UNIVERSITY OF CAPE COAST

TECHNO-PEDAGOGICAL COMPETENCE OF JUNIOR HIGH SCHOOL SOCIAL STUDIES TEACHERS IN ADANSI NORTH DISTRICT

SEBASTIAN BINFO NTI

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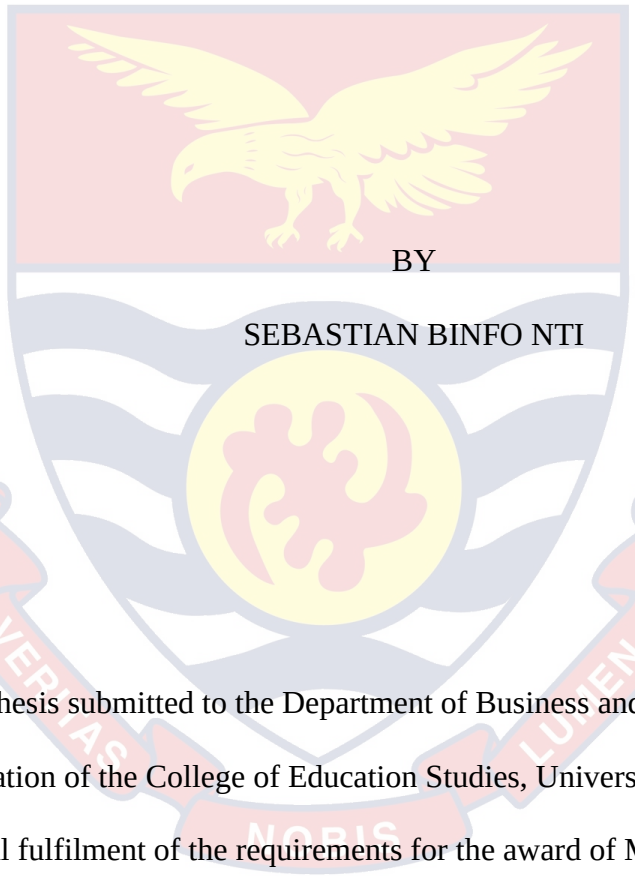

BY

SEBASTIAN BINFO NTI

Thesis submitted to the Department of Business and Social Sciences Education of the College of Education Studies, University of Cape Coast, in partial fulfilment of the requirements for the award of Master of Philosophy degree in Curriculum and Teaching

JULY 2020

DECLARATION

Candidate's Declaration

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

Candidate's Signature……..…… Date……

Name: Sebastian Binfo Nti

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature …… Date ……

Name: Rev. Prof. Kankam Boadu

Co-supervisor's Signature ……Date …….

Name: Prof. Yaw Ankomah

ABSTRACT

The study investigated the competence of Junior High School Social Studies teachers in terms of pedagogy and use of technology in the delivery of Social Studies content in the Adansi North District of the Ashanti Region of Ghana. The study used the cross-sectional survey design, with quantitative approach. The census method was used to involve all the Social Studies teachers in the Adansi North District. Questionnaires were used to collect data for the study. Means and standard deviations were used to analyse research questions 1-3 while one-way ANOVA, Pearson' Product Moment Correlation and Independent Samples T-test were used to test hypotheses 1-3 respectively. The findings of the study revealed that all the respondents, irrespective of age or teaching experience, demonstrated high competence in relation to pedagogy. It was also revealed that blending technology in teaching of Social Studies content is challenging for respondents. Furthermore, the study found out that most of the respondents had low levels of competence regarding techno-pedagogy. Recommendations were made that the Ghana Education Service and the Ministry of Education should strongly consider implementing Information Technology (ICT) development and coaching programmes for aspiring and in-service teachers. This will help improve delivery in the classroom. Again, there may be the need to intensify the development of other specific areas where teachers face challenges in the teaching of Social Studies. Considering the integrated nature of Social Studies, there will be the need for continuous learning and upgrade of knowledge on contents which emanate from other social sciences programmes.

KEYWORDS

Junior High Schools

Pedagogical Competence

Technological Competence

Techno-pedagogical Competence

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DEDICATION

To my wife, Ruth Amponsah Nyamekye and my children, Maria-Linus Owusuaa Nti and Mark-Sixtus Adu-Asare Nti.

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CHAPTER ONE

INTRODCTION

Technology has become part of daily human life. This significantly affects every area of life, consequently impacting on the education of all societies. The use of technology is thereby progressively incorporated into the educational sector goals of modern human societies as years go by. This has brought the traditional mode of teaching under scrutiny, hence, the scholar's interest to research into the use of technology in teaching and learning (Yalley, 2017; Amenyedzi, Lartey & Dzomeku, 2011; Abuhmaid, 2008).

This study sets out to investigate the techno-pedagogical competence of Social Studies teachers as has been done in other jurisdictions (Yalley, 2017; Rumzan et al., 2010; Abbad, Morris, & de Nahlik, 2009). The study area is of interest because it has Peri-Urban characteristics. Therefore, it is assumed that, teachers in these areas are not ignorant of ICT/Technology-based teaching and learning. Again, much has not been done in this area of study.

Therefore, the findings of this research will make available conclusions and recommendations to the Ghana Education Service and the Ministry of Education for the purpose of curriculum improvement. The study will also give directives to the District Education Office on the status of the use of technology in teaching among Social Studies teachers. Theoretically, the study will establish how Mishra and Koehler (2006) Technological Pedagogical Content Knowledge (TPACK) framework is applicable in the context of the district under study. The conceptual framework of techno pedagogical competence based on the objectives and key variables of the study were used to direct the research.

Background to the Study

An educated society is essential for the development and the continual existence of the human race. It serves as the medium through which the transfer of knowledge takes place. This could be done by passing on the values of the said society through a symbolic evidence of what that society stands for, as well as its expectations for the future generation. Therefore, the ability of the agent of change to adapt to the ever-changing means of transferring knowledge is crucial for continuity due to the enormous benefits accompanying an educated citizenry. Kankam (2016) asserts that Social Studies is the only subject whose approach emphasises a holistic integration of nation building content around important issues and topics which borders on environmental issues, population, attention to attitudes, values, beliefs and the skills of problem solving.

Again, Salia-Bao (1990) is of the view that Social Studies closely models traditional society approach to good citizenship by organizing history, culture, values and beliefs as a formally integrated school subject which is honoured and worthy to be studied. Consequently, Kankam (2016) defines Social Studies as a blend of ideas, theories, principles, generalisation and knowledge from areas such as social sciences and humanities in order to help learners fit well into society. Also, Schneider (1994) citing the National Council for the Social Studies (NCSS) provided a comprehensive definition of Social Studies as:

> "*the integrated study of the social sciences and humanities to promote civic competence. Within the school programme, Social Studies provides coordinated, systematic study drawing upon such disciplines as anthropology, archaeology, economics, geography, history, law,*

philosophy, political science, psychology, religion, and sociology as well as appropriate content from the humanities, mathematics and the natural sciences (p.vi)".

Thus, as an integrated field which draws its content from other disciplines, the benefits of a subject with this nature cannot be overemphasised. Some researchers (Kankam, 2016; Mukhongo, 2010; Biesta, 2006) also conclude that Social Studies stands out among other subjects when considering any subject for citizenship education. In other words, it is the best and only subject through which citizens could be educated holistically. From the various definitions of these scholars, it could be said that Social Studies potentially endows students with the ability of being sensitive and the capacity to understand issues during their interactions with both their physical and social environments. This can promote the total development of the individual towards becoming a useful member of the society.

The teaching of Social Studies in this era cannot be done effectively without the use of technology. According to the National Education Technology Plan released by the U.S. Department of Education, over the past 10 years, about ninety-nine percent (99%) of American K-12 schools have been connected to the Internet. The ratio for students and computer stands at 5:1. The technology that has tremendously changed the world outside schools is now changing schools and this change "is driven by an increasingly competitive global economy, as well as the students themselves who are born and comfortable in the age of the Internet" (Suspitsyna, 2012 citing U.S. Department of Education, 2005). This trend increasingly drives teachers to incorporate advanced technology into their classrooms to accommodate student needs, promote

student learning and better prepare students for the digital society. However, national surveys revealed that technology was not efficiently used in core school subject areas such as Science, Social Studies, Mathematics, and English (Al Bataineh, 2014; Suspitsyna, 2012 citing National School Board Foundation, 2004). Furthermore, Al Bataineh (2014) citing Becker's study reported Social Studies teachers were among the least likely to use technology in the classroom.

As the role of technology in education is rapidly increasing worldwide, invariably, developing countries have begun responding with technology utilization and implementation (Abuhmaid, 2008). Ghana's educational policy makers, over the years, have attempted to encourage the use of Technology in the classroom through educational reforms and other policies (Yalley, 2017). These attempts seem to have lost their substance partly because "the commitment of government to the provision of infrastructure for ICT policy implementation has been minimal" (Amenyedzi et al., 2011, p. 153). Other research has pointed out that developing countries face challenges in implementing technology in the teaching of various subjects especially due to the lack of technological infrastructure (i.e., computers, Internet connectivity). These, coupled with the lack of confidence in the importance of such technology, are some of the challenges. (Al Bataineh & Anderson, 2015; Abuhmaid, 2008). Dirani and Yoon (2009) explained that developing countries may be able to become competitive in the global economy only through the adoption of "e-learning, the field of open and distance learning (ODL), as well as modern learning and teaching concepts into the culture and the educational systems of the region" (p. 14).

In addition, Kankam (2016) is of the view that the approach used by Social Studies teachers emphasises a holistic integration of nation building content around relevant issues and topics that involve environmental concerns, population, attention to attitudes, values, beliefs and the skills of problem solving. Judging from the multidisciplinary content and child-centered pedagogical approaches, researchers conclude that Social Studies stands out as the most appropriate subject for Citizenship Education (Kankam, 2016; Cobold, 2013). Therefore, a subject such as Social Studies which is a blend of many subjects and has the core mandate of teaching the citizenry of the nation needs to integrate technology in the delivery of its content.

Within Social Studies, technology has served dual roles, "as both important instructional tools and as objects that have had significant effect on the political, social and economic functioning of the American society" (Yalley, 2016). In this sense, Social Studies teachers should be more aware of the change that technology has brought to modern society and try to reflect this change in their own classrooms. Unfortunately, Social Studies curricula have not been largely affected by this technology change and technology's unique role in the enhancement of Social Studies education is not widely recognised (Khan, Khan & Khan, 2017; Abdu-Raheem, 2010; Al Ghazo, 2008; Whitworth & Berson, 2003). Similar to Becker's finding, other research has shown that Social Studies teachers lag behind other content area teachers in the adoption of innovative teaching methods provided by technology (Al Bataineh & Anderson, 2015; Oluwaghohunmi & Abdu-Raheem, 2014; Ottenbreit-Leftwich et al., 2010; Dawson, Bull & Swain, 2004; Anderson & Becker, 2001; Anderson & Ronnkvist, 1999).

In recent years, there has been a slight emergence of new and innovative uses of technology in Social Studies. Some Social Studies teachers have been using technology, especially the Internet, although others shy away from it. However, one literature review of computer technology in the Social Studies indicates that "computer continues to serve the primary function of facilitating students' access to content and remains somewhat relegated to being an appendage to traditional classroom materials" (Whitworth & Berson, 2003, p. 483).

In Ghana, studies have looked at the use of technology by teachers but did not consider JHS Social Studies teachers' techno-pedagogical competence. This is an existing gap this study sought to fill. For instance, Buabeng-Andoh (2012) examined teachers' skills, and practices of ICT in teaching and learning in Ghanaian second-cycle schools. The results of the study indicated that computer was almost always used by teachers, followed by the internet, with the least frequently used hardware being the overhead projector. Another study by Boakye and Banini (2008) on teachers' ICT readiness in Ghana indicated that 71% of teachers in the study did not use ICT in classrooms, 49% of teachers used ICT to prepare lesson notes, 55% of teachers had some knowledge of web browsing, 71% used email, and 78% made efforts to learn how to use the computer. The study concluded that most teachers were not prepared to integrate ICT into their teaching. The aforementioned did not consider JHS Social Studies teachers' usage of ICT in the delivery of the Social Studies content to students. This study, therefore, sought to fill the gap.

While some researchers have examined developing countries' responses to technology implementation and e-learning (Rumzan et al., 2010; Abbad,

Morris, & de Nahlik, 2009), limited research has examined the extent to which teachers integrate technology into teaching of Social Studies. This research examined teachers' techno-pedagogical competence of Social Studies teachers in Adansi North District of the Ashanti Region of Ghana as it appears there has not been such a study in the area as at the time the research was being carried out. Existing research on the integration of technology involving Ghanaian schools has focused on students' usage of ICT across disciplines and grade levels, paying little attention to teachers (Yalley, 2016; Boakye & Banini, 2008). Again, Yalley (2016) claimed that among Ghanaian teachers, of whom those in the Adansi North District are not an exception, the use and integration of technology is very low. For these reasons, the current study has examined the competency levels of JHS Social Studies teachers in pedagogy and blending technology in teaching.

Statement of the Problem

Although teachers' use of technology in teaching Social Studies is being examined around the world, it appears much is not known in the developing countries. It is a known fact that schools in less developed countries, especially in Africa, are deficient particularly in the application of technology in education (Al Bataineh & Anderson, 2015). Lu and Overbaugh (2009) conducted a study on teachers' perceptions concerning the barriers that prevent them from integrating technology into their classroom routines. The researchers believed that environment has a significant impact on teacher-technology integration. The study was carried out in the US where technology is well advanced, yet, the study revealed a negative result among teachers in rural areas. Therefore, in a

less advanced country such as Ghana, there is the need to establish the situation in a peri-urban area like the Adansi North.

Studies conducted in Turkey concluded that teachers who owned computers had positive attitudes towards using ICT in their teaching as compared to those who did not own computers (Erdoğan & Cengelci, 2011; Akengin, 2008, p. 126). Also, those studies were conducted among primary school teachers and prospective teachers, unlike the current study that was conducted among JHS teachers in Ghana.

In Africa, Bakr (2011) examined the attitudes of Egyptian teachers toward computers. The study sample consisted of 118 public school teachers; 53 males and 65 females. The findings showed that Egyptian public-school teachers' attitudes toward computers and computer use were positive. Also, the results showed no significant differences in terms of gender and teaching experience regarding the use of technology. Vrasidas and McIsaac (2001) are of the view that in rich industrialised nations like the United States, technology is abundant in schools and classrooms, but the situation regarding technology in schools is not the same in smaller countries. Africa, a developing region, for instance, seems to be making lesser strides towards using technology as a means of instruction (Yalley, 2016; Boakye & Banini, 2008; Vrasidas & McIsaac, 2001). Additionally, some studies assert that developing countries are not doing well in relation to the use of technology in Education while others make claims to the contrary (Bakr, 2011; Erdoğan & Cengelci, 2011; Akengin, 2008; Vrasidas & McIsaac, 2001). This area of controversy is what the current study also seeks to explore towards a possible resolution.

Also, Ghana's Ministry of Education instituted a committee called Technology for Accelerated Development (ICT4AD)" to look at the incorporation of technology into the process of content delivery and into the educational sector as a whole (Ministry of Education, 2003 as cited in Buabeng-Andoh & Issifu, 2015). The hurdle was how to meet the challenges of education in the twenty-first century. In order to confront those challenges, the Ministry of Education (MoE, 2008) formulated a draft policy titled "ICT in Education Policy", a policy framework describing how ICT should be introduced and implemented in second-cycle institutions. As a follow up to this document, MoE conducted a research in 2009 under the theme "Readiness Assessment of second-cycle institutions in Ghana" (MoE, 2009, p. 22).

According to the survey report, the level of teachers' ICT/technological literacy is low and has been identified as a key factor limiting the utilisation of ICT in education. This is likely to affect the smooth and effective integration of technology, the subject matter to be studied and the method of teaching and learning within the Ghanaian schools of which the Adansi North District schools are no exception.

Methodologically, a majority of these studies sampled primary school teachers compared to the current study that used JHS teachers. It is clear that much have not been done on the subject matter in relation to JHS Social Studies teachers' competence and the use of technology in the delivery of Social Studies content, hence, the need for the current study.

Purpose of the Study

The purpose of the study was to investigate the competence of JHS Social Studies teachers in terms of pedagogy and use of technology in the

delivery of content in the Adansi North District of the Ashanti Region of Ghana. The specific research objectives were to:

1. Determine the level of technological competence of the JHS Social Studies teachers.
2. Establish the level of pedagogical competence of the JHS Social Studies teachers.
3. Estimate techno-pedagogical competence of the JHS Social Studies teachers.
4. Ascertain the influence of age on the techno-pedagogical competence of the JHS Social Studies teachers.
5. Investigate whether techno-pedagogical competence is influenced by teaching experience of JHS Social Studies teachers.
6. Examine gender differences of the JHS Social Studies teachers in terms of their techno-pedagogical competence.

Research Questions

The following research questions were posed to guide the study:

1. What are the levels of technological competence of the JHS Social Studies teachers?
2. What are the levels of pedagogical competence of the JHS Social Studies teachers?
3. What is the techno-pedagogical competence of the JHS Social Studies teachers?

Statement of Hypotheses

1. $H1_0$: There is no statistically significant difference between techno pedagogical competence of JHS Social Studies teachers and their age ranges.

   $H1_A$: There is a statistically significant difference between techno-pedagogical competence of JHS Social Studies teachers and their age ranges.

2. $H2_0$: There is no statistically significant relationship between techno-pedagogical competence of teachers and their teaching experience (years of teaching).

   $H2_A$: There is a statistically significance relationship between techno-pedagogical competence of teachers and their teaching experience (years of teaching).

3. $H3_0$: There is no statistically significance difference in techno-pedagogical competence of male and female teachers.

   $H3_A$: There is a statistically significant difference in techno-pedagogical competence between male and female teachers.

Significance of the Study

Stakeholders of the teaching profession consider looking at how best the Junior High School teacher can use technology in the delivery of Social Studies content. The research will bring to the limelight the essence of technology usage in teaching at the basic school. Again, it is envisaged that this study will throw more light on the pedagogical areas where teachers exhibit high competence and low competence. This eventually will result in the improvement of the content for in-service training organized for teachers.

Establishing the techno-pedagogical competence of teachers in this study could inform the kind of support the teachers need in the development of their technological skills as a means of complementing the teaching and learning tools and strategies already in use. Also, this study explores the influence of age on the use of technology. Thus, the age of teachers could determine whether a teacher is adept at using technology or not. For instance, some teachers who did not use computer while in school co8uld develop a dislike for it. Contrarily, those who were introduced to the computer could develop a love for the use of it for content delivery. Hence, findings on this factor in the study could be of great benefit to stakeholders of the educational enterprise when planning in-service training for teachers.

Delimitation

The study sought to assess the technological and pedagogical competence of Social Studies teachers in Adansi-North District in the Ashanti Region of Ghana. It focused on Social Studies teachers from Public Junior High Schools. In relation to content, the study centred on demographics such as age, gender, and teaching experience.

Limitations

A major limitation of the study was the use of the questionnaire which did not permit in-depth description on respondents' experiences nor allow for follow-ups on their responses. It should be indicated that some of the items demanded further probing but the quantitative methodology employed restricted the possibility for additional enquiries. This methodological constraint might have resulted in respondents providing shallow responses to the items. Furthermore, the quantitative methodology required a large sample size, yet,

due to inadequate resources, the selection of respondents for study was limited to only one district instead of multiple districts in the region.

Limited access to literature and information on the study was yet another challenge the researcher encountered, and this was largely attributed to the unavailability of a well-resourced data management system.

Organisation of the Study

The study is structured into five chapters. Chapter One elaborated on the introduction of the study which includes the background to the study, statement of the problem, purpose of the study, research objectives and questions, hypotheses, significance of the study, delimitation and limitations as well as organization of the study. Chapter Two comprised reviewing literature of other related studies on the topic and the conceptual framework that underpins the study. Still in Chapter Two, the study looked at the concept of techno-pedagogical competence of Social Studies teachers, among other sub-headings. The latter part of the chapter is made up of the summary of main points which surfaced during the literature review. Chapter Three consisted of the research methods such as research design, study area, population, sample and sampling procedures, data collection instruments, data collection and analysis procedures and ethical issues. Chapter Four captured the results and discussion of findings of the study as Chapter Five comprised summary, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This study sought to assess the techno-pedagogical competence of Social Studies teachers in the Adansi North District of the Ashanti Region. The review of related literature means identifying, locating and analysing documents containing relevant information related to a study. These documents include journals, books, research reports, abstracts and periodicals. The review makes the researcher aware of strategies, procedures, and instruments that have already been used and what needs to be done in that area of investigation. Literature was reviewed under the following sub-themes:

1. **Assumption of the Study**
2. **Theoretical Framework**

   Technological Pedagogical Content Knowledge (TPACK)
3. **Conceptual Framework**

   Conceptual Framework of Technological Content Knowledge
4. **Conceptual Review**

   a. Historical Antecedents of Social Studies in Ghanaian Schools

   b. Technological Competence

   c. Technology Adoption in Education in Ghana

   d. Pedagogical Competence

   e. Technological Pedagogical Knowledge

   f. It is concerned with the concept such as technology, pedagogy, adoption of technology in education.

5. **Empirical Review**

   a. Levels of technological usage among teachers

   b. Levels of pedagogical knowledge among teachers

   c. Techno pedagogical competence of teachers and age

   d. Techno pedagogical competence and teaching experience

   e. Techno pedagogical competence and gender

Assumption of the Study

The study was conducted based on the following assumptions:

The technological and pedagogical competence of Social Studies teachers are measurable (Yalley, 2016; Kankam, 2016). It has also been revealed in literature that measurement of this construct also is required regarding demographic variables such as age, teaching experience and gender (Al Bataineh & Anderson, 2015; Adodo, 2012; Tezci, 2010; Ching, Hung & Lee, 2008; Woods, Karp, Miao & Perlman, 2008; Goedde, 2006). Therefore, the study proceeds to estimate these variables identified in the literature.

Theoretical Review

The theoretical framework for this review is rooted in Mishra and Koehler (2006) Technological Pedagogical Content Knowledge (TPACK) framework.

Technological Pedagogical Content Knowledge (TPACK)

Figure 1 shows teachers' Technological Pedagogical Content Knowledge for effective teaching outcomes, that is, when properly integrated by Mishra and Koehler (2006). This study draws its motivation from Technological Pedagogical Content Knowledge (TPACK) which aims at considering the interplay of three main areas namely technology, pedagogy,

and academic content in dynamic and productive contexts (Yalley, 2016; Mishra & Koehler, 2006). Shulman (1986) regards TPACK as a reflection of introducing technology as an integral component in a transformative procedure in which pedagogical content knowledge develops as teachers transform their knowledge of content for pedagogical purposes. Again, Lee (2008) proposes the engagement of the subject matter of Social Studies to Social Studies teachers through a process that is "inherently technological" and also by "improving" content through technological adaptations. He further postulates that working with subject matter in a context of such sort requires pedagogical action.

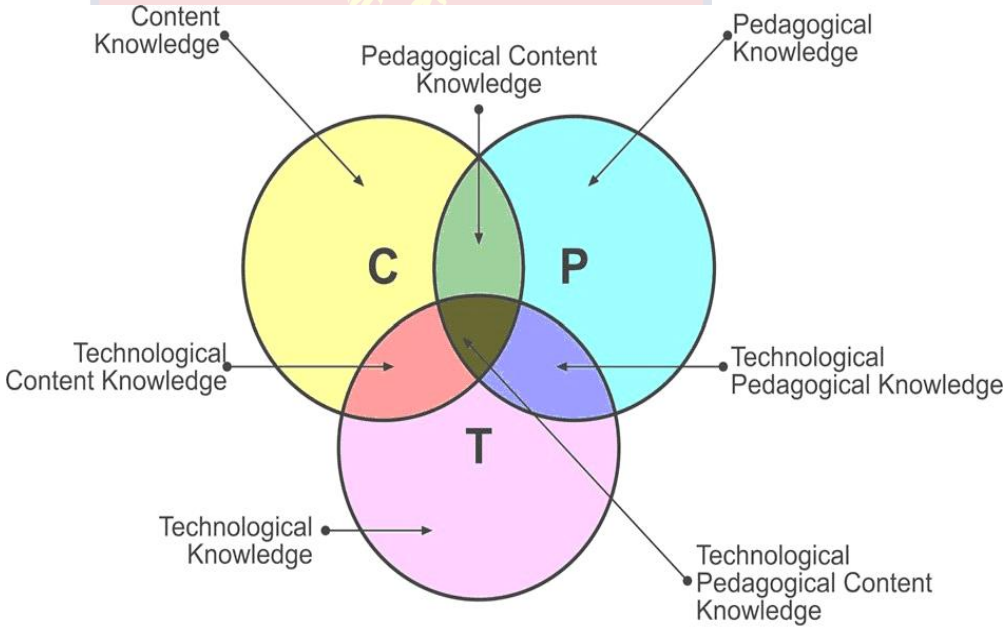

Figure 1-TPCK Model

Source: Mishra and Koehler (2006)

Consequently, Lee (2008) developed and expatiated ten actions Social Studies teachers could employ in these two contexts as follows:

1. Locating and adopting digital resources for use in the classroom.

2. Facilitating their students' work in non-linear environments by requiring students to make critical decisions about how to select their own resources and navigate through a wide variety of interfaces.

3. Working towards the development of critical media literacy skills among their students.

4. Giving students the chance to utilise the presentational capabilities of the Web which can serve as a source of motivation and encouragement to students.

5. Using the internet to extend collaboration and communication among students.

6. Extending and promoting active and authentic forms of human interaction in technology enabled social networks.

7. Making use of historical materials available through online sources.

8. Promoting understanding of spatial, human, and physical systems as aided by technology.

9. Expanding social experiences using technology.

10. Encouraging economic literacy through the use of technology.

The interplay of technology, pedagogy, and content knowledge in Social Studies which is associated with the ten pedagogical adaptations emphasized Social Studies in a democratic life direction.

Doolittle and Hicks (2003) also categorized strategies for effective use of technological tools for Social Studies instruction in the course of delivering contents, also proffered in the work of Lee (2008). These strategies are:

1. Both teachers and students should be prepared to implement technology as a tool for inquiry.

2. In creating authenticity, teachers should make use of technology which expedites and ignites the process of student inquiry and action.

3. In attaining multiple perspectives on people, issues, and events, teachers should use technology to foster local and global social interactions among students.

4. In encouraging the student's knowledge construction through building on students' prior knowledge and interest, teachers should use technology.

5. The students' vitality of knowledge should be embraced by teachers and aided by the use of technology in the provision of timely and meaningful feedback.

6. Teachers should promote students' academic independence by using technology to foster self-directed learning, originality and intellectual thinking.

Painter (2001) has also contributed some key notes to the integration of technology by teachers. These notes require teachers' readiness and flexible ability to incorporate technology into teaching activities with a high level of teaching skills based on curriculum knowledge, knowledge of students' abilities, students' needs and a reasonable level of technology literacy. Moreover, the International Society for Technology in Education (1999) has identified three primary principles of infusing Information and Communication Technology into teaching. These are:

1. ICT should be holistically infused into teacher choice of teaching and learning materials and resources;

2. ICT should be introduced in context; and

3. Learners should be exposed to innovative technology support in teacher education programmes.

Furthermore, Fullan (2000) postulates that technology is everywhere, hence using it is inevitable but the issue is about how they manage it. He added that "as technology becomes more powerful, good teachers become more indispensable" (p. 582). Thus, technology generates overabundance of information thereby making it difficult to determine the particular pedagogical wisdom on its own. In other words, breakthroughs in cognitive science about learners' inherent ability to construct their own meaning regarding a subject matter which aids deep understanding requires the teacher to know how to manage and utilize technology in order to improve learning.

On how helpful technology has been, some researchers are of the view that teachers must become specialists in pedagogical design and capitalize on the supremacies of technology both in and outside the classroom (Yalley, 2016; Hammond & Manfra, 2009). Considering empirical issues, Buabeng-Andoh (2012) explored Social Studies teachers' perception of technology in content delivery and found that a majority of the respondents perceived technology as an avenue of unlimited opportunities for obtaining educational resources for enriching course content and ultimately improving the teaching and learning process. Again, a majority of the respondents indicated that technology can enhance students' participation and feedback and also improve students' collaboration. The study concluded that teachers' perceptions on the application of technology in the teaching and learning environment were positive.

Regarding the place of technology in education, Taylor (2000) is of the view that "it is not the silver bullet that will solve all of our education problems, but it is certainly a useful tool that enables teachers to link various learning

communities together in new and different ways" (p. 4). Thus, the point for contemplation is what teachers and learners can achieve with the aid of technological tools, not what technology by itself can do. Taylor differentiates between technology use and technology integration within the learning environment and postulates that integration implies full-time, daily operation within lessons. Taylor (2000) once again asserts that curriculum integration with the use of technology comprises the mixture of technology as a tool to enhance the learning in a setting. Effective integration of technology is achieved when students are able to select technological tools to help them obtain information in a timely manner, analyse and synthesize the information, and present it professionally. Technology should become an essential portion of how the classroom functions, thus as accessible as all other classroom tools.

As educators, one is more concerned with the effective use of technology both as an instructional tool and a literacy learning tool. Knowing how to make decisions about how one is going to implement technology requires knowledge based on time, research (best practices) and expertise. Moulton (2009) suggests two types of integration of technology in education which includes using technology in the classroom and using technology to improve student learning and outcome. Undoubtedly, there is a difference between using technology for playing video games and using it as a learning tool. Therefore, there is the need to take steps to gain more experience with different technologies so as to enable the teacher to create an enabling environment for their students. Education Technology Research Development (2007) stressed that teachers need competence in three major skills in order to

integrate technology effectively: technology skills, technology-supported pedagogy skills, and technology-related classroom management skills.

It is also important for us to track the various stages of technology integration in our schools. For this reason, Association for Educational Communication and Technology (2004) made a major contribution in this area by identifying five stages teachers pass through:

1. Entry: where a teacher uses technology to deliver curriculum content to students;

2. Adoption: where teacher directs students in the conventional use of tool-based software;

3. Adaptation: where teacher encourages students to select a tool and modify its use to accomplish the task at hand;

4. Infusion: where a teacher consistently provides for the infusion of technology tools with understanding, for applying, analysing, and evaluating learning tasks; and

5. Transformation – where a teacher blends technology tools with student-initiated investigations, discussions, compositions, or projects across any content area.

According to Harkverdi, Gucum and Korkmaz (2007), effective technology integration is achieved when the integration supports curricular goals. It must support four key components of learning: active engagement, participation in groups, frequent interaction and feedback, and connection to real-world experts. It has been widely agreed by researchers that instructional technology does indeed hold a remarkable promise for changing the quality of

teaching and learning in schools, since it is a catalyst for transformation (Ryan & Cooper, 2006; Honey, 2001).

To obtain the full benefit of technology integration in our classrooms, one must entwine technology effectively with the content of what is to be learned. This was what Cuban (1986, 2001) referred to as "fitting the computer to the curriculum, not the curriculum to the computer" (p. 15). Consequently, Basilicato (2005) noted that a technological tool like the interactive whiteboard requires a dedicated teacher who can convey their enthusiasm for the subject to students. Logically, teachers who have taken part in some form of training on how to integrate technology into their classrooms are more likely to have a higher level of confidence in their ability to use instructional technology (Yalley, 2016). Subsequently, this training would spur them on to attempt integrating technology into their classroom routines. It will also lead to the development of the requisite competence in integrating technology, which will further boost their confidence and the cycle continues.

Gorder (2008) noted that effective integration of technology is subject to teachers' competence and ability to shape instructional technology activities to meet students' needs. Teachers possess mastery of content and pedagogy, but often when it comes to technology, teachers tend to learn along with students (Yalley, 2016). Fulton (1997) asserts that in their daily use of technology, teachers focus on teaching students first-level technology skills which involve how to work with technology, but many teachers ignore the second level skills of knowledge integration and a deeper understanding of analysing information. Sheingold (1990) said integrating technology in the classroom is about assisting students to use technology as a tool for learning

and not teaching students to operate computers. To reinforce the position of Sheingold, the Education Technology Research Development (2007) states that teachers need competence in three major skills in order to integrate technology effectively: technology skills, technology-supported pedagogy skills, and technology-related classroom management skills. Most importantly, the integration of these major skills leads to good teaching. Simply put, technological pedagogical content knowledge requires:

a. Representation of concepts using technologies and pedagogical techniques that uses technology in constructive ways to teach the content;

b. Knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face; and

c. Knowledge of students' prior knowledge and theories of epistemologies and how technological knowledge can be used to build on existing knowledge and develop new epistemology or strengthen old ones (Koehler & Mishra, 2008).

Mishra and Koehler (2006) argue that thoughtful pedagogical uses of technology require the development of a complex and a situated form of knowledge which they referred to as Technological Pedagogical Content Knowledge (TPACK). In doing so, they put forward the complex roles of, and interplay among, three main components of learning environments: content, pedagogy, and technology. The TPACK model portrays "teachers understanding of technologies and how pedagogy content knowledge interacts with one another to produce effective teaching with technology" (Koehler & Mishra, 2008, p. 652).

TPACK stands for Technology, Pedagogy, and Content Knowledge and was announced as the "Total PACKage" for effective teaching with technology

(Thompson & Mishra, 2007). According to Thompson and Mishra (2007), TPACK best reflects the interdependence of the three contributing knowledge domains (i.e. technological knowledge, content knowledge and pedagogical knowledge), (Mishra, personal communication). In 2001, Pierson, used the teachers' technology integration, Vrasidas, Pattis, Panaou, Antonaki, Aravi, Avraamidou and Theodoridou (2010) similarly used information and communication technology (ICT) related PCK whiles Niess (2005) coined technology-enhanced PCK to mean integration of ICT (technology) in the education. To address the distinction among scholars on technology integration, Mishra and Koehler (2006) proposed to consider the necessary relationships that exist among the three variables (technology, content and pedagogy) by introducing the notion of Technology Pedagogical Content Knowledge (TPACK).

It is against this backdrop that the researcher used the acronym TPACK throughout the study to ensure consistency unless a particular reference is made to a particular writer who uses "TPCK". In light of this, both acronyms TPACK and TPCK are used interchangeably because the change in terminology is not adopted by everyone and this adoption is going to undermine the theoretical connotation and relevance of the concept in the field of Social Studies. A number of Social Studies researchers and scholars have argued that keeping technology separate from content and pedagogy is a disservice to students, propagates misuse and even disuse of educational technology (Yalley 2016; Hooper & Rieber, 1995; Cuban, 2001). These researchers have therefore proposed an expansion of Shulman's model to include the domain of technology (Mishra & Koehler, 2008). The interception of these three domains:

content, pedagogy, and technology form the new framework known as Technological Pedagogical Content Knowledge.

In this study, Mishra and Koehler (2006) theory has been applied to the phenomenon of Social Studies teachers' integration of technology into content and pedagogy for effective and efficient delivery of the subject. In other words, before any Social Studies teacher can successfully integrate technology in their teaching practices, he/she must be competent in all the three domains first. Yalley (2016) opines that if teachers are to be successful, they need to confront the triad of technology, content and pedagogy simultaneously. The emphasis centres on "the complex interplay" of these three bodies of knowledge (technological knowledge, content knowledge and pedagogical knowledge) displayed.

In simple terms, the theory of Mishra and Koehler informs this study as it reveals the need for blending the teachers' knowledge and ability to impart the knowledge of Social Studies through the help of technology. Thus, the knowledge base of the teacher about Social Studies, to a large extent, could determine how well he will teach the subject. On the part of technology, the competence of the teacher in terms of content will determine his influence on the use of technology in the course of teaching the subject. Although, the focus is on the competency of the teacher, one cannot be competent without having the knowledge base in that particular discipline. Therefore, the theory gives room for considering a combination of the teachers' knowledge and how to impart knowledge about Social Studies using the knowledge base in technology, hence the need for techno-pedagogical competence. Based on the discourse so far, the main aim of the study sought to establish the competence of JHS Social

Studies teachers in terms of pedagogy and use of technology in the delivery of content in the Adansi-North District of the Ashanti Region of Ghana.

Conceptual Framework of the Study

The study was guided by a conceptual structure constructed by the researcher in figure 2 which aids in the determination of the relationships among the three constructs of the study techno-pedagogical competence, pedagogical and the technological competence of the JHS Social Studies teachers.

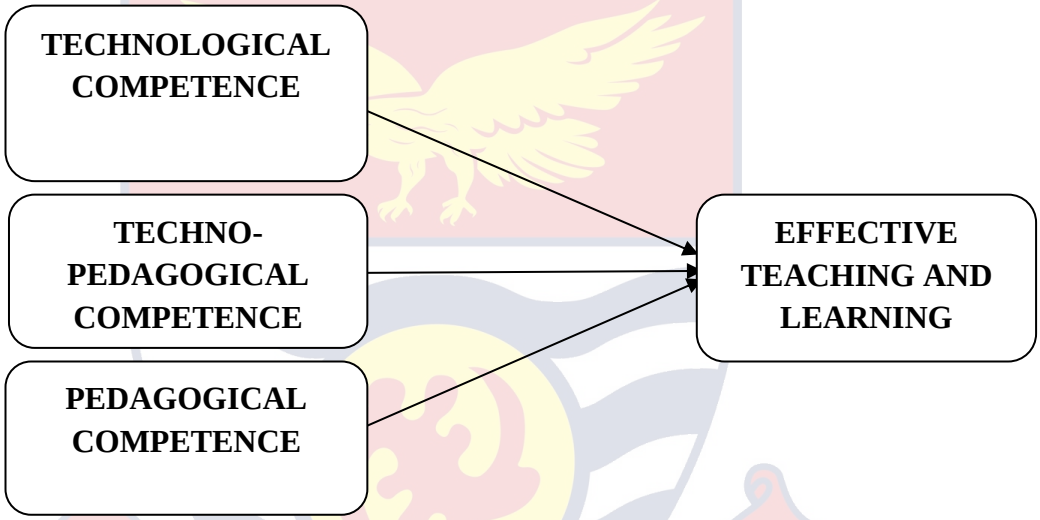

Figure 2-Conceptual Framework of the Study

Source: Author's construct (2019)

This framework served as the foundation on which decision regarding methodology, framing of research questions and hypothesis formulation was derived. The framework as indicated in Figure 2 shows that there is a convergent relationship between the competence (technological, the techno-pedagogical and the pedagogical) of the Social Studies teacher and effective teaching and learning. This presupposes that when the teacher has mastery over the content of the subject, the adaptation and use of technology and selection of teaching

methods for instance, he has a higher chance of teaching effectively to the understanding of students as indicated in the study of Cuba (2001).

The technological competence of teachers depends on how effective they can adjust to the ever growing and increasing knowledge especially in the areas of technology. This incumbently requires that teachers upskill in the use of technology not only for personal gains, but to enhance professional competence as well in a bid to creating a favourable teaching and learning environment for students. Again, as vicarious experiences greatly influence the efficacy of delivery, success in learning a skill in technology and utilising it will serve as a motivation for the teacher to explore more technological tools which will help their classroom facilitation.

Also, the effective usage of technology in delivery of content is subject to knowledgeability of the teacher in the content to be taught. The teacher should be competent in the areas of pedagogy. As suggested in literature (Yalley 2016; Gorder, 2008; Mishra & Koehler, 2006), pedagogical competence of teachers play an important role in their infusion of technology in the teaching of the Social Studies subject. The mastery of the pedagogical subject matter could ease the adoption and use of technology in the delivery of Social Studies content. Thus, prior to the usage of technology in teaching the subject Social Studies, the teacher should be well verse with the content of the subject itself (Yalley, 2016; Honey, 2001). This will allow a holistic presentation of the subject and not a one-sided delivery that could occur due to the deficiency in the training of the teachers in the principles and methodology of Social Studies as Kankam (2016) indicated. This is possible due to the nature of the subject

Social Studies. As suggested by Kankam (2016), the subject draws its strength from areas such as Psychology, Philosophy and Geography among others.

Technological competence of a Social Studies teacher is advantageous for effective delivery of the content matter of the subject as asserted by some studies (Gorder, 2008; Basilicato, 2005; Fulton, 1997). In other words, the use of technology is so essential in current times that teaching of the subject matter of Social Studies is incomplete without technological skills if the needs of learners are to be met to the highest degree expected.

For instance, a teacher well versed in Social Studies has a basic skill in creation of motion pictures as a technological tool could craft a short motion picture demonstrating to his/her students the cycle of rainfall from evaporation to cloud formation and finally to precipitation. The pedagogy of Social Studies is an integrated one which requires a diversified proficiency of the teacher. Hence, a Social Studies teacher who has anti-technology tendencies will present the subject as a mere abstract concept much to the disadvantage of the students. From the foregone propositions, there is the need to assess the phenomenon under study. Consequently, the study sets out to examine techno-pedagogical competence of Social Studies teachers in Adansi-North District. Specifically, the study sought to establish the relationship and differences in relation to demographic variables such as gender, age, teaching experience and the levels of technological competence, pedagogical competence and techno-pedagogical competence of respondents.

Conceptual Review

This section of the study sought to expand the various concepts in relation to the key variables as well as the objectives of the study. This includes the history of Socials Studies education.

Historical Antecedents of Social Studies in Ghanaian Schools

In the 1940s, the development of the Social Studies programme as a field of study was introduced into the curriculum of the teacher training colleges in Ghana (Tamakloe, 2008; Kankam, 2016). The teaching of the subject first took an experimental form during which the Presbyterian Training College (Akropong), Wesley College (Kumasi) and Achimota Training College (Accra) were the main pioneers. According to Agyemang-Fokuo (1994), this experiment did not blossom due to negative perceptions and attitudes towards the programme by both teachers and students.

Again, in the 1950s, the development of the subject was revisited in relation to the perception and attitudes of both tutors and students. Research indicates that the way people perceive things determine their level of commitment to those things (Kankam, 2016). Similarly**,** Callahan, Clark and Kellough (1992) postulate that people put much effort in their activities when they see that they achieve their aim and will be rewarded. By the early 1950s, the single subjects (i.e. studying subjects like History, Economics and Geography separately) had taken over the integrated Social Studies (i.e. drawing concepts, ideas, knowledge and views from different subject areas like History and Geography to solve problems or explain issues) in the teacher training colleges. According to Tamakloe (2008), this happened due to the fact that graduates from social sciences of the University of Ghana who were to handle

Social Studies in the teacher training colleges, were not conversant with the integrated approach as they had specialized for the purposes of teaching subjects as separate disciplines**.** Again, the students preferred the single subject approach in that it provided them the opportunity to improve upon their grades in those individual subjects or try their hands at GCE "O" Level examinations (Kankam, 2016).

In the late 1960s, another development propelled the re-introduction of integrated Social Studies in the teacher training colleges in Ghana. This was when some graduate and non-graduate teachers who had received scholarship to Wales and Bristol to study the "Environmental Studies Approach" and the "Integrated Social Studies" returned to Ghana. By 1971, about 14 of the teachers with a positive perception about Social Studies had been posted to the teacher training colleges to spearhead the development of the integrated programme which they had studied abroad. Also, in 1976, the experimental junior secondary schools were established where Social Studies as a subject was one of the subjects on the school curriculum. There was the need for student-teachers at the teacher training colleges to specialize in Social Studies to teach at the experimental junior secondary schools. After training the first three batches of Social Studies teachers at the teacher training colleges for the programme, it was realized that there was a glut of teachers because there was no corresponding expansion of the junior secondary schools in terms of numbers. The result was that Social Studies had to be abandoned in the training colleges in the 1981/82 academic year (Tamakloe, 2008). There was no need for training specialized Social Studies teachers who could not be absorbed into the education system. This state of affairs in the training colleges of Ghana, together

with the fact that Social Studies was not examined externally for certification, both at the teacher training colleges and secondary school levels, caused tutors and students alike to develop a half-hearted attitude to the study and development of the subject. The development of Social Studies in the teacher training colleges has therefore been characterised by unsteadiness due to both tutors' and students' perceptions and attitudes towards the programme since its inception. It is against this background that Tamakloe (2008) described the attempt at introducing Social Studies as one plagued with a "chequered history".

Another incident of interest in the history of the development of Social Studies was the educational reform in the year 1987. The Educational Reform Review Committee was born as a result of the experimentation of some of the recommendations of the 1972 Dzobo Committee. The Review Committee Report of 1987 recommended six years of primary school, three years of junior secondary school and senior secondary school education each or the 6-3-3. The recommendation was implemented in 1987, which led to all middle schools being turned into junior secondary schools. With this new reform in education, Social Studies was re-introduced in the teacher training colleges as one of the elective subjects to train students to teach the subject at the junior secondary schools. The aim of the Educational Reform Programme was aimed at changing the content of education at the basic level and to ensure its relevance to individual and societal needs (GES, 1987). Based on this, the New Education Reform Programme brought in its trail Social Studies at the basic education level for the whole nation.

The aims and objectives of the junior secondary school Social Studies programmes reflected all the three domains of educational objectives: cognitive,

affective and psychomotor. The cognitive domain deals with the acquisition of knowledge, facts and ideas; the affective domain deals with the behavioural change of the learner whilst the psychomotor domain deals with the acquisition of skills (Girdwood, 1999 citing GES, 1987). The introduction of Social Studies at the basic education level necessitated the training of more teachers to have a sound basis in the content for the courses at the junior and secondary school levels. Consequently, in 1990, Teacher Training Colleges in Ghana embarked on teaching of Social Studies after a new programme of instruction was designed. The aims and objectives of the teacher training college Social Studies syllabus are to:

> *help the teacher trainees to be equipped with the subject content, the professional knowledge and skills that will enable them to handle confidently the Social Studies programme at the basic level of education. Hence, our goal in teaching Social Studies in the Teacher Training Colleges should be to help students to acquire knowledge and to effect a change in their attitudes and values in their society and the environment. It is also to equip them with the skills to teach for changes in the values and attitudes of pupils* (Girdwood, 1999 citing GES, 1993: p. 1).

Boadu (2012) citing Martollera (1985) is of the opinion that the Social Studies programme has been perceived differently and described in various ways by many writers over the years. Researchers like Banks (1985) and Barr, Barth and Shermis (1977) remark Social Studies as a single subject and a singular noun. Kankam (2016) citing Wesley and the Committee on Social Studies perceive Social Studies as several subjects and, therefore, described it

as a plural noun. It is common knowledge that the tutors and students at the teacher training colleges have different perceptions of the Social Studies programme and are therefore likely to approach the subject according to how they perceive it.

Consequently, Kankam (2016) is led to express the view that there are two categories of tutors teaching Social Studies in the teacher training colleges in Ghana. The first category consists of those tutors who graduated in the integrated Social Studies from either University of Cape Coast or University of Education, Winneba (Kankam, 2016). This first category of tutors studied the theory, principles and methods of teaching integrated Social Studies. Hence, they are likely to perceive Social Studies as an integrated subject with its main goal as citizenship education. This will influence them to teach the subject as prescribed by the Ghana Education Service. The second category of tutors studied the separate subjects such as History, Geography, Economics and other foundation subjects of Social Studies. Such tutors are not likely to get the principles underpinning integration in Social Studies. Therefore, these latter categories of tutors are not likely to perceive Social Studies as an integrated subject with its main focus on citizenship education. Girdwood (1999) citing GES (1987) prescribed that Social Studies should not be treated as separate and isolated subjects but rather as one integrated subject.

Technological Competence

Technological Knowledge (TK) is always in a state of flux more than content and pedagogical knowledge. This makes defining and acquiring it notoriously difficult. Keeping up to date with technological developments can easily become overwhelming to time-starved teachers. This also means that any

definition of technology knowledge is in danger of becoming outdated by the time this text has been published. There are however ways of thinking about and working with technology that can apply to all technological tools, regardless of when they emerge.

In that sense, our definition of TK is similar to the notion of Fluency of Information Technology ("FITness") as proposed by the Committee on Information Technology Literacy of the National Research Council (NRC) in, 1999. The committee argues that "FITness" goes beyond traditional notions of computer literacy to require that people understand information technology broadly enough to apply it productively at work and in their everyday lives. Therefore, more than the traditional definition of computer literacy, "FITness" requires a deeper, more essential understanding and mastery of technology for information processing, communication and problem solving. Also, this conceptualization of TK does not posit an "end state," but rather assumes TK to be developmental; evolving over a lifetime of generative interactions with multiple technologies.

Technology Adoption in Education in Ghana

Currently, technology is exerting its influence on every aspect of human endeavour and the educational system is not exempted. The prospects of using emerging and digital technologies to improve the teaching and learning process as well as students' academic performance have been noted by researchers, scholars, teachers and teacher educators (Yalley, 2017; Lee, Brescia, & Kissinger, 2009). Educational stakeholders such as governments, schools and groups/NGO's, on recognizing and acknowledging the potential impact of technology, have committed significant investments to technological resources

with the hope that it will facilitate and improve teaching and learning in Ghana. Existing policy and strategy documents were reviewed in order to bring equity, access and quality in line with the key priorities of the Ministry of Education. In an attempt to define the strategic use of ICT to achieve developmental objectives for the educational sector, a number of guiding principles were adopted which influenced the policy.

According to the Ministry of Education (2008), the guiding principles were informed by the following:

1. World Forum on Education Dakar (2000).
2. Report of Educational Reforms in Ghana: Meeting Challenges in the 21st Century (2002).
3. ICT in Education Policy Framework which highlights key issues and expected benefits of ICTs in Education (2002).
4. The Ghana ICT for Accelerated Development (ICT4AD) Policy (2003) that recognizes education as a cross-cutting issue within the national framework crucial to the support of the thirteen pillars.
5. Ghana Education Strategic Plan 2003-2015: Volumes I and II (2003).
6. White Paper on the Report of the Education Reform Review Committee (2004).

As part of the government of Ghana's pledge to comprehensively deploy, utilize and exploit technology (ICT), specifically within the educational sector, a National ICT Policy and Plan Development Committee was set up in 2002 to formulate an ICT policy referred to as Information and Communication Technology for Accelerated Development (ICT4AD) which has been in implementation since 2004 (Ministry of Education, 2003).

The Concept of Pedagogical Competence

The pedagogical competence included: (1) identifying the students; (2) mastering the pedagogical knowledge; and (3) understanding the various models of learning (Suparno, 2002). Moreover, Suparno (2002) asserted that the pedagogical competence is the ability to manage the learners and it covers such areas as: (1) understanding the diversity of learners, (2) developing curricula/syllabi both in the form of documents and implementation of learning experiences; (3) preparing the lesson plans and strategies based on the standards of competence; (4) carrying out the teaching and learning process with interactive and dialogic atmosphere thereby encouraging active, innovative, creative, effective and fun learning process; (5) evaluating the learning outcomes in compliance with the required procedures and standards; and (6) developing the students' talents and interests through intra-curricular and extra-curricular activities to actualize various potentials.

According to Suparno (2002), pedagogical competence is the ability in learning or education that includes the ability to:

1. understand the characteristics of the students and their development,
2. understand various concepts of education that are useful for assisting students,
3. master several methodologies in accordance with the teaching materials and student development,
4. master the appropriate and constructive evaluation systems that are able to enhance the student's ability.

On the other hand, pedagogical knowledge is deep knowledge about the processes and practices of teaching and learning, encompassing educational purposes, goals, values, strategies and more (Yalley, 2016). This generic form of knowledge applies to learning, classroom management, instructional planning and implementation as well as student assessment procedures and processes. Thus, it encompasses knowledge about techniques and methods to be used in the classroom, the needs and preferences of learners and strategies for assessing student understanding. That is to say, a teacher with deep pedagogical knowledge should be able to understand the various means by which students construct knowledge and acquire skills. It also includes understanding how students develop habits of mind and moods toward learning. As such, pedagogical knowledge requires an understanding of cognitive, social, and developmental theories of learning and how they apply to students in the classroom.

Again, effective technology integration is achieved when it is directed to support curricular goals. That is, it should support four key components of learning: active engagement, participation in groups, frequent interaction and feedback, and connection to real-world experts (Harkverdi, et al., 2007). It has been widely agreed that instructional technology holds a remarkable catalyst for transformation (Ryan & Cooper, 2006; Honey, 2001). In other words, Social Studies teachers must find novel ways in which current computer applications from other fields can be modified to suit their classroom purposes.

Pedagogical competence stems from pedagogical knowledge which is a meticulous procedure. In this vein, Rodgers (2003), views the importance of teacher pedagogical knowledge or being methodical as follows:

1. It makes teaching and learning very simple and easy.

2. It enables more learning to take place.

3. The time taken to achieve more learning outcomes is very short. This is particularly so when the learning experiences are interesting and are tailored to the needs and maturational level of the learners.

4. Teaching methods help to implant what is pleasantly learned in the memory of the learners and makes for their easy recall.

5. People who are taught with teaching methods get to realize their import and may in the end acquire them for use in their interactive session in the classroom if they are student-teachers or serving teachers.

6. The use of teaching methods keeps learners alive to the teaching and learning process.

7. Teaching methods have the potential of reducing learners' disruptive classroom behaviours to the barest minimum and therefore contribute quite positively to the desired effective classroom management.

8. The choice of an appropriate teaching method to suit a given teaching learning encounter keeps the teacher professionally alive in his preparations to teach very well (p. 53).

Some researchers claim that the methods of teaching some subjects including Social Studies may be categorized into student-centered and teacher-centered approaches (Yalley, 2016; Tamakloe, 2008). In the studying of Social Studies, an important characteristic is the recognition of the human being as the most essential feature of learning and development of specific skills and knowledge. This enables effective functioning in the society. Consequent to this opinion, some studies suggest that it is essential for

teachers to use student-centered methods in realizing the stated objectives, goals and aims of the subject (Yalley, 2016: Abdu-Raheem, 2011).

In connection with the scope of Social Studies, Banks (1990) mentioned that lower grades in schools conceived the scope of Social Studies based on institutions and communities such as the home, the family, the school, the neighbourhood and the community. He further suggested that there should be specializations at the higher levels. Thus, students should be made to choose among some electives in fields such as Sociology and Psychology while not forgetting the problems of democracy. This idea concerning the scope of Social Studies appears to echo the idea put forward by Banks; in that at the basic level (Primary and Junior High), the subject is organized around eight distinct areas including the home, the school, the neighbourhood, the local community, the national community, the West African Community, the African Community and the World Community, while at the higher levels (Senior Secondary School, Teacher Training Colleges and Universities), the Social Studies programme combine elements from Geography, Economics, Sociology, Political Science and History. The programme is structured to reflect the Ghana Education Service (GES) (1988) statement that Social Studies integrate History, Geography, Civics and elements of Economics, Government and Sociology (Yalley, 2016).

Empirical Review

Empirically, literature was reviewed in accordance with expert views and the similarities or differences that exist in their studies. These reviews were based on the empirical evidence that exists in their studies as far as techno-pedagogical competence is concerned.

Levels of Technological Usage among Teachers

Technology has been with the world for quite a long time and its impact on the daily life of people cannot be understated. In the educational industry, the teacher is expected to explore technology not only for the personal convenience but also for professional purposes. According to Niess (2005), technological knowledge comprises understanding of how to use computer software, hardware, presentation tools (document presenters and projects) and other technologies used in educational contexts which make teaching and learning easier.

Abu-Samak (2006) in his study among Jordanian EFL teachers concluded that the teachers had high access to technology and moderate competency. Again, Koehler and Mishra (2006) agree that knowledge of teachers about various technologies mostly range from low technologies to digital technologies which include the internet, digital video, interactive whiteboards and software programmes. Considering the uncountable importance of the technology, the Jordanian government has put in the efforts to equip schools with technology infrastructure while encouraging homes to get involved (e.g. computers and Internet connections) (Al Bataineh & Anderson, 2015; Heafner, 2013; Khaswneh & Al-Awidi, 2008).

Archambault and Barnett (2010) confirm the response from the Social Studies teachers that technological knowledge is used when teachers employ the utility of technology to deliver information in the classroom. Gulbahar and Guven (2008) also assert that teachers' attitude is key in predicting the use of new technologies in instructional settings. It shapes not only their own ICT experiences, but also the experiences of the students who learn from them.

Demetriadis et al. (2003) reached similar conclusions in their research study thus: "Training efforts are generally welcomed by teachers but consistent support and extensive training is necessary in order for them to consider themselves able to integrate ICT in their teaching methodologies" (p. 35).

Some research studies (Smeets, 2005; Harris, 2002) also show that most teachers do not make use of the potential of ICT to contribute to the quality of learning environments, although they value this potential quite significantly. The study by Harris (2002) was a case study in three primary and three secondary schools and it focused on innovative pedagogical practices involving ICT. Harris concludes that the benefits of ICT will be gained "…when confident teachers are willing to explore new opportunities which aim at varying their classroom practices through the use of ICT" (p. 458).

Gulbahar and Guven (2008) conducted a survey on ICT usage and the perceptions of Social Studies teachers in Turkey using 326 teachers who teach fourth and fifth grade primary classes. A majority of Social Studies teachers in the study (98.2%) had access to a computer at work and among them, another majority of 88.7% had access to the Internet. Daily computer usage by Social Studies teachers was found to be generally moderate in that some use the computer for less than an hour, some 30.7% use it between 1 and 3 hours, 2.8% use a computer for between 3-5 hours and 1.5% use a computer for more than five hours daily. The study again established that over fifty-four percent of the participants rated their skills as average or high on the use of technological tools such as word processing, spreadsheets, presentation software, computer aided instructional software, web browsers, search engines, electronic mail, chat/forum, electronic encyclopaedia and instructional films. The preferred

instructional tools among the teachers also included the following: board, printed materials, overhead projector, television/video, radio cassette recorder, multimedia computer and slide projector. Although this study had in its scope primary school teachers, it did not include junior high school teachers. Also, the geographical location and environmental as well as cultural practices differ from the Ghanaian context hence the need for the current study.

Mundy, Kupczynski and Kee (2012) citing Younker found that on the average, teachers use computers 1.9 hours per week mainly to enter students' grades. Students spent even lesser time on the computers; only 1.5 hours per week. A study in Taiwan demonstrated a strong relationship between teacher training and the integration of technology into the curriculum. Hsu (2010) discovered that the better trained a teacher was in the use of technology, the more likely he or she was to successfully integrate it into classroom instruction. In a study of teacher perception of the values that are needed qualify as an "exemplary" user of technology in the classroom, it was found that teachers believe that a person has to be confident in his or her ability to use technology and be committed to its use (Ertmer, Ottenbreit-Leftwich, & York, 2007).

In Turkey, Özgür (2016) opined that among the lists of competencies for teachers, technological literacy competences in information and communication technologies is highly accepted internationally as stipulated by their Ministry of National Education. Kim, Kim, Lee, Spector and DeMeester (2013) sought to determine how teachers' pedagogical and epistemological beliefs related to their instructional use of technology. This was a 4-year study in which participants received technology equipment and a professional development opportunity including technical and pedagogical support. The main goal was for improving

technology integration practices. The results suggested a connection between teachers' beliefs about the nature of learning and effective teaching practices and their technology implementation practices. The study found that the more student-centered the pedagogical beliefs, the more ubiquitous the use of technology. These studies only looked at the integration of technology in teaching the content of Social Studies and did not consider levels of technological competence of the teachers which reflects a void in the study. This is because without expertise in an area, one cannot practice with professional competence in the said discipline.

Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur and Sendurur (2012) used a purposeful sampling of 12 teachers who had won awards for their technology use to revisit the disparity between teacher beliefs and technology integration practices. While their findings revealed that external barriers such as money, access, time, and state standards still existed, these participants felt they were able to overcome any negative influence the barriers may have created. However, the attitudes and beliefs of other teachers were perceived to be the greatest obstacle to student use of technology.

It could be realized from the literature that most of these studies were conducted among either primary school teachers or senior high school teachers and much attention was not given to the Junior High School students.

Levels of Pedagogical Knowledge among Teachers

Pedagogical knowledge of teachers has been explored by teachers over the years and the results have been both positive and negative. Meanwhile the subject Social Studies is now a distinct part of the curriculum at all levels of Ghana's educational system. Its relative newness in schools, coupled with the

dearth of professionally qualified Social Studies teachers and the inevitable need to have teachers equipped with a high level of competence in the delivery of the subject content, presents a number of challenges which ought to be addressed (Yalley, 2016).

According to Shulman (1986), pedagogical knowledge is any theory or belief about teaching and the process of learning that a teacher possesses which influences teaching. Hudson (2007) asserts that this process of learning includes the ability to plan and prepare materials, time and classroom management skills, implementation, problem solving and teaching strategies, questioning techniques and assessment. The use of a particular teaching pedagogy will influence classroom management and questioning techniques, including mode of assessment (Hudson, 2007). However, this study could not capture within its scope the levels of pedagogical skills under consideration. Yalley (2016) investigated the technological pedagogical content knowledge of Social Studies teachers in Senior High Schools in Kumasi Metropolis in the Ashanti Region. The population of the study comprised all the 136 Social Studies teachers in the nineteen public Senior High Schools in the Metropolis. It was established in the study that Social Studies teachers possessed pedagogical knowledge. Thus, Social Studies teachers in the Metropolis were competent as at the time the study was being carried out. Yalley's study did not consider teachers at the Junior High School level, hence the need for this study.

Rechards (2005) and Ogunkunle (2008) agreed that self-directed learning makes learning effective and meaningful to learners, improves and develops problem-solving abilities in learners and also takes care of all categories of learners. Abdu-Raheem (2010) confirmed the responses by stating

that inquiry, problem solving, discussion, discovery and role playing are effective methods for teaching Social Studies concepts. Also, Yalley (2016) and Abdu-Raheem (2011) agreed that problem-solving method is effective because students are able to participate actively in the lessons. Abdu-Raheem's study was concerned with the effects of discussion method on secondary school students' achievement and retention in Social Studies, and Yalley's research was conducted among an identical population. Clearly, these studies did not give attention to Junior High School teachers and that necessitate this study. Consequently, there is the need to look at the phenomenon among teachers in the junior secondary schools specifically, Adansi North District Assembly.

Abdu-Raheem (2011) has observed that the objective of Social Studies is yet to be achieved as a result of poor teaching and lack or inadequacy of instructional materials to motivate students. Wang (2006) asserted that effective teachers present information or skills clearly and enthusiastically, are non-judgmental and relaxed, keep the lessons task-oriented, aim at students' achievement, interact with students through probing questions and assist students by elaborating their answers. Tamakloe, Amedahe and Atta (2005) stress that outdated methods of teaching should make way for current ones that are activity based and so ensure active involvement of learners. This could be employed to guarantee the achievement of learning objectives. In a related discourse, Afolabi (2000) stressed the need for a continuous systematic programme of professional improvement to enhance the effectiveness and efficiency of teaching. This requires teachers being versatile in the use of methods and processes for teaching and learning.

According to Parker and Heywood (2000), Social Studies teachers should master the teaching methods and strategies to facilitate effective interaction between the learners and the content. For example, the lecture method of teaching allows a great deal of information passed from the teacher to the learners but the extensive use of this method tends to substitute the teacher for the student and leads to the fading students' memories and decreasing attention (Jekayinfa, 2012). Additionally, Afolabi (2000) also asserts that teaching and learning is famed as conventional teaching where the teacher is the centre of the lesson, a controller of the class activities and a dictator while the learner is a passive learner who takes all the words of the teacher without interaction between student and teacher. In the same vein, Adelekan in Afolabi, Abidoye and Afolabi (2013) lamented that in spite of the laudable objectives and benefits of Social Studies in the school curriculum, the teaching of the subject is characterized by the conventional method of teaching which always leads to ineffective learning and poor attitude of students towards the subject.

Borhaug (2005), is of the view that in defining the content, Social Studies is short of a specific didactical standard which comprises most importantly the purpose, goal, content and teaching methods. Consequently, the subject matter becomes vulnerable because it sets out to cover topics and themes that are of interest to the school but do not fit into any other subject in the school. Hence, it becomes difficult to teach the subject.

Also, Kankam, Bekoe, Ayaaba, Bordoh and Eshun (2014) agreed to the varied conceptions about the scope of Social Studies in Ghana. They assert that most teachers conceptualized the content of Social Studies to cover acquisition of problem solving skills, solving issues that threaten human survival,

development of positive attitudes of students; critical examination of controversial issues, critically thinking about important social and political issues, and key social and cultural situations in the community. Yalley (2016) citing Ma (1999) asserts that the focus on subject-matter knowledge suggests that teachers have not made the necessary impact on their teaching and that they lack the essential knowledge for teaching in their field or area. This could spring from various reasons such as the inability to clearly define what constitute the subject matter of Social Studies, rather than its combination of themes and issues borrowed from other social sciences.

Furthermore, the dimension-based scope is predicated upon the assumption that the world consists of diverse societies. Consequently, there is the need for a subject which will serve convergent point for the many dimensions of the society, and the subject most suited for this is Social Studies. Cobbold (2013) in his book "Introduction to the Nature and Philosophy of Social Studies," suggested a Community-Based Scope for the subject matter of Social Studies. Thus, the scope from which the perspectives of the social environments and communities in which students live and function is studied. Therefore, in order to attain competence in this field of study it is required of a teacher to be knowledgeable. Rodgers and Raider-Roth (2006) claim that "many a time, teachers are knowledgeable in the subject matter without necessarily being able to decompress it in a way that makes it accessible to their students" (p. 280). Thus, teachers should be competent with the teaching methods, strategies and techniques to effectively use the appropriate pedagogy to teach the content of Social Studies as a subject.

It is well noted in the literature that most studies were much concerned with the knowledge base of Social Studies teachers but attention was not given to the application of the knowledge gained through pedagogy. Therefore, there is the need to assess the phenomenon as it pertains to the study area.

Technological Competence

In the education industry, the teacher is expected to use technology not only for the personal gains but for professional purposes as well. According to Niess (2005), technological knowledge comprises understanding of how to use computer software, hardware, presentation tools (document presenters and projects) and other technologies used in educational contexts which makes teaching and learning easier. Cox (2008) also affirmed that teachers' technological knowledge encompasses modern technologies such as computer, internet, audio, digital video and commonplace technologies including overhead projectors, blackboards, and books. These studies looked at the knowledge base of Social Studies teachers and not the ability of the teachers using the knowledge in technology to teach the subject matter of Social Studies to the ultimate benefit of students.

Again, Koehler and Mishra (2006) agree that technological knowledge of teachers about various technologies mostly range from low technologies to digital technologies which include the internet, digital video, interactive whiteboards, and software programmes. Considering the uncountable importance of the technology, the Jordanian government has put in the efforts to equip schools with technology while it again encouraging homes to get involved (e.g. computers and Internet connections) (Al Bataineh & Anderson, 2015; Heafner, 2013; Khaswneh & Al-Awidi, 2008).

Archambault and Barnett (2010) confirmed that Social Studies teachers' technological knowledge is used when teachers implement technology to help deliver information in the classroom. Gulbahar and Guven (2008) also assert that teachers' attitude is key in predicting the use of new technologies in instructional settings. It shapes not only their own ICT experiences, but also the experiences of the students who learn from them. Demetriadis et al. (2003) reached similar conclusions in their research study: "Training efforts are generally welcomed by teachers but consistent support and extensive training is necessary in order for them to consider themselves able to integrate ICT in their teaching methodologies" (p. 35).

Also, some research studies (Smeets, 2005; Harris, 2002) show that most teachers do not make use of the potential of ICT to contribute to the quality of learning environments, although they value this potential quite significantly. The study of Harris (2002) was a case study in three primary and three secondary schools and it focused on innovative pedagogical practices involving ICT. Harris (2002) concludes that the benefits of ICT will be gained "when confident teachers are willing to explore new opportunities which aim at varying their classroom practices through the use of ICT" (p. 458). The two studies were conducted among senior high school teachers and not junior high school teachers therefore there is the need to consider the junior high school teachers in this regard. Gulbahar and Guven (2008) conducted a survey on ICT usage and the perceptions of Social Studies teachers in Turkey using 326 teachers who teach fourth and fifth grade at primary level. The majority of Social Studies teachers in the study, 98.2% have access to a computer at work and among them majority 88.7% had access to the Internet.

Mundy et al., (2012) indicated that daily computer usage of Social Studies teachers was found to be generally moderate in that some use a computer in less than hourly basis, some 30.7% used it between 1 and 3 hours, 2.8% used a computer for between 3-5 hours and 1.5% used a computer for more than five hours daily. The study again established that over fifty-four percent of the participants rated their skills as average or high at technological tools such as word processing, spreadsheets, presentation software, computer aided instructional software, web browsers, search engines, electronic mail, chat/forum, electronic encyclopaedias and instructional films. The preferred instructional tools according to usage rate are as follows: board, printed materials, overhead projector, television/video, radio cassette recorder, multimedia computer and slide projector. Although this study had in its scope primary school teachers, it did not include junior high school teachers. Also, the geographical location and environmental as well as cultural practices differs from the Ghanaian context hence the need for the current study.

Mundy, et al. (2012) citing Younker found that on the average, teachers used the computers 1.9 hours per week mainly to enter grades in elementary schools. Students spent even less time on the computers only 1.5 hours per week. A study in Taiwan demonstrated a strong relationship between teacher training and the integration of technology into the curriculum. Hsu (2010) discovered that the better trained teacher in the use of technology, the more likely he or she was to successfully integrate it into classroom instruction. In a study of teacher perception of the values that are needed to be an "exemplary" user of technology in the classroom, it was found that teachers believe that a person has to be confident in his or her ability to use technology and committed to its use (Ertmer,

et al., 2007). This study focused on the training of teachers in the use of technology in teaching but did not consider the competence of the teacher in suing technology for instructional delivery after receiving the training.

In Turkey, Özgür (2016) opined that among the lists of competencies for teachers, technological literacy competences of teachers regarding the use of information and communication technologies among the competences of teachers is highly accepted internationally as stipulated by their Ministry of National Education. Kim, Kim, Lee, Spector and DeMeester, (2013) sought to determine how teachers' pedagogical and epistemological beliefs related to their instructional use of technology. This was 4-year study in which participants received technology equipment, professional development including technical and pedagogical support. The main goal was for improving technology integration practices. The results suggested a connection between teachers' beliefs about the nature of learning and effective teaching practices to their technology implementation practices. The study found that the more student-centered their pedagogical beliefs, the more ubiquitous the use of technology. This study did not consider pedagogical competence but rather looked at pedagogical and epistemological beliefs hence the need for the current study.

Ertmer et al. (2012) used a purposeful sampling of 12 teachers who had won awards for their technology use to revisit the disparity between teacher beliefs and technology integration practices. While their findings revealed that external barriers such as money, access, time, and state standards still existed, these participants felt they were able to overcome any negative influence the barriers may have had. However, the attitudes and beliefs of other teachers were perceived to be the greatest obstacles to student use of technology. There is a

probability of researcher bias in this study due to the sampling approach used which influenced the results. This could stem from the angle that those teachers with negative attitudes were schooled during the era in which the use of computers either by teachers or students was not common or students were not presented with the opportunity to use computers. Consequently, this could inform the teachers' attitude hence purposive sampling alone is problematic.

Techno Pedagogical Competence of Teachers and Age

Ching, Hung and Lee (2008) examined the relationship between teachers' beliefs about their instruction and uses of technology with a sample of 582 pre-service teachers. The correlation analysis revealed that constructivist teaching was significantly correlated with constructivist use and traditional use, while traditional teaching was correlated negatively with constructivist use. Moreover, a weak and negative association was shown between traditional teaching and traditional use. The results indicated that constructivist teaching and traditional teaching were negatively correlated. Multiple regressions revealed that constructivist use and age significantly predicted traditional use, and constructivist teaching and age significantly predicted constructivist use. The study did not specify the category of ages which were stacked to particular teaching style. Again, it refused to consider other teaching methods which are taken into accounts by this study.

In a study that targeted English language learners, Abu-Samak (2006) examined the factors that may impact Jordanian English Foreign Language (EFL) teachers' attitudes toward information and communication technology. The findings showed that Jordanian EFL teachers held positive attitudes toward information and communication technology in spite of how old the teacher is

although the study revealed an inverse relationship between age and teachers' attitudes towards technology. On the perception of competency needed for implementing technology in Social Studies classrooms, Al Bataineh and Anderson (2015) found female teachers who were thirty or younger and those between ages thirty-one to thirty-nine scored a higher mean than all male teachers, whereas male and female teachers who were forty or older scored the same lowest mean of perceptions of competency of technology use. This current study looks at the perception of techno-pedagogical competency and age in a bid to discover how these variables are related and how they affect teachers' use of technological tools in the teaching of Social Studies to meet student needs.

Techno Pedagogical Competence and Teaching Experience

Consistency leads to reliability just as continuous practice results in mastery and perfection. Thus, the number of years an individual spends in the field of work gives the person a superior level of knowledge that otherwise would not have been acquired. Goedde (2006) examined the best factors (Assessment of Technology Competency (ATC) score, socioeconomic status, district in-service teacher variables: number of years of experience and hours of technology related professional development) that predicted pre-service teacher technology competency. The study used a sample of 278 teachers in school districts located in Ohio during Fall 2004- Spring 2005. The data were generated from two resources: The ATC retake survey, which is administered for pre-service teachers, and two additional existing sources of data for gathering information about pre-service teacher background experiences. It was revealed that there was no statistically significant correlation between pre-service teacher technology competency and average teacher years of experience. Also, a very

slight positive relationship was found between average number of teaching hours of professional development and median household income.

Al Bataineh and Anderson (2015) found a significant main of teaching experience on teachers' perceptions and competency. In this study, theta results for teaching experience was about .55, which, according to Cohen (1998), is a very large effect. Tezci (2010) used ANOVA to find out whether teachers' knowledge of ICT use, frequency of ICT use, computer and Internet attitudes varied with teaching experience and previous participation in a computer course. The results showed that teachers' levels of knowledge and use of ICT, and attitudes towards the Internet and Computers show the same difference according to years of experience; the less the years of experience, the higher their knowledge and ICT use and vice versa. Furthermore, openness of the youth to innovations may be another factor. The research conducted by the National Center for Educational Statistics (2006) indicated that teachers with less years of experience use ICT more for educational purposes. However, in the research conducted by Niederhauser and Stoddart (2001), no differences could be found. The teachers who received a course on computers in addition to their professional experience have higher positive attitudes than those who did not.

In Turkey, studies by Aral, et al. (2006), İşman, Evirgen and Çengel (2008) and Deniz (2005) concluded that positive attitudes increased with increasing experience with computers, and that those with less professional experience possess more positive attitudes. Those with lower professional experience are young teachers. Since they are in the early years of their career, young teachers lack the feeling of "exhaustion", which means that they are more open to new technologies. According to Mundy et al, (2012) experienced

teachers who had little or no professional development in the use of technology in the classroom were less likely to use it in the classroom and were less likely to see the benefit of technology usage in the classroom. Bataineh and Anderson (2015) realized there is a statistically significant interaction between gender and teaching experience of Social Studies teachers on their perceptions of the competency needed for implementing technology in their classrooms. Means and standard deviations were computed and then two-way ANOVA tests were computed as well. The results showed that female teachers with the least teaching experience had higher perceptions of competency for implementing technology in Social Studies classrooms than male teachers, meanwhile female teachers with the most teaching experience had nearly as high perceptions of competency as male teachers.

Techno-Pedagogical Competence and Gender

Gender is an inevitable construct that cannot be overlooked where human participants in research are concerned. In most cases, there have been controversies concerning the findings of some researchers hence there is the need to assess the construct in this study. Woods, Karp, Miao and Perlman (2008) examined K-12 physical educators' technology competencies and usage. Their study used a sample of 114 physical educators who assessed their perceived competency, usage of technology, the issues of technology and where they learned to use technology. The sample was members in the Northwest District Association of the American Association of Health, Physical Education, Recreation and Dance (NWD). The study found a statistically significant difference for gender. Male teachers perceived themselves to have higher levels of competence than female teachers.

Al Bataineh and Anderson (2015) found that there was no significant main effect found for gender on teachers' perceptions of technological competence. Again, there was no significant interaction between the two variables under inquiry. Similarly, Adodo's (2012) study showed a significant difference between the male and female pre-service teachers towards computer skills. The relationship between interest/attitude and competency was low but significant, as well as the relationship between gender and competency was significant.

Tezci (2010) conducted a study among Turkish teachers concerning attitudes and knowledge level of teachers in ICT use with a sample size of 1540 primary school teachers. In terms of gender, ICT knowledge, their use in education and attitudes towards the Internet, the study found statistically significant differences. Male teachers reportedly scored higher than female teachers in terms of knowledge and usage. They had more positive attitudes than female teachers did. Hong and Koh (2002) researched on the topic "Computer anxiety and attitudes towards computers among rural secondary school teachers in Malaysia." This study found a statistically significant difference between male and female teachers with male teachers demonstrating higher scores in terms of knowledge in technology usage. There have been similar findings reported in other studies such as Garland and Noyes (2004) and Çelik and Bindak (2005).

On the other hand, studies such as Volman, van Eck, Heemskerk and Kuiper (2005) and Bove´e, Voogt and Meelissen (2007) demonstrated that females had more positive attitudes towards the use of technology than males. In these researches, gender was found not to be a significant variable itself but

rather it can be assumed to be shaped by experience, as well as cultural and educational objectives. The results of the analysis indicate that, rather than an independent factor, it might be useful to treat gender together with other variables such as culture and upbringing. Li and Kirkup (2007), in their research, demonstrated that the different national cultures had an effect on attitudes and usage in terms of ICT which influence competence levels.

From the literature, there are varying findings among various studies carried out by the works consulted by the researcher. The literature revealed varied results from different settings and geographical locations outside the African continent. Differences in culture and orientation coupled with reforms in Colleges of Education, the need arises for ascertaining the interaction among all these variables of interest within the Ghanaian context, specifically the Adansi-North District Assembly.

Chapter Summary

This chapter focused on the review of related literature beginning with a summary of the concepts on which the review was conducted. The summary was followed by the theoretical review on the subject matter of the study. The conceptual frame work of the study was discussed extensively under this section. The subsequent paragraphs focused on empirical works of previous research conducted in the areas of interest such as techno-pedagogical competence, teaching experience, age and gender. It is established in the literature that with regards to technological competence and gender that there is a conflicting result in terms of whether there is difference in competency levels between males and females, and whether gender own its own merit could cause such differences, if any. Also identified were different schools of thought

regarding Social Studies as a subject of study whereby one views it as a holistic subject which draws knowledge from other areas of study with its own principles and methods while the other school of thought sees it as a possible subset of certain topics from other social sciences with no clearly defined subject matter.

In this study, Social Studies is considered a subject on its own with clearly defined methods as suggested by Kankam (2016), although it draws knowledge from other social science subjects. Therefore, the structure of the questionnaire in this current study was structured on the assumption that the prospective Social Studies teacher respondent is conversant with methods despite how they were introduced to the subject in their respective institutions of training. This assumption is feasible because the Ghana Education Service occasionally organises in-service training for teachers where technical issues of methodology are addressed.

CHAPTER THREE

RESEARCH METHODS

Introduction

The ultimate goal for this study was to assess the competency of JHS Social Studies teachers in terms of pedagogy and use of technology in the delivery of content. This chapter presents the methods that were used for the study. It addresses the research design, population, sampling procedures, data collection instrument, data collection procedures and analysis.

Research Design

The study is a quantitative study utilizing a cross-sectional survey research design, meaning that the researcher collected data at one point in time with an interest in describing relationships among variables (Creswell, 2012). Additionally, this study was largely exploratory in nature. The design permits collection of data which aids in testing hypotheses or answering questions concerning current status of the phenomenon under study, as indicated by Amedahe (2002). The study further adopted the quantitative approach in investigating the competency of JHS Social Studies teachers in terms of pedagogy and use of technology in the delivery of content in the Adansi-North District of the Ashanti Region. This approach allows some fraction of the population, that is the sample, for data collection through the process of asking questions (Fraenkel & Wallen, 2006) and the findings generalised to represent the entire Social Studies teachers in the Ashanti Region.

Quantitative approach involves the process of employing an objective measure to a numerical data with the view of demonstrating the relationships existing between variables (Cresswell, 2014). It must be pointed out that

descriptive surveys seek to gather data at a particular point in time with the intention of describing the nature of existing conditions or identifying standards against which existing conditions can be compared (Creswell, 2012; Williams, 2007). Surveys are also capable of providing descriptive, inferential and explanatory information that can be used to ascertain correlations between items and the themes of the survey (Cohen, Manion & Morrison, 2007). With regard to the ultimate aim of this study which seeks to explore the techno-pedagogical competence of JHS Social Studies teachers in the Adansi North District of the Ashanti Region of Ghana, the use of quantitative approach is quintessential. This is because there is the need to gather data from a wide population of respondents in order to make generalizations. This therefore calls for the gathering of standardized information by using the same instruments and questions for all sampled respondents.

The design therefore involves collecting data from all sampled respondents through the administration of a questionnaire and analysing the responses (Leedy & Ormrod, 2010). This study is descriptive because, as indicated by Cohen et al. (2007), it sought to describe and explore a phenomenon in real life situation and to generate new knowledge about the topic. Punch (2005) has indicated that descriptive survey is basic to all types of research in assessing the situation as a pre-requisite for conclusions and generalizations.

Fraenkel and Wallen (2006) opined that the purpose of descriptive survey research design is to observe, describe and document aspects of a phenomenon as it naturally occurs. As indicated by Polit and Beck (2008), descriptive surveys gather information to represent what is going on at only one

point in time. Moreover, with regards to the quantitative approach, Dudwick, Kuehnast, Jones and Woolcock (2006) asserted that quantitative approach aids others to make informed decisions and validations regarding the authenticity of the findings without repeating the analysis necessarily. On the other hand, as suggested by Neuman (2000), quantitative approach fails to provide an in-depth description of participants' experiences regarding a study. This feature tends to be a major demerit of adopting the quantitative approach.

It must be pointed out that, descriptive survey research design with quantitative approach fails in asking probing questions, coupled with its inability to seek clarifications especially when structured or closed ended questionnaires are used as data collection instruments. Despite the deficiencies, the descriptive survey design was chosen for the study because judging from the main thrust of the study, where data was collected at just one point in time on samples from the selected schools, it was deemed the most appropriate design.

Furthermore, with regards to the research objectives, this design is appropriate because the study sought to quantify the levels of competency of respondents in relation to technology, pedagogy and techno-pedagogy among Social Studies teachers. Consequently, the quantitative design is appropriate because it allows the use of questionnaire which makes provision for the researcher to reach a larger sample (Cresswell, 2014, Creswell & Plano-Clark, 2011), which is what this study did. Even though with the use of questionnaire, certain in-depth information may not be obtained because the opportunity to scrutinize the deeper thoughts of people on a phenomenon is not permitted by this design, it is still valid as it aids the study in achieving the objectives.

Study Area

Adansi North is located in Ashanti Region of Ghana, 70 km south of the Regional Capital Kumasi. It is located between Longitude 1.50 W and Latitude1.4 N and Longitude 1.5 W latitude 6.30 N of the Greenwich Meridian. The District thus falls within the typical Tropical Region of Africa which characteristically experiences high temperatures coupled with high rainfalls throughout the year. Adansi North covers a land area of approximately 853.63 square kilometres representing about 4.7% the Ashanti Region. It is bounded to the South-West by Obuasi Municipal, to the South by Adansi South District, to the South-East by Bosome Freho District, the North-East by Bekwai Municipal and to the West by Amansie Central District.

The Ghana Education Service superintends the district's education system. There are 331 public (263) and private (68) educational institutions in the district: 115 pre-schools (KG), 116 Primary, 77 JHS, 4 SHS with two Tertiary Institutions (a Nurses' Training College and College of Education). Private schools consist of 26 pre-schools, 25 primary, 16 JHS and 1 SHS. The district has a teacher population of 2,132; 1,754 trained teachers and 214 untrained with 164 non-teaching and or management staff**.** The teacher attendance rate in the district is 84.32%. It has the teacher-pupil ratio of 54:1 for pre-school and 36:1 for primary. The JHS has 21:1 while 24:1 goes for the SHS. These figures tally against the national record of 25:1, 35:1, 22:1 and 25:1 for the respective levels. Classroom infrastructure is quite satisfactory at all levels except the pre-school level (KG) whose basic requirements are different and largely unmet. Most JHS schools particularly are without electricity (Adansi North District Assembly, 2018).

The District Directorate is currently accommodated in a makeshift structure and out of the 331 schools, only twenty have teachers' residential units, albeit being inadequate. Most school structures need major and minor repairs and maintenance. Efforts are however being made with the construction of 3-No 3Unit Classroom Blocks, 1No 3-Unit teachers' quarters. Students'/pupils' bursaries/financial assistance packages are also available. The district has WASSCE and BECE pass rates of 99.96% and 87.30% respectively, according to the district Education Directorate. The literacy rate quoted from the PHC, 2010, is remarkably at 78.5% (Adansi North District Assembly, 2018).

Population

The target population for the study was about 1,750. The target population included all Junior High School (JHS) Social Studies teachers in the Ashanti Region. However, the accessible population comprised only JHS Social Studies teachers in the Adansi-North District. One hundred and twenty (120) Social Studies teachers served as the accessible population because they were all within the reach of the study. The Social Studies teachers in the Adansi-North Educational Directorate who teach Social Studies at the JHS level were selected because most of them have either received their education through the two viewpoints of Social Studies being taught at the tertiary level as suggested by Kankam (2016). The population included male and female Social Studies teachers in the district who possessed at least a 2-year teaching experience at the time of the study.

The choice of the teachers as the population was based on the notion that they have the content knowledge as well as the pedagogical knowledge in terms of teaching Social Studies. Therefore, whether certificated or not, anyone

teaching Social Studies was considered eligible to partake in the study. The population consisted of both male and female Social Studies teachers whose qualifications ranged from a minimum of a Diploma and a maximum of Master's degree in the relevant field of teaching. Age wise, the population assumed a mean age of 25 and an average of 10 years of teaching experience.

Sampling Procedure

The census method was used to involve all the respondents who are JHS Social Studies teachers in the Adansi-North Educational Directorate of the Ashanti Region. According to the Educational Directorate (Adansi North District Assembly, 2018), there are about 120 Social Studies teachers in the District and the study used all of them for the purposes of generalisation. It is recommended by some researchers that five to twenty percent of the population could be used as the sample size for a study (Cresswell, 2014; Cohen et al., 2007; Amedahe, 2002). Consequently, the study involved the whole accessible population because the number is not large. A quantitative study mostly requires a relatively large sample size for aiding generalization. Considering one hundred and twenty Social Studies teachers in the district is not so large a number to be sampled hence the use of census. Census was again chosen since it provides a true measure of the population and eliminates the possibility of sampling error (Cresswell, 2014; Cohen et al., 2007). In cases where much is not known about the area of study, through this method, a benchmark data may be obtained for future studies. For instance, much information was not obtained on the gender diversity of the population. It also gives the opportunity to be presented with detailed information about small sub-groups within the

population which may not be available in the cases of sampling. This was expounded in chapter 4.

Data Collection Instruments

The data collection instrument used for the study is the questionnaire. The study adapted the TPACK questionnaire proposed by Schmidt, Baran, Thompson, Mishra, Koehler and Shin (2009b). The instrument for the survey was divided into four sections: demographic characteristics, techno-pedagogical competence, pedagogical competency, and technological competency. The questionnaire was designed based on the objectives of the study. This means that each Section focused on a particular research objective except Section A which sought information on the demographic distribution of the respondents. Section B was on research question 1 (technological competence of Social Studies teacher), and Section C was on pedagogical competence of Social Studies for explore the requirements of research question 2. Section D was on technological competence of the Social Studies teachers aimed to collect data to answer research question 3.

Regarding the number of items, Section A enquired of demographic variables such as age, teaching experience and gender. Techno-pedagogical competence under Section B had 11 items to cater for research question 1. Pedagogical competence under Section C was made up of 11 items to explore research question 2, while Section D which covered the technological competence consisted of 8 items for inquiring into research question 3. In sum, the study consist of 30 items. The items under Sections B to D were combined with demographic variables in Section A to test the various hypotheses.

The scale for measurement in relation to the instrument was based on a four- point Likert-scale which ranges from 1- Rarely (R), 2- Sometimes (D), 3- Often (O), and 4-Very Often (VO). The weights were added to get the average for the acceptable mean value (1+2+3+4 = 10; 10 /4 = 2.5). A mean value of 2.5 and above depicts the dominance of that particular concept among respondents as well as a high level of existence of a concept. On the contrary, a mean score below 2.5 on an item shows how less dominating the said item is as far as the respondents are concerned. It may also show a low level of a concept. As a questionnaire, the study could not afford the latitude for respondents to express themselves deeper on variables about which they had more information to give. It was however the best instrument for this research considering the objectives of the study.

As a questionnaire, the study was able to tackle a broad range of the large number of respondents in a way other tools for data collection cannot satisfy. The questionnaire tends to be more reliable since its anonymity encourages greater honesty than an interview (Cohen et al., 2007). The questionnaire might have some demerits such as respondents not reporting their beliefs and attitudes accurately in order to present themselves as ideal personalities. Amedahe (2002) explained that the questionnaire serves as the most appropriate and useful data-gathering tool in a research if properly constructed and administered because it has a wider coverage and can reach respondents more easily than other tools. It was based on this merit of attaining a wider coverage that the questionnaire was used as the appropriate instrument for eliciting response from the respondents.

Pilot-Testing of Instrument

According to Amedahe (2002), pilot-test of instruments helps the researcher to identify confusing and ambiguous language and to obtain information about possible results. Pre-testing is therefore a necessity. Pre-testing of the instrument was conducted among Social Studies teachers in Adansi South Educational Directorate.

The pilot test helped to ascertain the reliability co-efficient of the instrument. A total of 20 teachers were used for pilot-testing and this aided in estimating the reliability coefficient, as reported in the reliability section. Pilot testing enabled modification, clarification and the restructuring of items that appeared ambiguous and misleading to respondents (Fraenkel, Wallen & Hyun, 2012). The pre-test results were used to fine-tune the instrument for final administration.

Test for Validity and Reliability of Instrument

Amedahe (2002) opined that one way for checking the reliability of an instrument is pre-testing. This helps the researcher to identify unclear and uncertain language and to obtain information about possible results. Although the TPACK questionnaire by Schmidt et al. (2009) had an established validity and reliability, in its edited form, the entire questionnaire was pilot-tested to ascertain whether there has been a reduction or further strengthening of the instrument. Several scholars concur that the validation of a questionnaire is necessary so that the researcher could be sure that the test items constituting a questionnaire in a survey research measure the construct that it is meant to measure (Fraenkel et al., 2012; Amedahe, 2002; Cohen 1998). The initial instrument was given to measurement and evaluation experts to check the

structure, layout and conformation of the research instrument to the research objectives, research questions and item construction procedures. Also, the views, comments, additions and deletions that were suggested based on the result of the pilot-testing were all harmonised to arrive at the final version of the instrument.

Again, Cresswell and Plano-Clark (2011) opined that if a study and its findings make sense to participants, then, it must at least have some level of validity. Therefore, the validity of the instrument, specifically the face and content validity, was ascertained by the researcher's supervisor and peers pursuing Master of Philosophy in Curriculum Studies and Teaching (Social Studies). This was done by checking the content to ensure that it measured what it was supposed to measure.

The reliability of the questionnaire was ensured through the capturing of the pilot data in SPSS after which the Cronbach Alpha test for reliability estimate was used. The reliability estimate was in relation to the various variables to be tested by the entire questionnaire. Specifically, Technological Competence had .91, Pedagogical Competence had .87, and Techno-Pedagogical Competence had .92 (*see Appendix I*). This helped to estimate the reliability value for the study. The pilot testing used a sample 20 JHS Social Studies teachers from some schools in the Adansi South District Educational Directorate. The value arrived at helped to determine how reliable the data collection instrument is.

Fraenkel et al., (2012) interpretation of Cronbach alpha co-efficient was used to determine the appropriateness of the instrument. A reliability coefficient within 0.6 to 0.9 is considered a respectful range for determining the

appropriateness of the instrument (Fraenkel et al., 2012). Therefore, if the instrument yielded an alpha value within this (0.6 – 0.9) range, then it is deemed appropriate for measuring the constructs intended to measure. On the whole, the instrument yields a reliability co-efficient of .89

Data Collection Procedures

The data was personally collected by the researcher. However, prior to the data collection, a letter of introduction was obtained from the Head of Department of Business and Social Sciences Education. The letter was presented to the District Education Directorate and the various headmasters and headmistresses of the JHSs in the Adansi North District to seek permission. This enabled the researcher to obtain permission and the consent of the various institutions whose personnel were involved. Consequently, it allowed the Social Studies teachers to participate, co-operate and support the researcher in the collection of data for the study. It is ethical in research to assure respondents of confidentiality and anonymity; hence the questionnaire was accompanied with a consent form for respondents to grant their consent.

The data was collected within two-weeks. There was a conference for Social Studies teachers within that period. This facilitated the distribution of the questionnaires. The major challenge encountered during the data collection procedure was the retrieval of the completed questionnaires from the respondents. Thus, out of the 120 instruments distributed, 119 were retrieved; a total of 99.16%.

Ethical Considerations

All the respondents were taken through the purpose, objectives and potential use of the study findings in order to receive their informed consent.

Given that most of the study respondents were teachers in various schools, their head teacher were contacted first for approval before the respondents approached and their involvement requested. Confidentiality of the study subjects was maintained as required. The respondents were also informed of their right to decline from participating in the study at any point in time regardless of their prior consent to partake in the study.

In fulfilment of standards and ethical issues, the rights to privacy, voluntary participation, safety, anonymity and confidentiality were held in high esteem. It should be highlighted that teachers have rights to privacy and as a result, these rights must be respected at every point in time. In this regard, the right of privacy of respondents in the study was respected and under no circumstances were respondents covertly involved in the data collection without their knowledge or consent. Another key component regarding ethical issues in research is the respondents' voluntary participation. On the average, it took respondents 30 minutes to complete the questionnaires after the researcher explained the significance of the study to them. On this note, respondents were allowed to exercise their voluntary right in the participation of the study. Thus, coercion was totally absent from the study.

In addition, the unethical behaviour of plagiarism was strictly adhered to. Plagiarism occurs when a researcher falsifies, distorts data or lifts other peoples' intellectual property with or without acknowledgement. This study followed strictly the prescribed standards of scientific behaviour to avoid that. On these premises, information was gathered from the right respondents and the information gathered subjected to proper analyses before writing the research report. In the attempt to appreciate others and giving credit to those that it is

due, ideas, works and writings were duly acknowledged by way of providing appropriate references in the in-text referencing and the main referencing as adopted by the University of Cape Coast. Ultimately, the study honoured the prescribed ethical rules concerning research.

Data Processing and Analysis

The data were organised into four sections based on the research questions and socio-demographic characteristics. Each section provided questions meant to help elicit answers to the various research questions. The responses to the items on the questionnaires were edited, cleaned and coded by assigning numbers to the various categories of responses for the purposes of analyses. Also, the data were captured unto Statistical Package for the Social Sciences (SPSS) for Windows, Version 24.0. The data were analyzed using descriptive statistics (frequency and percentages, mean and standard deviation) and inferential statistics (independent samples t-test). For the demographic characteristics, frequencies and percentages were used in presenting the data.

For research question 1, which examined the levels of technological competence of the JHS Social Studies teachers, mean and standard deviation were used for analysing. In answering this research question, data was gathered through items 1-11 in section B of the questionnaire. This part was concerned with Techno-Pedagogical Competence and consisted of items measured on a four-point Likert scale. Therefore, given the mean of 2.5, any item which scores above this mean is deemed as an element in which Social Studies teachers are competent. However, given that the mean score of an item is below 2.5, then there is not enough evidence to support that teachers are competent in that regard.

Research question 2 focused on assessing the levels of pedagogical competence of the JHS Social Studies teachers. It was analysed using mean and standard deviations. In answering this research question, items numbered 1-11 in section C on the questionnaire were considered. This part sought to ascertain the Pedagogical Competence, consisting of 11 items. Again, items were measured on four-point Likert scale. Therefore, given the mean of 2.5, any item whose score is above the stated mean is deemed as an element which the Social Studies teachers' competence is exhibited. Data on research question 3, which was aimed at estimating the techno-pedagogical competence of the JHS Social Studies teachers which was derived from research objective 3 of the study. Items 1-11 of section D of the questionnaire was used in answering the research question. Once again, the mean and standard deviation were calculated (1+2+3+4/ =2.5). Similarly, the interpretation of the scores holds true here as it did for the previous two sections, B and C.

Inferential statistical tools were employed to test the three hypotheses of the study. It should also be noted that means and standard deviations were computed prior to the use of inferential statistics for some of the hypotheses, while that of others hypotheses were presented in the analysis. The results of the analysis were considered to be significant at $p<.05$. Specifically, One-way ANOVA was used to test hypothesis 1 and Pearson' Product Moment Correlation was employed to determine the relationship between techno-pedagogical competence of teachers in terms of teaching experience for hypothesis 2. This was appropriate due the fact that there were two continuous variables being examined here and Pearson' Product Moment Correlation is applicable for this type of statistical analysis. The teaching experience was not

categorised because the literature suggested that the authors whose works were consulted mostly categorised it, hence this decision.

With hypothesis 3, Independent Samples T-test was employed to evaluate the mean difference between male and female teachers in relation to their technological competence. This is because the data here consist of a dependent variable that is continuous (technological competence of teachers which is measured on interval or ratio scale) and an independent variable that is categorical (male and female).

Before the main analysis, the retrieved questionnaires were serially numbered for identification purposes. The items on the questionnaire were then coded and keyed into the SPSS version 24. The keyed data was cleaned to remove all the doubly keyed and empty responses. In cases where there were missing items, the SPSS helped to clean and manage the data appropriately. The cleaned data was then computed according to the variables of the study. From there, numerical codes were assigned to the options under each item on the questionnaire. After the data was captured, a preliminary descriptive statistic was run and to help determine wrong input. Where a wrong input was identified, the researcher referred back to the questionnaires to effect the necessary correction. This helped to minimize errors in the study.

Chapter Summary

The study was motivated by the positivist school of thought using the quantitative approach. A cross-sectional descriptive survey design was used. The population comprised all Social Studies teachers who were in active service in the Adansi-North District. Using the census method, data was collected with a structured questionnaire. The data gathered were processed with SPSS v.24.0

and analysed with statistical tools deemed appropriate for a particular research question and hypotheses respectively. The results are presented in the next chapter.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

The purpose of the study is to investigate the competence of JHS Social Studies teachers in pedagogy and use of technology in the delivery of content. The study adopted a cross sectional survey using the quantitative approach. This chapter is divided into two main sections. Section "A" comprises results and discussion of demographic characteristics by the use descriptive statistics such as frequencies and percentages. Section B captures results and discussion of the main data. This encompasses research questions 1, 2 and 3 which were analysed using mean and standard deviation. Also, inferential statistics such as One-way ANOVA was used to test hypothesis 1, Person Product Moment Correlation for hypothesis 2 and Independent Samples t-test for hypothesis 3.

Section A

Demographic Variables of Respondents

Table 1- *Gender of Social Studies Teachers*

Students	No.	%
Males	72	60.5
Females	47	39.5
Total	119	100

Source: Field survey, 2019.

Table 1 presents the gender distribution of respondents (N= 119). Table 1 denotes that out of 119 teachers who participated in the study, 72(60.5%) were males while 47(40%) were females, thus putting the male respondents in the majority. This result is not surprising as it seems to confirm the pattern at the

university level where most Social Studies students are males, and similarly at the SHS level where a lot of males read General Arts.

Table 2- *Qualification, Age and Teaching Experience of Teachers*

Variables	No.	%
Current Qualification		
Bachelor of Education Degree	70	58.8
Bachelor of Science Degree	13	10.9
Bachelor of Arts Degree	14	11.8
Master's Degree	5	4.2
Other Qualification	17	14.3
Age		
22-31 years	76	63.9
32-41 years	38	31.9
42-51 years	5	4.2

Source: Field survey, 2019.

Results from the data in Table 2 show more than half (58.8%) of the respondents hold a Bachelor's Degree in Education. This is not surprising considering the policy that a teacher must teach for four years to qualify for study leave. Again, considering the stressful procedure regulating study leave with full pay, the majority of the teachers may not be motivated to pursue further education after first degree. The results show that some, 13 (10.9%) of the teachers hold Bachelor of Science Degree.14 (11.8%) of the respondents hold a Bachelor of Arts Degree and 5(4.2%) also had a Master's Degree. The remaining 17(14.3%) respondents had other qualifications like Teacher Certificate 'A'. Age as reported by teachers in this study was categorized into three. It was revealed that among the 119 teachers who responded to the

questionnaire, 76(63.9%) were 22-31 years, 38(31.93%) range from 32-41 years and 5 (4.2%) were within the ages of 42-51 years.

It is evident that the majority of teachers in this study are young and this could give rise to the assertion that teachers would possess some significant level of technological competence. This younger category could be perceived to be computer literate in that they were born at the time of availability and usage of computers and technology.

Table 3- *Measures of Central Tendencies and Measures of Dispersion of Variables*

Descriptive Variables	Technological Competence	Pedagogical Competence	Techno-pedagogical competence
Mean	20.68	20.68	20.59
Std. Deviation	5.30	5.30	6.25
Skewness	-.034	-.034	.001
Kurtosis	-.837	-.837	-.515
Minimum	10.00	10.00	12.00
Maximum	32.00	32.00	37.00

Source: Field survey, 2019.

The dispersion of the data was first established before the running of any inferential statistics. It could be seen from Table 3 that the data assumes a normal distribution hence inferential statistical tools were used in testing various hypotheses. According to Field (2009), a data is said to assume normality when the figures are zero or close to zero for Skewness. Consequently, it is assumed that the data above is normally distributed.

Main Results and Discussion

Level of Technological Competence of JHS Social Studies Teachers

Research Question 1: *What are the levels of technological competence of the JHS Social Studies teachers?*

Table 4- *Technological competence of JHS Social Studies teachers*

Statement	N	Mean	Standard Deviation
I see technology as a process is able to help me as teacher to modify my teaching techniques in meeting the teaching and learning needs of my students.	119	2.37	.94
I demonstrate positive attitude towards the use of ICT tools and this influence my use of it in the delivery of Social Studies content	119	2.42	.86
I employ my knowledge based in standard technologies such as books, dry erasers, boards, and chalkboards to assist my students.	119	2.45	.73
I use modern/advanced technologies such as computer, internet, interactive white board, digital video and overhead projectors.	119	1.99	.79
I use computer software and hardware within the educational context.	119	3.35	.74
I employ the technological skills needed to use innovative resources.	119	2.50	.96
I use tools like Microsoft word in planning my daily routine activities.	119	2.48	.94
I create a data base to keep track of my students using some ICT tools like Microsoft Excel.	119	**3.12**	.73

Source: Field survey, 2019.

Research question 1 sought to find out the technological competence of JHS Social Studies teachers. The question was geared towards answering research objective 1 of the study. Consequently, items 1-8 of section D of the questionnaire was used in answering the research question. The items were measured on a four-point Likert scale ranging from 1- Rarely (R), 2- Sometimes (D), 3- Often (O), and 4- Very Often (VO). This aided in indicating the extent to which one engages in the activity described by a particular statement. Means and standard deviation were used to analyse the responses. A mean value of above 2.5 (1+2+3+4/4 =2.5) shows that respondents often demonstrate that particular competence in the statement while a mean value below 2.5 shows that respondents do not demonstrate such a competence with the statement. A summary of the responses is presented in Table 4.

The table also shows that using computer software and hardware within the educational context (*M=3.35; SD=.74*) was identified as a high level of technological competence of JHS Social Studies teachers. The results further indicated that teachers employ technological skills needed to use innovative resources (*M=2.50; SD=.96*). This is an indication that there was a moderate level of technological competence of JHS Social Studies teachers. The respondents also indicated that they use tools like Microsoft word in planning their daily activities. Again, (*M=2.48; SD = .94*) was identified as a low level of technological competence of JHS the teachers. With respect to creating a data base to keep track of my students using some ICT tools like Microsoft Excel, (*M=3.12; SD=.73*) was also identified as a high level of technological competence of JHS the teachers.

The results show that the following items recorded means below the reference point: "I see technology as a process is able to help me as a teacher to modify my teaching techniques in meeting the teaching and learning needs of my students" (*M=2.37; SD=.94*), "I demonstrate positive attitude towards the use of ICT tools and this influences my use of it in the delivery of Social Studies content" (*M=2.42; SD=.86*), using knowledge based in standard technologies such as books, dry erasers, boards, and chalkboards to assist students (*M=2.45; SD=.73*), use of modern/advanced technologies such as computer, internet, interactive white board, digital video and overhead projectors (*M=1.99; SD=.79*). They were therefore identified as low levels of technological competence of JHS Social Studies teachers.

Contrary to the above, however, using computer software and hardware within the educational context; ICT tools like Microsoft Excel in creation of data base to keep track of their students proved to be an area of high competence for the teachers. This is deemed a good start although most of the items measuring technological competence fell below the grand mean.

The use of Excel by many of the respondents could be attributed to the fact it is one of the common tools of Microsoft Office suits tools introduced in every basic ICT lecture. Though it is a bit complex, it possesses the quality of being versatile when its operation has been grasped by the learner. The finding confirms the assertion of Niess (2005) that technological knowledge comprised understanding of how to use computer software, hardware, presentation tools (document presenters and projects) and other technologies used in educational contexts to make teaching and learning easier. The agreement between these

two studies underscore the importance of competence without which no individual can utilize what has been learnt.

The finding also corroborates other studies which found that Social Studies teachers and governments are propagating the implementation of technology in the course of teaching the content of the subject (Heafner, 2013; Al Bataineh & Anderson, 2015; Khaswneh & Al-Awidi, 2008). Archambault and Barnett (2010) confirm the response from the Social Studies teachers that technological knowledge is used when teachers implement technology to help deliver information in the classroom.

Another study congruent with the current one is the work of Gulbahar and Guven (2008) who are of the view that teachers' attitude is key in predicting the use of new technologies in instructional settings. It shapes not only their own experiences in technology usage, but also the experiences of the students who learn from them. That is, students will tend to use technology as they observed their teachers using it in everyday classroom life. Research in child psychology indicates that pupils learn more through observation hence consistent observation of an adult figure like the teacher will make a great impact in what the student does with technology.

Similarly, the findings of the usage of technology among teachers in this study are affirmed by Gulbahar and Guven (2008) who conducted a survey on ICT usage and the perceptions of Social Studies teachers in Turkey involving 326 teachers who taught fourth and fifth grade at primary level. The study established that many of the respondents had access to a computer at work and, several more of those had access to the Internet also. Daily computer usage of Social Studies teachers was found to be generally moderate in that some use

computer in less than an hour. Also, some of them use it between 1 and 3 hours while others spend between 3-5 hours on it, and 1.5% use computer for more than five hours daily. This could also be said about the current study as the use of technological tools like excel is almost a daily occurrence.

The use of technology in teaching and learning is also dependent on factors such as in-service training on the use of computers. For instance, the government of Ghana somewhere in 2013 supplied laptops to teachers, schools and students alike. This move by the government was geared towards improving technology usage in education. However, the initiative was not complemented with training for teachers to acquire the needed skills for delivery, and so the intervention failed to achieve the intended results. Therefore, an increased presence of technology in the classroom will depend on regular training for teachers. Similar sentiments were expressed by Hsu (2010) who discovered that the better trained a teacher was in the use of technology, the more likely he or she would successfully integrate it into classroom instruction. Again, this assertion agrees with the opinion that teachers believe that a person has to be confident in his or her ability to use technology and committed to its use (Ertmer et al., 2007; Ertmer et al., 2012; Kim, Kim, Lee, Spector & DeMeester, 2013).

Evidence provided by the data indicates that levels of competence in other advanced technological tools such the use of the interactive white board, creation and use of motion pictures and short videos was very low. The mean score of 1.99 proved to be the lowest recorded comparative to the grand mean. This finding is similar with the findings of Smeets (2005) and Harris (2002) whose studies concluded that most teachers do not make use of the potential of ICT tools to contribute to the quality of learning environments, although they

value this potential quite significantly. The case of teachers being technologically handicapped in the use of advanced tools could emanate from the inadequate provision of technological tools and equipment by government and other stakeholders of the educational enterprise. Although successive governments in Ghana have made attempts at the infusion of technology into the country's educational system, efforts need to be escalated. For instance, intangible amenities such as electricity and cellular and Wi-Fi connectivity for facilitating and enhancing the use of computers are non-existent in some localities. Consequently, the reality of having technologically furnished classrooms in the Ghanaian educational system appears elusive.

Level of Pedagogical Competence of JHS Social Studies Teachers

Research Question 2: *What are the levels of pedagogical competence of the JHS Social Studies teachers?*

Research question 2 sought to establish the pedagogical competence of JHS Social Studies teachers. The question aimed towards answering research objective 2 of the study. In this light, items were crafted which comprise items 1-11 of section C of the questionnaire. The questionnaire was measured once again on a four-point Likert as follows: 1- Rarely (R), 2- Sometimes (S), 3- Often (O), and 4- Very Often (VO), as an indication of the degree of one's participation in a stated activity. A summary of the responses is presented in Table 5.

Table 5- *Pedagogical competence of JHS Social Studies teachers*

Statement	N	Mean	Standard Deviation
I present and formulate the "Social Studies" content that make it comprehensible to my students.	119	2.92	.61
I apply the philosophy of the subject "Social Studies" and learning of students.	119	3.04	.60
I present the content of Social Studies to the diverse interest and abilities of students.	119	3.03	.71
Effectively, I integrate the content, method and the characteristics of learners.	119	3.04	.79
I use varied techniques in assessing students' understanding and diagnosing their misconceptions about Social Studies	119	2.99	.69
I use students-centered method to achieve specific objectives	119	2.71	.82
I use problem-solving and discussion methods to allow maximum participation of my students	119	2.44	.79
I use a lot of instructional materials as possible to aid students learning	119	2.61	.73
I employ self-directed, discovery and role playing methods in my teaching	119	2.40	.82
I plan and prepare materials relevant to the subject to be thought	119	3.08	.88
I use time and classroom management skills effectively during lessons	119	3.42	.72

Source: Field survey, 2019.

In Table 5, the results show that teachers were able to present and formulate the "Social Studies" content that makes it comprehensible to their students (*M=2.92; SD=.61*) and apply the philosophy of the subject "Social Studies" and learning of students (*M=3.04; SD=.60*). Both components had

mean scores above 2.50 and thus were indicative of high a level of pedagogical competence of JHS Social Studies teachers. The results again revealed that teachers were able to present the content of Social Studies to the diverse interest and abilities of students (*M=3.03; SD=.71*) while they effectively integrate the content, method and the characteristics of learners (*M=3.04; SD=.79*). These were also high as far as the levels of pedagogical competence are concerned. Similarly, it appeared that teachers employed varied techniques in assessing students' understanding and diagnosing their misconceptions about Social Studies (*M=2.99; SD=.69*). From the data, it can be inferred that teacher competence in pedagogy is very high as the following items all had their means exceeding 2.50: use of students-centred method to achieve specific objectives (*M=2.71; SD=.82*), using a lot of instructional materials as possible to aid students learning (*M=2.61; SD=.73*), plan and prepare materials relevant to the subject to be thought (*M=3.08; SD=.88*) and use time and classroom management skills effectively during lessons (*M=3.42; SD=.72*). Conversely, the use of problem-solving and discussion methods to allow maximum participation of students during lessons didn't reflect well on teacher competence in pedagogy as recorded in (*M=2.44; SD=.79*). Social Studies teachers also seem not to be employing self-directed, discovery and role-playing methods in teaching (*M=2.40; SD=.82*) and therefore not promoting a learner-centred classroom environment. This development could raise doubts on the teacher's pedagogical competence. It could be seen that most teachers in this study are competent in terms of pedagogy as revealed by the data.

Pedagogical knowledge is very crucial in teacher discussions on content delivery and successful presentation of the learning matter to the student.

According to Shulman (1986), pedagogical knowledge is any theory or belief about teaching and the process of learning that a teacher possesses and which influences his or her teaching. Yalley (2016) in his study of technological pedagogical content knowledge of Social Studies teachers in the Senior High Schools in Kumasi Metropolis established that Social Studies teachers possessed pedagogical knowledge. Thus, Social Studies teachers in the Metropolis were competent as at the time the study was being carried out and it corroborates the findings of this study that teachers proved to be very competent in relation to the use of time and classroom management skills effectively during lessons as this item yielded the highest mean among all the items (*M=3.42, SD= 72*). It imply that teachers in the district use effective techniques in that it has been noted that the use of certain teaching techniques positively influence classroom management, questioning techniques not excluding mode of assessment (Hudson, 2007; Yalley, 2016).

The findings of this study proved teachers to be perceptive of their student's varied needs and interests as planning and preparation of materials relevant to the subject to be taught (*M=3.08, SD= 88*) yielded one of the highest means among all the items. This evidence of adequate preparation by teachers will enable them to hold the interest of their students with their diversified teaching methods and strategies hence. In affirming the above positions, Parker and Heywood (2000) are of the view that Social Studies teachers should master the teaching methods and strategies to facilitate effective interaction between the learners and the content. This is important for shifting content delivery from its outmoded and ineffective trademark as a teacher-centred activity instead of a student-centred one. Directly opposing the interactive classroom is the lecture

method of teaching which reduces students to mere listeners of information being passed from the teacher. It is the kind of teaching which leads to students' inattentiveness. (Jekayinfa, 2012). This should be an issue of concern because the trend of imparting knowledge is changing with the increasing of technological advancement.

On the other hand, the use a lot of instructional materials as possible to aid students learning (*M=2.61, SD= 73*) as a finding of the study was in disagreement to the findings of Abdu-Raheem (2011) who observed that the objective of Social Studies is yet to be achieved as a result of poor teaching and lack or inadequacy of instructional materials to motivate students. Availability and use of teaching and learning materials are considered as very important by the respondents in this study. The competence of these Social Studies teachers is reflected in the work of Abu-Abu-Samak (2006) who suggests that effective teachers present information or skills clearly and enthusiastically, are non-judgmental and relaxed, keep the lessons task-oriented, aim at students' achievement, interact with students through probing questions and assist students by elaborating their answers and this cannot be done in isolation but with the aid of instructional materials.

Rechards (2005) and Ogunkunle (2008) agree that self-directed learning makes learning effective and meaningful to learners, improve and develop problem-solving abilities in learners and also take care of all categories of learners. Abdu-Raheem (2010) confirms their positions by stating that inquiry, problem solving, discussion, discovery and role playing are effective methods for achieving learning objectives. This study however recorded a divergent stance. It was found that respondents do not employ self-directed, discovery and

role-playing methods in their teaching as it scored a low mean (*M= 2.40, SD= 82*) which is below the mean threshold (*M= 2.5*). This could be interpreted as the perception some teachers hold that the pupils are not mature enough to be able to make meaningful contributions to some lessons. It could also be attributed to the large class sizes of the basic schools in the district and the country as a whole. A careful observation would reveal that the classrooms of public are over populated; a deviation from the very standard set by the regulating body, the Ghana Education Service. Consequently, certain teaching methods which require the teacher to pay a lot of attention to students become difficult to implement. Therefore, there is the need to work towards reducing class sizes to enable the use and adoption of varieties of teaching and learning methods so that, as postulated by Oluwaghohunmi and Abdu-Raheem (2014), old teaching methods make way for new activity-based ones which for the benefit of learners.

This could be employed to ensure achievement of learning objectives. Invariably, there is the need for a continuous systematic programme of professional improvement to enhance the effectiveness and efficiency of teaching as stressed by Afolabi (2000) which could make teachers more versatile in the use of methods and processes for teaching and learning. Again, the finding of the study that teachers use problem-solving and discussion methods to allow maximum participation of my students (*M= 2.44, SD= .79*) debunks the findings of Yalley (2016) and Abdu-Raheem (2011) who agreed that problem-solving method is effective because students are able to participate actively in the lessons.

When a teacher possesses the philosophy of the subject, it is assumed that the individual has the in-depth understanding of the subject and the possible means of delivering it. Hence, it could be said that teachers in this study are able to deliver content to the best of their ability because they are well versed in the subject. According to Table 5, "I apply the philosophy of the subject "Social Studies" and learning of students" registered a mean of 3.04. This finding agrees with Rodgers and Raider-Roth (2006), who claim that "many a times teachers are knowledgeable in the subject matter without necessarily being able to decompress it in a way that makes it accessible to their students" (p. 280).

In another vein, it could be argued that a teacher can be well versed in a subject when it has a well-defined content, goals and objectives. Thus, what makes up the subject matter is clear to all and sundry but the same may not be said about Social Studies as some researchers have pointed out that the subject matter of Social Studies needs to be clearer than it is now especially in Ghana (Borhaug, 2005; Kankam, Bekoe, Ayaaba, Bordoh & Eshun, 2014). Hence, Cobbold (2013) suggests a Community-Based Scope. Thus, the scope from which the perspectives of the social environments and communities in which students live and function should be studied as the subject matter.

Techno-Pedagogical Competence of JHS Social Studies Teachers

Research Question 3: *What is the techno-pedagogical competence of the JHS Social Studies teachers?*

Research question 3 investigated the techno-pedagogical competence of JHS Social Studies teachers. The question was for the purpose of answering research objective 3 of the study. In Table 6, items 1-11 under section B of the questionnaire are recorded and the various responses reported. The

questionnaire was measured on a four-point Likert scale ranging from 1- Rarely (R), 2- Sometimes (D), 3- Often (O), and 4- Very Often (VO) which aided in indicating the extent to which teachers engage in an activity which has been put in a statement form.

Means and standard deviation were used to analyse the responses of the respondents. In the analysis, mean values above 2.5 (1+2+3+4/ =2.5) shows that the majority of the respondents often demonstrate that particular competence with the statement while a mean value below 2.5 shows that the majority of the respondents do not demonstrate such competence with the statement. A summary of the responses is presented in Table 6.

The results show all the items had means scores lower than the grand mean. The item which reads I use computer aid resources to constructively assist weak students during instructional period (*M=2.45; SD=.83*), I use virtual/online field trip to enable student get first hand learning experience (*M=1.76; SD=.78*) and I use the web as an enquiry oriented activity to encourage co-operative learning among students (*M=1.69; SD=.82*) all had means lower than the mean of means. Hence it could be said that teachers are not competent in relation these items under techno-pedagogical competence in this study.

Table 6- *Techno-pedagogical competence of JHS Social Studies teachers*

Statement	N	Mean	Standard Deviation
I use computer aid resources to constructively assist weak students during instructional period.	119	2.45	.82
I use virtual/online field trip to enable student get first hand learning experience.	119	1.76	.78
I use the web as an enquiry-oriented activity to encourage co-operative learning among students.	119	1.69	.82
I use Glogter/Power point to create my teaching and learning materials and resources	119	1.50	.71
I use drill and practice as a teaching strategy to enable student memorize concept and historical aspect of Social Studies.	119	1.74	.69
I use simulation to encourage student construct their own knowledge and conduct research	119	1.78	.76
I use multimedia resources to create a constructive learning environment for students learning	119	1.82	.77
I use tele collaborative tools to communicate with my students outside the classroom	119	1.91	.80
I create multimedia/hypermedia tool to provide students with visual support in order to develop mental models	119	1.63	.71
I use drill-and-practice tool to create tutorials and study guides for my students concerning Social Studies contents	119	1.8	4.69

Source: Field survey, 2019.

Again, I use Glogter/Power point to create my teaching and learning materials and resources (*M=1.50; SD=.71*), I use drill and practice as a teaching strategy to enable student memorize concept and historical aspect of Social Studies (*M=1.74; SD=.69*), I use simulation to encourage student construct their own knowledge and conduct research (*M=1.78; SD=.76*), I use multimedia resources to create a constructive learning environment for students learning (*M=1.82; SD=.77*), I use tele collaborative tools to

communicate with my students outside the classroom (*M=1.91; SD=.80*), I cre ate multimedia/hypermedia tool to provide students with visual support in order to develop mental models (*M=1.63; SD=.71*), I use drill-and-practice tool to create tutorials and study guides for my students concerning Social Studies contents (*M=1.84; SD=.69*), also the item, I encourage my students to further learn using programs recorded CD-ROM and I create some for them as well (*M=2.45; SD=.76*) were not identified as indicative of a strong techno-pedagogical competence of JHS Social Studies teachers.

The results of most of the items scoring below the grand mean could be resulted from the seemingly complex nature of the subject Social Studies. The subject is a combination of social sciences hence developing technological items for delivering its contents is a bit difficult for tutors. Thus, many Social Studies teachers find it difficult in presenting the contents using technological tools. This could explain the results from the data concerning techno-pedagogical competence. Therefore, none of the statements or items was above the mean cut off point that is 2.50. Consequently, the study concludes that the respondents in this study are barely competent in terms of techno-pedagogical skills. Again, it could be attributed to the nature of the items. That none of the items had a mean score higher than the grand mean was an unexpected outcome. It led the researcher to conclude that respondents are probably not familiar with some of the elements in the item. It is possible that tools like Glogter, drill-and-practice tool, hypermedia, virtual field trip and simulation are total or semi-alien concepts hence difficult for the teacher to grasp.

Techno-pedagogical competence requires the blending of technology and pedagogical skills in the teaching and learning of Social Studies. It may be

assumed that every teacher in this dispensation deems as crucial the use technology in all human endeavours, most importantly, in the teaching and learning process, yet all the items had mean scores that fell below the mean threshold of 2.50. Apart from the presumed unfamiliar concepts in this section of the questionnaire, other factors internal or external to the school settings may also have influenced the low mean scores for techno-pedagogical competence. This development shares a similarity with the assertion by Ertmer et al. (2012) whose study found external barriers such as money, access, time and state standards still existed in the attempt to combine technology and delivery. In their study, participants felt they were able to overcome any negative influence the barriers may have had through adequate training. However, the attitudes and beliefs of other teachers were perceived to be the greatest obstacle to student use of technology. This could be resulted from the teachers' inability to use it hence they discourage their students.

Testing of Hypotheses

Techno Pedagogical Competence and Age of Teachers.

$H1_0$: *There is no statistically significant difference between techno pedagogical competence of JHS Social Studies teachers and their age ranges.*

The hypothesis attempted to establish whether age has an influence on techno-pedagogical competence of teachers by finding out whether there is a statistically significant difference in two variables. This hypothesis was necessary given that the young teachers between the ages of 22 – 35 years are presumed to be computer literate. Hence, they are expected to use some applications and software's of technology in the delivery of their content. It

should be noted that the descriptive statistics was presented prior to the presentation of the ANOVA analysis. The results are presented in Table 7-9.

Table 7- *Mean difference of Age of teachers*

	N	Mean	Std. Deviation	Std. Error
22-31 years	76	20.2632	4.89998	.56207
32-41 years	38	21.7895	5.42844	.88061
42-51 years	5	18.6000	9.18150	4.10609
Total	119	20.6807	5.29620	.48550

Source: Field Survey, 2019.

As part of the One way-ANOVA analysis, the study presented the mean scores for the year categories to give a fair idea about the distribution of the data. The age range of 32-41 years old had the highest mean score (*M=21.79*), followed by 22-31 years old (*M=20.26*) and 42-51 years old had the least mean of (*M=18.60*). From the data distribution, it could be realized that the middle age group rather used technology in their delivery as they had the highest mean. Although the respondents between the age range of 22-31years were the majority in the study, they did not have the highest mean. Therefore, the study proceeded to look at the Homogeneity of variance analysis for ANOVA.

Table 8- *Test of Homogeneity of Variances for one-way ANOVA used in the study*

Levene Statistic	df1	df2	Sig.
4.958	2	116	.009

Source: Field Survey, 2019.

Using Leven's test for equality of variation, Table 8 reveals equality of variances test was significant ($p<.05$), therefore, the assumption of homogeneity of variances has been violated but due to the robust nature of the tool the study

proceeded to run the test. Hence, one-way ANOVA was used to evaluate the mean differences between techno-pedagogical competence and age of teachers.

Table 9- *ANOVA for Techno pedagogical competence and Age of teachers*

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	81.613	2	40.806	1.466	.235
Within Groups	3228.253	116	27.830		

Source: Field Survey, 2019.

The result in Table 9 indicates that indeed, age of teachers (p> .05) did not influence the techno-pedagogical competence. Therefore, the study fails to reject the null hypothesis that age of teachers will not significantly influence pedagogical competence. Consequently, the study proceeds to say that techno-pedagogical competence of teachers is not subjected to age in this study.

The findings here disagrees with Al Bataineh and Anderson (2015) who found out that teachers who were thirty years or younger and who were thirty-one to thirty-nine scored the highest mean of perception of competency needed for implementing technology in Social Studies classrooms, whereas teachers who were forty or older scored the lowest mean of perceptions of competency of technology use. Again, a study conducted in Jordan by Abu-Abu-Samak (2006) concerning Jordanian EFL teachers revealed that teachers held positive attitudes toward information and communication technology in spite of how old they were. This positive attitude has been found to have positive influence on technological competence.

The findings of the study also disagree with Ching, et al. (2008) whose study established that constructivist use and age significantly predicted traditional teaching which does not involve technology. It was further established by the same study that constructivist teaching and age significantly predicted constructivist use of teaching and learning materials which include technological tools. Constructivist teaching allows the adoption of technology in the delivery of contents. The least competent of all the age groups, despite the fact that they are younger and had access to technology but unable to use it in their teaching could imply that they only use it for their personal convenience comprising mainly of youthful amusements. In contrast, the middle aged whose generation was not exposed computers proved to be competent probably due to the high professional ethics they have developed with years of experience in the field.

Techno-Pedagogical Competence of Teachers in terms of Teaching Experience (Years of Teaching).

$H2_0$: *There is no statistically significant relationship between techno pedagogical competence of teachers in terms of teaching experience (years of teaching).*

The intention behind hypothesis 2 was to examine the relationship between techno-pedagogical competence of teachers in terms of teaching experience (years of teaching) of JHS Social Studies teachers. Pearson' Product Moment Correlation was performed to determine this relationship. The data gathered on the two variables were used in estimating the correlation co-efficient between them. Prior to this, the mean and standard deviation estimates were ascertained and presented.

Table 10- *Correlation between techno-pedagogical competence (TPC) and teaching experience (TE)*

Variable	TE	TPC
Teaching Experience	1.000	
Techno Pedagogical Competence	-.061	1.000

Source: Field Survey, 2019.

Prior to the presentation of the inferential data, the descriptive statistics was presented. The Pearson's correlation was run to determine whether there is a relationship between teaching experience and techno-pedagogical competence. The results showed that teaching experience had relationship with techno pedagogical competence recording a negative correlation coefficient ($r = -.061$, $p < .510$). Thus, there is a moderate inverse relationship between techno-pedagogical competence and teaching experience. With this result, it can be said that the increment in one variable brings a decrease in the other variable. This could mean that the higher a teacher's teaching experience, the lower the tendency of being competent in the use of technology in teaching Social Studies.

It was again realized that, the relationship between teaching experience and techno pedagogical competence ($p>.05$) was not significant. Therefore, the study fails to reject the null hypothesis that there is no statistically significant relationship between teaching experience and techno-pedagogical competence ($p=.510$).

This finding agrees with Al Bataineh and Anderson (2015) who found a significant main effect of teaching experience and teachers' perceptions of competency. Some studies have equally suggested that positive attitude towards computer and technology is usually high among young teachers because they lack the feeling of "exhaustion", which means that they are more open to new

technologies and tend to use it often than hence the competency (Deniz, 2005; Aral, et al., 2006; İşman, Evirgen & Çengel 2008).

Also, Tezci (2010) showed that teachers' levels of knowledge and use of ICT, and attitudes towards the internet and computers do not differ according to years of experience. That is to say, the less the years of experience, the higher their knowledge and ICT use. In other words, the teachers who have practised in the field of teaching for a short period of years tend to be more competent than others who have been in the service for a longer duration. Again, the research conducted by the National Center for Educational Statistics (2006) indicated that teachers with less years of experience use ICT more for educational purposes than those who have been in teaching for a relatively long time.

However, in the research conducted by Niederhauser and Stoddart (2001), no differences could be found. The teachers who received training in computers in addition to their professional experience have higher positive attitudes than those who did not and this influenced their competence levels. Hence, the integration of technology and ICT tools in the training of would-be teachers is of great importance to their ability to use it in the teaching of Social Studies.

Similarly, Mundy, Kupczynski and Kee (2012) are of the view that experienced teachers who had little or no professional development in the use of technology in the classroom were less likely to use it in the classroom and were less likely to see the benefit of technology usage in the classroom. This presupposes that there is a relationship between teaching experience and technology use in the classroom.

Techno-Pedagogical Competence between Male and Female Teachers

H3$_0$: *There is no statistically significant difference in techno-pedagogical competence between male and female teachers.*

The hypothesis sought to establish whether there existed differences in techno-pedagogical competence in terms of male and female teachers. There were conflicting results regarding the gender differences in terms of techno-pedagogical competence. Consequently, there was the need to estimate what the data gathered on the subject in relation to the study area will reveal hence this hypothesis. The results are presented in Table 11-12. Meanwhile, prior to the presentation of the inferential statistics, the mean and standard deviation was presented first.

Table 11- *Mean difference in Technological Competence*

Variable	Gender	N	Mean	Std. Deviation	Std. Error Mean
Technological Competence	Male	72	21.89	5.41	.64
	Female	47	18.83	4.59	.67

Table 11 displays the means and standard deviations of the self-reported total technological competence construct between male and female teachers. The data presented in the table depicts an existence of mean differences between male (*M=21.89, SD= 5.41*) and female (*M=18.83, SD= 4.59*) teachers in terms of their technological competence by simply observing the face value of the mean scores. To test whether these differences in means are statistically significant, Independent Samples t-test was run and the result is presented in Table 12.

Using Leven's test for equality of variation, Table 12 reveals the equality of variances test was significant ($p<.05$), therefore, the assumption of homogeneity of variances has been violated but due to the robust nature of the tool the study proceeded to run the test. Hence, Independent Samples t-test was used to evaluate the mean difference between male and female teachers in relation to total technological competence construct. On the average, technological competence is higher among male teachers ($M = 21.89$, $SD = 5.41$) than female teachers ($M = 18.83$, $SD = 4.59$). The difference was statistically significant $t\ (109.09) = 3.31$, $p = .001$; however, there was a medium effect size r = .30.

Table 12- *Independent Samples T-test for Technological Competence*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Technological competence	Equal variances assumed	4.328	.040	3.198	117	.002	3.05910	.95647	1.16487	4.95333
	Equal variances not assumed			3.310	109.095	.001	3.05910	.92410	1.22759	4.89062

Source: Field survey, 2019.

In relation to techno-pedagogical competence and gender, the study found a significant difference between male and female teachers regarding techno-pedagogical skills. Thus, the study established that on the average technological competence is higher among male teachers (*M = 21.89, SD = 5.41*) than female teachers (*M = 18.83, SD = 4.59*). This study reveals a disparity between its findings and the findings of Al Bataineh and Anderson (2015) whose study found that female teachers scored the highest mean on perception of competency needed for implementing technology in Social Studies classrooms. This could be resulting from the probability that a majority of the respondents could be young females who have had access to technology in the course of their professional experience. There was also no significant main effect found for gender of teachers' perceptions of technological competency and usage of teachers in the classroom.

Similarly, a study conducted by Adodo (2012) showed a significant difference between the male and female pre-service teachers towards computer skills. The relationship between interest/attitude and competency was low, but positive and significant. Also, the relationship between gender and competency was significant and this is in line with the findings of this study. Again, in a study conducted by Tezci (2010), it was established that male teachers had higher scores than female teachers in terms of technological knowledge and usage in the classroom among teachers. This finding has been supported by other studies such as Garland and Noyes (2004), Çelik and Bindak (2005). Therefore, the results this current study denoting that males demonstrate higher level of competence could be resulting from the dominant presence of male teachers of Social Studies in the District of study. Also, it could be attributed to

the prevailing tradition associated with technology whereby in most cases, technological usage and development has been a course mostly pursued by male students.

On the other hand, the study findings agree with the findings of Woods, Karp, Miao and Perlman (2008) who found a statistically significant difference for gender when physical education teachers assess their own competency of general technology used in the classroom. In this study, male teachers perceived themselves to have higher levels of competence than female teachers. This assertion of females demonstrating higher techno-pedagogical competence is also supported by other studies such as Volman, van Eck, Heemskerk and Kuiper (2005) and Bove´e, Voogt and Meelissen (2007). All these studies demonstrate females had more positive attitudes than males, hence a higher techno-pedagogical competence.

Summary of Findings

The results in relation to research question 1 indicate that on the average, the respondents are competent but use few technological tools. Again, all respondents, irrespective of age or teaching experience, demonstrate high level of competency in relation to pedagogy. It was also revealed that blending technology in teaching of Social Studies content is challenging for respondents in this study hence they demonstrate low techno-pedagogical competence. Techno-pedagogical competence is not influenced by the age of respondents. The study found a relationship between techno-pedagogical competence and teaching experience of teachers but it was not statistically significant. In respect to gender, there was a significant difference between male and female teachers and technological competence.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This section focused on the summary, conclusions and recommendations of the study. The key findings were identified and translated into recommendations relevant to the members and affiliates of the education community.

Summary of the Study

The purpose of the study was to investigate the competency of JHS Social Studies teachers in terms of pedagogy and use of technology in the delivery of content. The study was guided by three research questions and three hypotheses. Cross sectional descriptive survey was the research design adopted here. The study sampled a total of 119 respondents from the population for data gathering. The instrument employed was a structured questionnaire with a four-point Likert-scale measure which captured demographic characteristics, techno-pedagogical competence, pedagogical competence and technological competence as the main variables of the study. The instrument was pilot-tested on 20 Social Studies teachers.

The reliability estimates of the instrument and the various aspects of the instrument through the pilot-test have been expounded under the reliability section of this write-up. Also, descriptive statistics comprising simple frequencies and percentages, mean and standard deviations were used for the analysis of data. The mean and standard deviations were used to answer research questions 1-3. Inferential statistical tools such as One-way ANOVA, was used

to test hypothesis 1, Pearson Product Moment Correlation was employed for hypothesis 2 and with hypothesis 3, Independent Samples t-test was used.

Major Findings

In accordance with the results presented in chapter four, the major findings of the study were identified:

i. The study found that most of the respondents were not into the use of technological tools like Microsoft Excel for building and maintaining a data base for their students. This could stem from the angle that most teachers are not abreast of the use of this technological tool.

ii. Although on the whole the respondents demonstrated high levels of competence in the pedagogical skills, a majority of respondents were very competent in the area of time and classroom management skills usage in the delivery of their lessons. This result was a bit surprising considering the fact that JHS students fall within the adolescent brackets which is characterized by rebellion. Consequently, it was anticipated that teachers will find it a bit difficult in managing time.

iii. The result showed that none of the items eliciting information on techno-pedagogical competence had a score beyond the mean score, implying that most of the respondents had low levels of competence regarding techno-pedagogy. Considering how respondents were very competent in pedagogical competence, it was expected that they would not encounter too many challenges in integrating technology in their teaching. Therefore, it could be that teachers are reluctant in keeping up with technology hence this result.

iv. There was no statistically significant difference among the age groups of the respondents and techno-pedagogical competence. It was established that age of teachers did not influence their techno-pedagogical competence. This result is not surprising though the opposite was expected. It appears that teachers who could not have the chance to be introduced to technology while in school may have found a means of catching up considering its importance in the current dispensation.

v. The study established that there is but a weak relationship between techno-pedagogical competence and teaching experience and it was not statistically significant.

vi. The study revealed that there was a statistically significant difference between male and female teachers regarding their technological competence. It is normal for the male to explore new avenues in doing things. Consequently, this could have influenced the results.

Conclusions

The study can be concluded that:

Respondents in this study are competent in using some technological tools such as Microsoft word and power point which help promote teaching and learning.

Respondents in this study demonstrated high pedagogical competence hence the study proceeds to state that most of the respondents in this study are very efficient in the area of pedagogy. It could therefore imply that since the

pedagogical competence of teachers in Adansi North Educational Directorate is high, students will perform better in their examinations.

Regarding techno-pedagogical competence, the respondents' capacities were found to be low. Thus, blending technological tools with the content of Social Studies is a bit challenging for the respondents in this study. The study proceeds to say that techno-pedagogical competence of teachers is not subjected to the age of respondents in this study. It was denoted by the study that there is a relationship between techno-pedagogical competence and teaching experience of respondents.

Finally, the study concludes that on the average technological competence is higher among male teachers than female teachers.

Recommendations

In accordance with the findings and conclusions drawn in this study, the following recommendations were arrived at:

1. The District Educational Directorate, school boards, Ghana Education Service and Teacher Professional Associations should strongly consider implementing IT development and coaching programmes for aspiring and practising teachers because the majority were found to be using just a few technological tools. This will help improve content delivery in the classroom.
2. As the study found that the majority of teachers possessed pedagogical competence, there is the need to intensify the development of other specific areas such as integrating technology in the teaching of the subject, especially in areas where teachers may face some challenges. Considering the integrated nature of Social Studies, there will be the need for continuous

learning and upgrade of knowledge on contents which emanate from other social sciences programmes.

3. Teachers should be inspired to become committed to the development of their competence in technology which is also necessary in the world of work in current dispensation. The world has moved from manual operations to digitalised systems for speed, efficiency and accuracy. Hence, teachers are to be encouraged to incorporate effective technological tools and equipment like motion pictures for demonstration of concepts such as rainfall, court proceedings and parliamentary processes, among others.
4. In order to ensure the holistic development of the would-be teacher, it is important that other modes of teaching (e.g. the use of Zoom or online teaching) be employed by the respective training institutions to aid in other dimensions harmonious with current societal and global trends. By that, having good grades does not become the sole focus of the teacher training programme, but proficiency in other essential fields such as technological applications in everyday teaching is also given the needed attention by all stakeholders.
5. The District Educational Directorate, school boards, Ghana Education Service and Teacher Professional Associations should strongly consider motivating teachers, especially the females, who embrace and use technology in the teaching and learning of Social Studies.

Suggestions for Further Research

1. It is suggested that this topic is replicated in other districts of the Ashanti and other regions in Ghana on the use of technology in delivery of Social Studies contents. Again, a relatively higher number of respondents,

including students, could be involved in the study for the purposes of triangulation of results.

2. It is suggested that similar work is done on other subject disciplines to create the awareness of the need to integrate technology in teaching these subjects effectively. These studies can take the qualitative approach which allows for probing and seeking in-depth knowledge on a given construct. The study could ask probing questions which were omitted because the quantitative approach proved to be restrictive.

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APPENDICES

APPENDIX A

TECHNO-PEDAGOGICAL COMPETENCE QUESTIONNAIRE (TCQ)

Dear Respondent

This questionnaire aimed at assessing "***Techno-pedagogical competence of JHS Social Studies teachers in Adansi North District"***. Information obtained from the respondents are meant for academic purposes only. You are kindly requested to respond to the questions willingly and as honestly as possible. You have the right to refrain from any one particular question, a group of questions or the entire questionnaire without any consequence. Also, your responses will be processed with that of others hence be assured that information you will provide will be strictly treated confidential. Thank you

Informed Consent

I have read and understood the information above and willingly agree to complete the questionnaire under the stated conditions [ ]. Please, tick the box at the end of the statement if you agree to participate in the study.

SECTION A: DEMOGRAPHIC DATA

Please, tick [√] where appropriate.

1. Age: ……

2. Sex: Male [ ] Female [ ]

3. Current Qualification: Bachelor of Education Degree [ ] Bachelor of Science Degree [ ] Bachelor of Arts Degree [ ] Master Degree [ ] Other……

4. Years of teaching: ……

For section B, C and D indicate the extent to which you engage in the statement on a scale: 1- Rarely (R), 2- Sometimes (D), 3- Often (O), and 4- Very Often (VO).

SECTION B

TECHNO PEDAGOGICAL COMPETENCE OF SOCIAL STUDIES TEACHERS

Please read the items carefully and tick [√] the response which best express your belief.

S/N.	Statements	R	S	O	VO
1.	I use computer aid resources to constructively assist weak students during instructional period.				
2.	I use virtual/online field trip to enable student get first hand learning experience.				
3.	I use the web as an enquiry oriented activity to encourage co-operative learning among students.				
4.	I use Glogter/Power point to create my teaching and learning materials and resources.				
5.	I use drill and practice as a teaching strategy to enable student memorize concept and historical aspect of Social Studies.				
6.	I use simulation to encourage student construct their own knowledge and conduct research.				
7.	I use multimedia resources to create a constructive learning environment for students learning.				
8.	I use telecollaborative tools to communicate with my students outside the classroom				
9.	I create multimedia/hypermedia tool to provide students with visual support in order to develop mental models				
10.	I use drill-and-practice tool to create tutorials and study guides for my students concerning Social Studies contents				
11.	I encourage my students to further learn using programs recorded CD-ROM and I create some for them as well				

SECTION C

PEDAGOGICAL COMPETENCE OF SOCIAL STUDIES TEACHER

Please read the items carefully and tick [√] the response which best express your belief.

S/N	Statements	R	S	O	VO
1.	I present and formulate the "Social Studies" content that make it comprehensible to my students.				
2.	I possess the philosophy of the subject "Social Studies" and learning of students.				
3.	I present the content of Social Studies to the diverse interest and abilities of students.				
4.	Effectively, I integrate the content, method and the characteristics of learners.				
5.	I have techniques in assessing students' understanding and diagnosing their misconceptions about Social Studies				
6.	I use students-centered method to achieve specific objectives				
7.	I use problem-solving and discussion methods to allow maximum participation of my students				
8.	I use a lot of instructional materials as possible to aid students learning				
9.	I employ self-directed, discovery and role playing methods in my teaching				
10.	I plan and prepare materials relevant to the subject to be thought				
11.	I use time and classroom management skills effectively during lessons				

SECTION D

TECHNOLOGICAL COMPETENCE OF SOCIAL STUDIES TEACHERS

S/N	Statements	R	S	O	VO
1.	Technology as a process is able to help me as teacher to modify my teaching techniques in meeting the teaching and learning needs of my students.				
2.	I demonstrate positive attitude towards the use of ICT tools and this influence my use of it in the delivery of Social Studies content				
3.	I use my knowledge based in standard technologies such as books, dry erasers, boards, and chalkboards to assist my students.				
4.	I use modern/advanced technologies such as computer, internet, interactive white board, digital video and overhead projectors.				
5.	I use computer software and hardware within the educational context.				
6.	I possess the technological skills needed to use innovative resources.				
7.	I use tools like Microsoft word in planning my daily routine activities.				
8.	I create a data base to keep track of my students using some ICT tools like Microsoft Excel.				

APPENDIX B

RELIABILITY

/VARIABLES=TC1 TC2 TC3 TC4 TC5 TC6 TC7 TC8 PC1 PC2 PC3 PC4 PC5 PC6 PC7 PC8 PC9 PC10 PC11 TPC1 TPC2 TPC3 TPC4 TPC5 TPC6 TPC7 TPC8 TPC9 TPC10 TPC11

Technology

/SCALE('ALL VARIABLES') ALL

/MODEL=ALPHA.

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	119	100.0
	Excluded[a]	0	.0
	Total	119	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.893	31

RELIABILITY

/VARIABLES=TC1 TC2 TC3 TC4 TC5 TC6 TC7 TC8

/SCALE('ALL VARIABLES') ALL

/MODEL=ALPHA.

Reliability

Scale: TECHNOLOGICAL COMPETENCE VARIABLE

Case Processing Summary

		N	%
Cases	Valid	119	100.0
	Excluded[a]	0	.0
	Total	119	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.913	8

RELIABILITY

/VARIABLES=PC1 PC2 PC3 PC4 PC5 PC6 PC7 PC8 PC9 PC10 PC11

/SCALE('ALL VARIABLES') ALL

/MODEL=ALPHA.

Reliability

Scale: PEDAGOGICAL COMPETENCE VARIABLE

Case Processing Summary

		N	%
Cases	Valid	119	100.0
	Excluded[a]	0	.0
	Total	119	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.877	11

RELIABILITY

/VARIABLES=TPC1 TPC2 TPC3 TPC4 TPC5 TPC6 TPC7 TPC8 TPC9 TPC10 TPC11

/SCALE('ALL VARIABLES') ALL

/MODEL=ALPHA.

Reliability

Scale: TECHNO-PEDAGOGICAL COMPETENCE VARIABLE

Case Processing Summary

		N	%
Cases	Valid	119	100.0
	Excluded[a]	0	.0
	Total	119	100.0

a. Listwise deletion based on all variables in the procedure.

Overall Reliability Statistics

Cronbach's Alpha	N of Items
.923	11