Survey on use of cell phones in class. (2012). Haifa University. [Hebrew].
- Tamakloe, E. K. (1992). *Issues in Social Studies Education*. Accra: Black Mask.
- Tamakloe, E. K. (2008). *Issues in Social Studies education revised*. Accra: Black Mask Ltd.
- Tamakloe, E.K., Atta, E.T., & Amedahe, F.K. (1996). *Principles and methods of teaching*. Accra: Ghana Black Mask Ltd.
- Tapera, M., & Kujeke, E. C. (2019). Evaluation of Information and Communication Technology (ICT) Challenges, A case of Zimbabwean Polytechnics. *IJARIE ISSN (O)-2395-4396*, 5(1).
- Tezci, E. (2003). *The effect of web-based -education on the development of students' democracy consciousness*. Turkish Online Journal of Educational Technology. 2 (3). Retrieved July 22, 2004, from <http://www.tojet.sakarya.edu.tr>.
- Thomson, D. L. (2010). Beyond the classroom walls: Teachers' and students' perspectives on how online learning can meet the needs of gifted students. *Journal of Advanced Academics*, 21(4), 662-712. Retrieved from EBSCO host database.
- Tin, K. L. (2002). Effective Teaching in the Information era: fostering an ICT based integrated Learning Environment in Schools. *Asia-Pacific Journal for Teacher Education & Development* 5(1): pp. 21-45.
- Tolbert, E. J. (2015). *The Impact of Computer-Aided Instruction on Student Achievement*. Doctor of Education Dissertation. School of Education, Gardner-Webb University.
- Tondeur, J., Hermans, R., van Braak, J., & Valcke, M. (2008). Exploring the link between Teachers' Educational beliefs profiles and different types of Computer

- use in the Classroom: The Impact of Teacher beliefs. *Computers in Human Behavior*, 24, 2541- 2553.
- Trowbridge, W. L., Bybee, W. R. & Powell, P. C. (2004). *Teaching Secondary School Science: Strategy for Developing Scientific Literacy*. 8thed, New York: Education Inc.
- Twoli, N., Maundu, J., Muindi, D., Kiiro, M. & Kithinji, C. (2007). *Instructional Methods in Education: A Course Book for General Teaching Methods*. Nairobi: Kenyatta Institute of Education.
- UNESCO. (2008). *Integrating ICTs in Education, Lessons learned*. Published by the UNESCO Asia and Pacific Regional Bureau for Education.
- UNESCO. (2004). *Information and Communication Technologies in Secondary Education*. Position paper. Moscow: UNESCO Institute for Information Technologies in Education.
- Urwin, T. (2005). Towards a Framework for the use of ICT in Teacher Training in Africa. *The Journal of Open and Distance Learning*, 20(2), 113-129.
- USAID. (2019). *First Principles of Designing Effective Education Programs using Information and Communication Technology (ICT), through the Educational Quality Improvement Program I (EQUIP)*. Washington DC: Nanom Group.
- Usun, S. (2004). Undergraduate Students attitudes on the use of Computers in Education. *Turkish Online Journal of Educational Technology*. 3(2).
- VanLehn, K. (2011). The relative effectiveness of human tutoring, intelligent tutoring systems, and other tutoring systems. *Educational Psychologist*, 46(4), 197-221.
- Volman M. & van Eck, E. (2001). Gender Equity and Information Technology in Education: The second decade. *Review of Educational Research*, 71(4), 613-634.
- Voogt, J. and Pelgrum, H. (2005). ICT and Curriculum Change. *Human Technology; an Interdisciplinary Journal on Humans in ICT Environments*, 1(2), 157–175.
- Voogt, J., & Tondeur, J. (2015). Towards design-based approaches for ICT integration in African education. *Technology, Pedagogy and Education*, 24:5, 527-535.
- Watson, G. (2006). Technology Professional Development: Long-term Effects on Teacher self-Efficacy. *Journal of Technology and Teacher Education*, 14(1), 151-166.

- Weisma, W. & Jurs, S. G. (2005). *Research Methods in Education. An Introduction. Eighth Edition*. New York: Pearson.
- Welman, J. C., Kruger, F., Mitchell, B., & Huysamen, G. K. (2005). *Research Methodology (3rd ed)*. Cape Town, South Africa: Oxford University Press.
- Whitley, B. E. (1997). Gender differences in computer-related attitudes and behaviors: A meta-analysis. *Computers in Human Behavior*, 13(1), 1–22.
- Wright, V. H., & Wilson, E. K. (2011). Teachers' use of technology: Lessons learned from the teacher education program to the classroom. *SRATE Journal*, 20(2), 48- 60. Retrieved from EBSCO host database.
- World Bank Report. (2018). *Access to Education, Skilled Jobs Creation can Accelerate Poverty Reduction and Inequality in South Africa*. Retrieved May 11, 2018, from <http://www.worldbank.org/en/news/feature/2018/04/03/access-to-education-skilledjobs->
- World Bank, W. (2018). *World Development Report on Learning 2018.pdf* (pp. 1–239). pp. 1–239. Washington DC: World Bank Group.
- World Bank Report. (2016). “World Development Report 2016: Digital Dividends.” Overview booklet. World Bank, Washington, DC. <http://documents.worldbank.org/curated/en/961621467994698644/pdf/102724WDR-WDR2016Overview-ENGLISH-WebResBox-394840B-OUO-9.pdf>
- Yalley, C. E. (2017). Renaissance of Social Studies Instruction in the Senior High Schools in Ghana: Technological Perspective. *Journal of Education and Practice*, 8(3), 2222-1735.
- Yamane, T. (1997). *Statistics, An introductory Analysis, 2nd Ed.*, New York: Harper and Row
- Young, J. (2002). The 24-hour professor. *The Chronicle of Higher Education*, 48(38), p. 31-33.
- Yin, R. K. (2014). *Case study research design and methods* (5th ed.). Thousand Oaks, CA: Sage Publications, inc.
- Zukas, A. (2000). Active Learning, World History, and the Internet: Creating Knowledge in the Classroom. *International Journal of Social Education*, 15(1), 62-79.

APPENDICES

APPENDIX A

Questionnaire for Social Studies Teachers

Introduction

This questionnaire is designed purposely to gather data for a research titled: *Senior High Schools Readiness for the integration of CBI in Social Studies Learning in the Northern Region, Ghana*. You have been sampled as one of the participants. If you agree to take part in the study, you are reminded to be honest with your response. Please be assured that any information offered by you will be handled with greatest privacy and confidentiality. Again, the information will be applied only for research purposes. Thank you in advance for your support.

Respectfully,

Iddrisu Bariham,

PhD Candidate, Kenyatta University, Kenya.

Part 1: Biographic Data

1. Name of school.....
2. Age of the teacher
() 20-30 () 31-40 () 41-50 () 51-60 () 61 and above
3. Sex () Male () Female
4. How long have you been teaching Social Studies in the school?
() 1-5 years () 6-10 years
() 11-15 years () 16-20 years
5. What is your highest professional qualification?
() Diploma () Bachelor's degree
() Master's degree () PhD
6. What is the location of the school?
() Rural () Urban () Peri-urban
7. Do you integrate CBI in your instructions? YES or NO

Part 2: Teacher’s Perceptions of CBI Integration in Social Studies Instruction

Please indicate the extent to which you agree or disagree with each of the following statements.

KEY: SA-Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD-Strongly Disagree

S/N	Integration of Computer Based Instructions in Teaching and Learning of Social Studies	SA	A	N	D	SD
1	CBI provide conducive environment for students learning.					
2	CBI is good for teacher lesson preparations and not for instructions.					
3	CBI offers useful resources to enhance students’ learning.					
4	CBI helps learners to access authentic and current information in Social Studies.					
5	CBI makes me productive and enhances effective learning					
6	I need more knowledge and skills on CBI application in Social Studies instruction.					
7	CBI integration is cumbersome and hence could delay my syllabus coverage					
8	I do not Integrate CBI into my teaching because of insufficient ICTs tools in my school.					
9	CBI is scaring and hence I am reluctant to adopt it in my lessons					

Part 3: Teachers' Preparedness (ICT Skill) for the Integration of CBI in Social Studies Instructions

Indicate the extent to which you can comfortable carry out the following ICT tasks during your Social Studies Lessons

KEY: SA-Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD-Strongly Disagree

S/N	Teachers Knowledge and skills of ICT	SA	A	N	D	SD
1	I can use computer games and drills to teach any topic in Social Studies.					
2	I can create and delete PowerPoint presentation slides.					
3	I can design instruction that demands use of Computer Based Instruction					
4	I can add video clip to power point during lesson's delivery					
5	I can use Smart White Board to support students' learning					
6	I can Save PowerPoint Presentations					
7	I know how to Change background for PowerPoint					
8	I can use video and DVDs during teaching of Social Studies					
9	Downloading images from YouTube and using them in teaching					
10	Using web-based resources during teaching of Social Studies					
11	Teaching students how to handle ICT resources					
12	I can use search online with internet for information during teaching.					

13. Other(s) specify

.....

Part 4: Teacher’s Willingness to Participate in Training on the Integration of CBI in Social Studies Instruction (Training Needs Assessment)

Which of the following areas do you need training?

KEY: SA-Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD-Strongly Disagree

S/N	Teachers Knowledge and skills of ICT	SA	A	N	D	SD
1	I need support on basic ICT skills.					
2	I need support on how to integrate Computer Based Instruction in Social Studies lessons.					
3	I need training on how to incorporate computer simulations and games in Social Studies lessons					
4	I need training on how to prepare slides and use them during Social Studies instructions					
5	I need training on how to integrate video into Social Studies lessons					
6	I need training on how to use Interactive White Board to support students’ learning					
7	I need training on how to use YouTube and WhatsApp to support students learning in class					
8	I need training on how to use computer to prepare and store assessment items for examination					
9	I need training on how to download images from internet and use them during Social Studies lessons					
10	I need training on how to integrate student-centered gender inclusive pedagogy into my video lesson					

11. Other(s) specify.....

12. What are your suggestions about the following content in Social Studies that need some form of ICT intervention in instruction at Senior High School level?

Please tick where necessary.

Topics	Yes	No	Specific topics/Concepts
Our Culture and National Identity			
Socialization and Our Social Environment			
Peace building and Conflict Resolution			
Our Constitution, Democracy and Nation Building			
Education and Social Change			
Rights and Responsibilities of the Individual			
Sustainable Development			
Resource Development and Utilization in Ghana			
Population Growth and Development			
The world of Work and Entrepreneurship			
Other(s) specify			

Part 4: Teachers' Preparedness (Technological Pedagogical Content Knowledge) for CBI Integration in Social Studies Instruction

Please indicate the extent to which you agree or disagree with each of the following statements.

KEY: SA-Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD-Strongly Disagree

S/N	Teachers' Technological Pedagogical Content Knowledge (TPACK)	SA	A	N	D	SD
1	I know how to solve my own technical challenges during CBI.					
2	I have technical skills needed to use CBI.					
3	I can plan a lesson that incorporate CBI					
4	I have sufficient subject matter knowledge in Social Studies					
5	I know how to select teaching style suitable for different learners.					
6	I know how to assess students' performance in Social Studies classroom					
7	I know how to manage classroom for effective teaching and learning					
8	I can select appropriate teaching approaches to guide students' thinking and learning					
9	I can download images from YouTube and use them in teaching					
10	I can use web-based resources during teaching of Social Studies in class					
11	I can integrate video into teaching and learning in my classroom					
12	I can offer leadership in helping others to coordinate the use of content, technologies and pedagogy in my school/District.					

12. Others specify

Part 5: Extent to which Teachers Integrate CBI in Social Studies Instruction

How often do you use the following Computer Based Instructions in your Social Studies Lessons? KEY: ED-Every Day, STW-Several Times per Week, OW-Once a Week, R-Rarely, NA-Not at All

S/N	ICT Tools	ED	SWT	OW	R	NA
1	Use of computer tutorials in class					
2	Use of multimedia eg educational CDs such as set of books					
3	Use of instructional simulations to enhance learning					
4	Use of video for demonstrations in class.					
5	Use of intelligent tutoring systems					
6	Use of PowerPoint presentation with animations					
7	Use of WhatsApp, and YouTube					
8	Use of Mobile phones to support learning in class					
9	Use of computers for examination preparation and storage					
10	Use of computer for preparation of students' report cards					
11	Use of computer drill and practice to foster critical thinking among students					
12	Use of internet to access information in class during instructions					

16. Other(s) Computer Based Instructions used specify

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Part 6: Challenges faced by Teachers in employing CBI in Social Studies

Instruction

1. State **five (5)** challenges you encounter when incorporating Computer Based Instructions in Social Studies lessons.

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2. Suggest **five (5)** ways of overcoming the challenges and improving the integration of CBI in Social Studies instructions among SHSs in Ghana.

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Thank you

APPENDIX B
Questionnaire for Students

Part 1: Demographic Data

1. Sex Male Female
2. What is the location of the School?
 Urban Peri-Urban Rural

Part 2: Student’s Perception towards Computer Based Instruction (CBI)

Please indicate the extent to which you agree or disagree with the following statements
KEY: SA-Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD-Strongly Disagree

S/N	General Statement on ICTs integration	SA	A	N	D	SD
1	CBI makes me participate actively in the teaching and learning process.					
2	CBI promotes critical thinking among students					
3	CBI helps me to perform well in my exams					
4	CBI promote collaborative learning					
5	CBI promotes better understanding of concepts and easy application of knowledge gained					
6	I enjoy learning when the teacher uses CBI during teaching and learning of Social Studies					
7	Our teachers do not allow us to use computers and therefore I have no idea on how to use it					
8	CBI helps me to access authentic and current information on issues in Social Studies					
9	Computers scare me and therefore I do not follow the instruction when my teachers use CBI in Social Studies instruction					
10	I do not have enough computer skills to use during CBI					

11. Others specify

Part 3: Extent of CBI Integration by Students in Social Studies Learning

How often do you use the following Computer Based Instructions in the learning of Social Studies? Tick where necessary

KEY: ED-Every Day, STW-Several Times per Week, OW-Once a Week, R-Rarely, NA-Not at All

S/N	ICT Tools	ED	STW	OW	R	NA
1	Use of computer tutorials during Social Studies instructions					
2	Use of multimedia eg educational CDs such as set of books					
3	Use of computer instructional simulations to enhance learning					
4	Use of video for demonstrations in Social Studies class.					
5	Use of computer intelligent tutoring systems to enhance students' learning					
6	Use of PowerPoint presentation with animations during Social Studies lessons to promote students' learning					
7	Use of WhatsApp, and YouTube to enhance students learning in class					
8	Use of Mobile phones to support learning during Social Studies instructions					
9	Use of computer problem solving approach during Social Studies instructions					
10	Use of computers for examination preparation and storage of students' scores					

11. Other(s) Computer Based Instructions specify

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Part 4: Challenges faced by Students in Integrating CBI in Social Studies Learning

1. State any **five (5)** challenges you face when learning with CBI.

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2. Suggest **five (5)** ways of overcoming the challenges stated in question (1) and to improve on the effective application of CBI in Social Studies learning.

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Thank you

APPENDIX C

Interview Schedule for Head teachers

Introduction

You are humbly requested to participate in this study on readiness of SHSs for the integration of CBI in Social Studies instruction in the Northern Region, Ghana. This interview will take about an hour or more of your valuable time and will be conducted at your convenience. There are no anticipated risks associated with participation in this study. The researcher will adopt necessary steps to ensure your anonymity and identity is protected. Your participation in this study is absolutely voluntary and you are at liberty to withdraw at any time you feel like doing so. The results of the study will be made known to you once the study is completed. For any further enquiries, please call the researcher on 0206640418. Thank you in advance for your cooperation.

Respectfully,
Iddrisu Bariham,
PhD Candidate, Kenyatta University, Kenya.

- i. What are your opinions about the integration of CBI in Social Studies instructional processes at the SHS level?
- ii. What plans for technical support services and infrastructure are in place to support Social Studies teachers to effectively integrate CBI in their lessons?
- iii. How are Social Studies teachers supported technologically and pedagogically to effectively prepare them towards the integration of CBI in their instructions?
- iv. What challenges do Social Studies teachers and students encounter when using CBI in classrooms and how can those challenges be overcome to improve the application of technology in Social Studies instruction?

APPENDIX D

Interview Schedule for Regional Director of ICT

Introduction

You are humbly requested to participate in this study on readiness of SHSs for the integration of CBI in Social Studies learning in Northern Region, Ghana. This interview will take about an hour or more of your valuable time and will be conducted at your convenience. There are no anticipated risks associated with participation in this study. The researcher will adopt necessary steps to ensure your anonymity, and identity is protected. Your participation in this study is absolutely voluntary, and you are at liberty to withdraw at any time you feel like doing so. The results of the study will be made known to you once the study is completed. For any further enquiries, please call the researcher on 0206640418. Thank you in advance for your cooperation.

Respectfully,
Iddrisu Bariham,
PhD Candidate, Kenyatta University, Kenya.

- i. What are the levels of SHSs teachers' and students' preparedness for the integration of CBI in Social Studies learning and teaching?
- ii. What arrangements for technical and infrastructure support for SHSs are in place to support Social Studies teachers to integrate CBI in their instructions?
- iii. What challenges do teachers and students in SHSs faced when employing CBI in Social Studies instruction and how can those challenges be overcome?
- iv. What is the Ministry of Education main vision and plan towards the integration of CBI in Social Studies instructions in the SHSs?

APPENDIX E

Checklist for Schools Digital Infrastructure

KEY: Thick YES or NO as apply in the school

S/N	Availability of ICT Resources/Infrastructure	Yes	No	Comments
1	The school has a computer laboratory to enhance integration of CBI			
2	The school has enough computers to support the integration of CBI in Social Studies learning			
3	The main location of computers and other ICT tools are accessible to Social Studies teachers and students			
4	School has ICT Policy to guide the implementation of CBI in learning and teaching			
5	The school has other telecommunication facilities including reliable internet			
6	The school has electricity to power the ICT resources			
7	School has a stand by generator for power back-up			
8	All classrooms in the school are connected to power to support integration of CBI in teaching and learning of Social Studies			
9	School has TV set and DVD player to support video lessons			
10	School has Smart board (White Interactive Board) to facilitate the integration of CBI in Social Studies lessons			

APPENDIX F

Kenyatta University Proposal Approval Letter



KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke

P.O. Box 43844, 00100

Website: www.ku.ac.ke

NAIROBI, KENYA

Tel. 810901 Ext. 57530

Internal Memo

FROM: Dean, Graduate School

DATE: 24th September, 2018

TO: Mr. Iddrisu Barham
C/o Educational Comm. & Technology Dept.
Kenyatta University

REF: E83F/38156/17

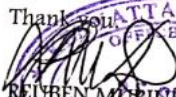
SUBJECT: APPROVAL OF RESEARCH PROPOSAL

This is to inform you that Graduate School Board at its meeting of 19th September, 2018 approved your Research Proposal for the Ph.D. Degree, entitled "Preparedness of Senior High Schools for Integration of Computer Based Instructions in Teaching and Learning of Social Studies in Northern Region, Ghana".

You may now proceed with your Data collection, subject to clearance with The Northern Regional Director, Ghana Education Service.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed supervision Tracking Forms per semester. The form has been developed to replace the progress Report Forms. The Supervision Tracking Forms are available at the University's Website under Graduate School webpage downloads.

By copy of this letter, the Registrar (Academic) is hereby requested to grant you substantive registration for your Ph.D. studies.

Thank you

REUBEN MURIUKI
FOR DEAN, GRADUATE SCHOOL

c.c. Registrar (Academic) Att: Mr. Likam
Chairman, Educational Communication & Technology Dept.

Supervisors:

1. Prof. Henry Ayot.
C/o Educational Comm. & Technology Dept.
KENYATTA UNIVERSITY
2. Prof. Samson Ondigi
C/o Educational Comm. & Technology Dept.
KENYATTA UNIVERSITY
3. Dr. Mueni Kiio
C/o Educational Comm. & Technology Dept.
KENYATTA UNIVERSITY

RM/cao

APPENDIX G

Kenyatta University Research Authorization Letter



KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke

Website: www.ku.ac.ke

OUR REF: E83F/38156/17

The Northern Regional Director,
Ghana Education Service, Tamale Region,
GHANA

Dear Sir/Madam,

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 8710901 Ext. 57530

Date: 24th September, 2018

RE: RESEARCH AUTHORIZATION FOR MR. IDDRISU BARIHAM REG. NO. E83F/38156/17

I write to introduce Mr. Bariham who is a Postgraduate Student of this University. He is registered for Ph.D. Degree programme in the Department of Educational Communication & Technology in the School of Education.

Mr. Bariham intends to conduct research for a proposal entitled, "Preparedness of Senior High Schools for Integration of Computer Based Instructions in Teaching and Learning of Social Studies in Northern Region, Ghana".

Any assistance given will be highly appreciated.

Yours faithfully,


REUBEN MURIUKI
FOR: DEAN, GRADUATE SCHOOL

RM/cao

APPENIDX H
Research Permit

GHANA EDUCATION SERVICE

In case of reply the
number and date of this
letter should be quoted

My Ref. No. SS.158/GES/NR/Vol.8



REPUBLIC OF GHANA

Regional Education Office
P.O. Box 4, E.R.
Tamale.

Tel. No.: 037 - 2023165
Fax No.: 037 - 2024716

Your Ref. No.....

16th October, 2018

PERMIT TO CONDUCT A RESEARCH

I am pleased to introduce Mr. Iddrisu Bariham, a teacher at Bagabaga College of Education who is working on his PhD Project at the Kenyatta University in Kenya.

As part of the requirements for graduation he is conducting a research on the preparedness of Senior High Schools for the Integration of Computer Based Instructions in Teaching and Learning of Social Studies in Northern Region Ghana". The data collection is to be used for research purpose only.

May you give him all the necessary support needed to carry out the said activity, please.

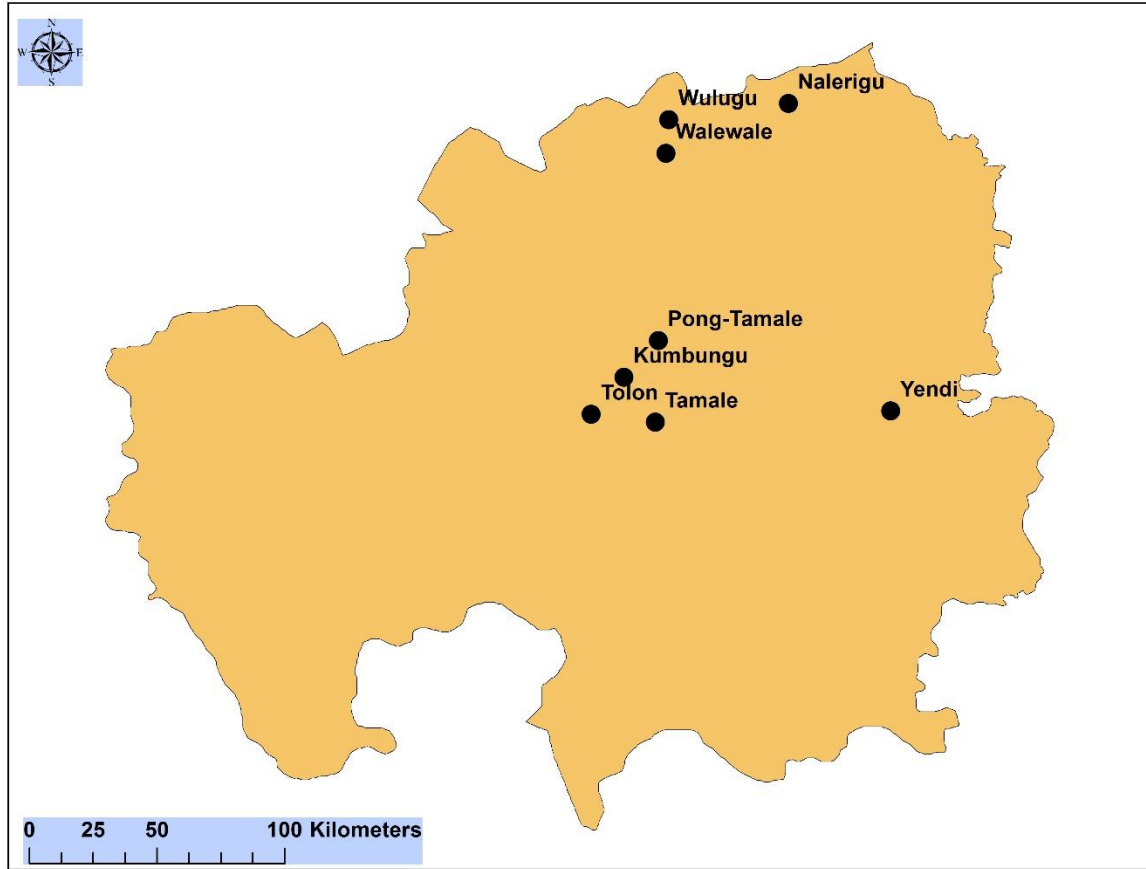
Thank you.

ALHAJI MOHAMMED HAROON
REGIONAL DIRECTOR (NR)

TO WHOM IT MAY CONCERN



APPENDIX I
Map of Northern Region (Ghana)



APPENDIX J

Statistics of the Sampled Public Senior High Schools in Northern Region (Ghana)

S/N	Schools Coded with Letters	Total No. of Teachers	Total No. of Social Studies Teachers	Status
1	A	1321	8	Girls Boarding
2	B	78	8	Mixed Day
3	C	90	8	Mixed Day
4	D	180	10	Mixed Boarding
5	E	154	10	Mixed Boarding
6	F	134	10	Mixed Boarding
7	G	70	8	Mixed Boarding
8	H	158	9	Mixed Boarding
9	I	85	9	Mixed Day
10	J	112	9	Mixed Boarding
11	K	144	8	Mixed Day
12	L	186	10	Mixed Boarding
	Total	1,523	107	

Source: Statistics Unit (GES-Regional Office, Tamale)-2017/2018 Academic Year

APPENDIX K

Sample Letter of Consent to Participate in the Study

Dear.....

You are humbly requested to participate in this study on readiness of SHSs for the integration of Computer Based Instruction in Social Studies instructions in the Northern Region, Ghana. This interview or questionnaire will take about an hour of your time and will be conducted at your convenience. There are no anticipated risks associated with participation in this study.

The researcher will adopt the necessary steps to ensure your anonymity, and identity is protected. Your participation in this study is voluntary, and you are at liberty to withdraw at any time you feel like doing so. The results of the study will be made known to you once the study is completed. For any further enquiries, please call the researcher on 0206640418. If you have any further questions with regards to your rights as a participant in this study, you may contact Kenyatta University, Department of Educational Communication and Technology, Nairobi-Kenya.

I have read the above information regarding this research and I consent to participate in the study.

Name.....

Date.....

Signature.....