UNIVERSITY OF CAPE COAST

AN ASSESSMENT OF TEACHERS' TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE IN CHRISTIAN RELIGIOUS STUDIES: A SURVEY

COMFORT AFARI-YANKSON

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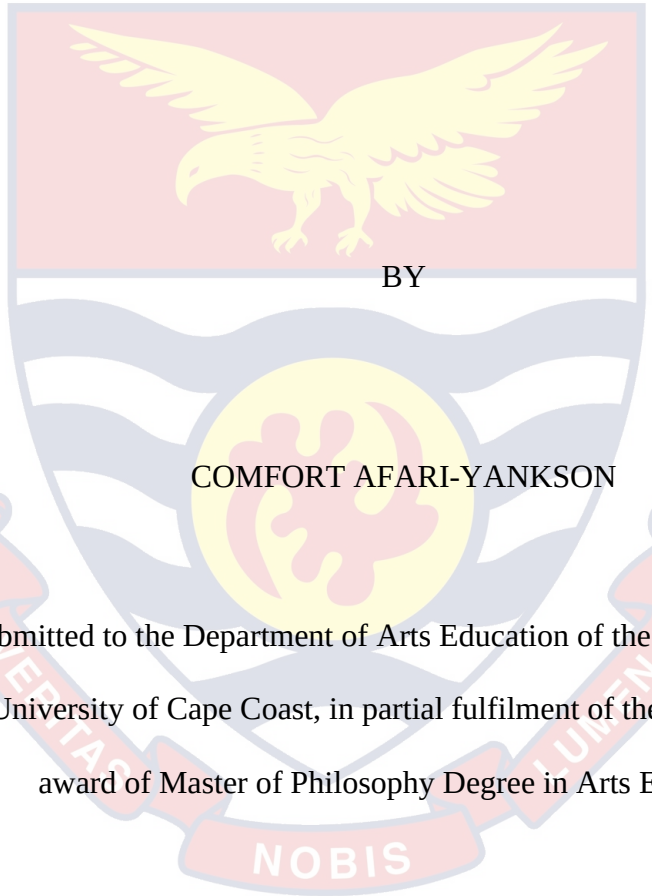

BY

COMFORT AFARI-YANKSON

Thesis submitted to the Department of Arts 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 Arts Education

NOVEMBER 2021

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: Comfort Afari-Yankson

Supervisor's Declaration

I hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines onsupervision of thesislaid down by the University of Cape Coast.

Principal Supervisor's Signature:…… Date:……

Name: Rev. Prof. Seth Asare Danso

ABSTRACT

The study sought to assess the technological pedagogical content knowledge of teachers of Christian Religious Studies in some selected Senior High Schools in the Central Region of Ghana. The convergent mixed method research design was adopted for the study. Using the census method, 72 final year CRS teachers were involved in the study. Questionnaire and observation guide were used to gather the requisite data for the study. The data was analysed using frequencies, percentages, means and standard deviation. The study found out that the CRS teachers had a good content knowledge in the teaching of Christian Religious Studies. However, the CRS teachers were unfamiliar with a few of the contents of the Old Testament as well as the aims of teaching Christian Religious Studies. Also, although CRS teachers indicated that they used a number of pedagogies in teaching the subject, they did not have knowledge about various contemporary pedagogies for teaching Christian Religious Studies such as: life themes pedagogy, existential pedagogy, and the concept cracking pedagogy for the teaching of CRS. Again, the CRS teachers indicated that they had adequate technological knowledge but it was observed that they did not make use of the technological knowledge they claimed they possessed. The study recommended that, the Ministry of Education, Ghana Education Service and the National Council for Curriculum and Assessment (NaCCA) should organise workshops for teachers to be abreast with some of these contemporary pedagogies for the teaching of CRS in Senior High Schools. Again, CRS teachers should teach lessons that appropriately combine CRS content, technologies, and the teaching approaches in their classroom.

ACKNOWLEDGMENTS

I am ineffably indebted to my supervisor, Rev. Prof. Seth Asare-Danso for his patience, motivation, great sense of humour, guidance and immense knowledge and contribution throughout this study. His conscientious guidance helped me and it is a great honour to work under his supervision.

I am also grateful to all the Headmasters, Headmistresses, Assistant academic heads and all CRS teachers and students in Senior High Schools in the Central Region of Ghana for availing themselves for data to be collected from them in order to make this study a success. I acknowledge the moral support provided with love, by my sisters; Maame Esi Yankson and Irene Baaba Yankson whose financial support and passionate encouragement made it possible for me to complete this project. It is in limitless joy that I express my cordial gratitude to Mr. Stephen Yankson and Mr. Nathaniel Yagane who read through the work and offered invaluable suggestions. To my children and friends who co-operated with me in this regard, may God shower us all with generational blessings.

DEDICATION

To my beloved children, Paa Kodwo Ketu-Mensah, and Maame Aba Adom Mensah

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CHAPTER ONE

INTRODUCTION

Background to the Study

The success and survival of any instructional programme depends greatly on the teacher. Teachers being the main implementers of instructional programmes are expected to deliver these programmes as required. It is an undeniable fact that teaching is a challenging profession. The responsibility of organising and planning pupils' learning is entrusted to the teacher. "Teaching is not merely instruction, but the systematic promotion of learning by whatever means. Teaching strategy is an important aspect of curriculum" (Stenhouse, as cited in Mensah, 2014, p. 24). It is necessary for stakeholders in Religious Education to provide teachers with the requisite opportunities, so that they will acquaint themselves with the nuances of quality teaching, through the use of suitable and appropriate methods of teaching. In fact "...curriculum development must rest on teacher development and that it should promote it and hence the expertise of the teacher" (Stenhouse as cited in Mensah, 2014).

To enhance learning, teachers, including Christian Religious Studies teachers, need to develop a nuanced understanding of the complex relationships between technology, content, and pedagogy, and use this understanding to develop appropriate, context-specific strategies and representations. Productive technology integration in teaching needs to consider all three issues not in isolation, but rather within the complex relationships in the system defined by the three key elements.

It is clear from the above discussion that efficient or quality teachers must have a sound knowledge of what their people must know and have the ability to relate the subject matter (content), method, sequence and pace of work to individual needs; to use the environment and appropriate media to support learning (technology); use a range of teaching strategies skillfully (pedagogy); and have enthusiasm for the subject (Farrant, 1980 as cited in Adentwi, 2005). In simple terms, Christian Religious Studies teachers should have the ability to combine technology with pedagogy and content in a way that will inspire learners to enjoy learning and perform better.

In line with this, technological, pedagogical and content knowledge (TPACK) of teachers has been introduced in this 21st century, as a framework for understanding teacher knowledge required for effective technology integration (Mishra & Koehler, 2006). The model of technological, pedagogical and content knowledge (TPACK) argues that developing good content requires a thoughtful interweaving of all three key sources of knowledge: technology, pedagogy, and content. The core of the argument is that there is no single technological solution that applies to every teacher, every course, or every mode of teaching.

Several scholars (Cochran, King, & DeRuiter, 2003; van Driel, Verloop, & De Vos, 2008) have written extensively, regarding the nature and evolution of TPACK. One issue that comes out strongly is the view that technological pedagogical content knowledge is a personal construct, and individual teachers develop their own brand of TPACK over a long period of time, as they journey on their professional path. However there are disagreements regarding whether this

argument can stand critical scrutiny. For instance, Grossman, Schoenfield and Lee (2005) argue that some aspects of TPACK develop during teachers' pre-service and professional practice. This is surprising, because acquisition of in-depth content knowledge, effective use of instructional resources and its relevant pedagogy become more robust through years of practice. This is significant because it influences effective teaching and learning within the context of spiritual and moral education.

In the Senior High Schools, Christian Religious Studies form part of the school curriculum. The aims for the teaching of the subject as indicated in the CRS syllabus were to ensure that students: demonstrate knowledge, understanding and appreciation of the Biblical texts, as set in the selected passages; analyse the religious and social background of the specified themes/passages; apply the religious and moral lessons in the set passages/themes in their lives; as well as adopt healthy attitudes, concepts and skills acquired from the Bible for their personal living and impact on society (MoE, 2010). This is significant because CRS students would be empowered by providing them with strong analytical power and problem-solving skills, as well as appropriate values and attitudes. These skills empower them to have questioning minds which in turn enable them to find solution to the mirage of challenges in their society (Ntim, 2017). However, these skills can only serve useful purposes in the educational process, provide opportunity for learners to become human by using their knowledge, understanding and skills to advance the cause of humanity (Lickona, 1993). This

is significant because the country's resources will be exploited for the good of the haves and the have nots in the society.

Preparing quality Christian and spiritual (religious) educators is central in developing the moral and spiritual values of young people. This is not surprising because increasing number of people across the ideological spectrum perceive that society is in deep moral trouble. The disheartening signs are everywhere; the deteriorating of civility in public discourse and everyday life, rampant greed at a time when one in five children is poor; increased violent juvenile crime and suicide have caused many to declare moral crisis in many nations (Lickona, 1997).

To withstand the storm of moral debauchery which has engulfed the world, Hope (1996) argues that a great and continuing purpose of education has been the development of sound moral and spiritual values in children. To fulfill this purpose, society calls upon all its social institutions to play a key role in the upbringing of young people. This is not surprising because special claims are made on the school, one of the social institutions, because of its central role in the nurture of the young. The basic education system in Ghana through the Christian and spiritual (religious) education programme has been mandated to carry out this onerous responsibility (MoE, 2007).

It is in the light of this that for the past years, Ghana has given priority to moral education, which is an aspect of Christian Religious Studies programme. It is seen as a tool for re-engineering the moral fabric of society. The curriculum for Christian Religious Studies has been designed and is being implemented at the

secondary and tertiary levels of education because as Roosevelt (as cited in Howe & Straus 2002) puts it "to educate a person in mind and not in moral is to educate a menace to society" (p.45). This implies that moral education is at the heart of every educational endeavor. The present study therefore seeks to find out if the above aims as specified in the Christian Religious Studies syllabus are being achieved by assessing the efficiency and knowledge that teachers exhibit in the use of instructional resources (technological knowledge), knowledge of what their learners must know (content knowledge), as well as ability to use a range of teaching strategies skillfully (pedagogical knowledge) to deliver their lessons using the TPACK framework developed by Koehler and Mishra (2005).

Statement of the Problem

Teachers should have the ability to combine technology with pedagogy and content that inspires learners to enjoy learning and perform better (Koehler & Mishra, 2005). For this to take place, lessons in CRS should be presented such that they create mental images in the minds of students. CRS lessons should have a concrete/analogical representation of content knowledge. Well-designed computer programme, Biblical videos and images can be fused into lessons to make teaching-learning process lively.

However, from a personal experience as a CRS teacher, most students tend to show disinterest and apathy towards the subject. Students demonstrate these behaviours by not showing up for classes and some may be in class but may be copying notes for other subjects like integrated science, history, social studies, etc. Interactions with some of the students revealed that, some of the students did

not enjoy the CRS lessons of some of the teachers and they (students) perceived the lessons to be boring. Perhaps, these teachers lacked adequate pedagogical knowledge on how to deliver their contents. Another observation also revealed that, some of the teachers handling the course in some of the secondary schools did not have appropriate qualifications needed to teach the subject due to the perception that, Christian Religious Studies is an easy subject that, anyone at all without appropriate qualifications like degree in religion could be made to handle. From my own personal experience, during my secondary education, a Reverend Father was made to handle the teaching of Christian Religious Studies because of the assumption that any person at all with a sound Biblical knowledge could be made to handle the subject. Again, during my teaching experience, I realized that, the CRS teachers who were made to teach the subject although had done Religion, they had not majored in the subject and as a result, they had not done methods of teaching Religion which is taught for only those education students who majored in Religion. This implies that, some of the teachers of Religion and for that matter CRS in Ghana lack the required academic and professional competencies.

In recent years, technological pedagogical content knowledge (TPACK) has emerged as a promising theoretical framework for helping teachers and teacher educators to make sense of the knowledge needed for technology integration in the classroom (Mishra & Koehler, 2006). The framework has attracted burgeoning attention among education technologists, and hundreds of publications have resulted (Graham, 2011). However, recent reviews by Appiah, (2018), Yalley, (2017), and Xiaobing, Xiaorui, Chun & Maiga (2017) indicate

that despite the many studies done on TPACK, very little has been done on the application of this framework in Christian Religious Studies. For instance, several researchers (Aydemir 2014; Marks 1990) have explored the concept of pedagogical content knowledge. However these studies were conducted within different socio-cultural contexts. For instance, while the former study was conducted in Turkey, the latter study was conducted in the US.

In a similar fashion, Bosu (2010) and Agyeman (2011) in Ghana had investigated the pedagogical content knowledge regarding Accounting and Ghanaian Language respectively. Asante (2015) also investigated the Technological Pedagogical Content Knowledge of RME teachers. Similarly, a study conducted by Annobil (2005) within the Cape Coast Metropolis, focused on teachers' use of instructional materials within the classroom context. Also, a study conducted by Asare-Danso (2017) revealed that RME tutors at the colleges of education in Ghana possess adequate pedagogical and content knowledge. Nonetheless, all the above mentioned studies focused on different subject areas. Therefore, this work sought to fill the gap in literature so far as CRS as a subject is concerned by assessing teachers' technological pedagogical content knowledge in CRS in some selected Senior High Schools in the Central Region of Ghana.

Purpose of the Study

The purpose of the study was to assess the technological pedagogical content knowledge of teachers in Christian Religious Studies in some selected Senior High Schools in the Central Region of Ghana. Specifically, the study sought to:

1. examine teachers' content knowledge in teaching CRS in Senior High Schools in the Central Region of Ghana.
2. assess teachers' pedagogical knowledge in teaching CRS in Senior High Schools in the Central Region of Ghana.
3. examine teachers' technological knowledge in teaching CRS in Senior High Schools in the Central Region of Ghana.
4. assess teachers' technological pedagogical content knowledge in teaching CRS in Senior High Schools in the Central Region of Ghana.
5. examine teachers' technological content knowledge in teaching CRS in Senior High Schools in the Central Region of Ghana.
6. assess teachers' pedagogical content knowledge in teaching CRS in Senior High Schools in the Central Region of Ghana.
7. find out teachers' technological pedagogical knowledge in teaching CRS in Senior High Schools in the Central Region of Ghana.

Research Questions

The following research questions guided the study:

1. What is the content knowledge of teachers in teaching CRS in Senior High Schools in the Central Region of Ghana?
2. What is the pedagogical knowledge of teachers in teaching CRS in Senior High Schools in the Central Region of Ghana?
3. What is the technological knowledge of teachers in teaching CRS in Senior High Schools in the Central Region of Ghana?

4. What is the technological pedagogical content knowledge of teachers in teaching CRS in Senior High Schools in the Central Region of Ghana?
5. What is the technological content knowledge of teachers in teaching CRS in Senior High Schools in the Central Region of Ghana?
6. What is the pedagogical content knowledge of teachers in teaching CRS in Senior High Schools in the Central Region of Ghana?
7. What is the technological pedagogical knowledge of teachers in teaching CRS in Senior High Schools in the Central Region of Ghana?

Significance of the Study

This study will be of immense importance to various stakeholders such as the GES, MoE, NaCCA, CRS teachers, CRS students, future researchers, etc., in the following ways: To GES, MoE and NaCCA, the study would serve as a guide to provide the needed instructional resources and professional training for teachers to enhance the effective teaching of the subject. Also, to GES, MoE and NaCCA, this study would serve as a guide to them concerning the practice of teaching the subject at the Senior High School level. To teachers, the study will serve as a guide to the teaching and learning of Christian Religious Studies at the Senior High School level as well as the teaching of Religious Education at the tertiary level. Again, to teachers, the study will help identify the various difficulties they have in teaching the subject in terms of pedagogical, content and technological challenges in order to address them. To students, the study will help them enjoy and develop interest in the learning of CRS, since teachers would be encouraged to adopt various pedagogies available for the teaching of the subject.

In effect, students' performance in CRS will be enhanced. To future researchers, the study will add up to the literature on teachers' technological pedagogical content knowledge in the teaching of Christian Religious Studies (CRS) in Ghanaian Senior High Schools. Again, to future researchers, the study would contribute to research by filling the gaps in literature, as virtually no study seems to have been done on the topic, so far as CRS is concerned.

Delimitation of the Study

Geographically, the study was conducted in some selected Senior High Schools in the Central Region of Ghana. The Central Region had 75 public Senior High Schools. Out of these, three (3) were secondary technical schools that did not offer CRS. Therefore, the study involved an accessible population of 72 public Senior High Schools in the Central Region of Ghana. The justification for focusing on only public Senior High Schools in the Central Region was that most public Senior High School teachers are the same teachers who teach in the private schools on part-time basis, therefore the inclusion of these teachers would be a duplication of responses. Also, the study assessed the technological pedagogical content knowledge of teachers in Christian Religious Studies. Theoretically, the TPACK framework developed by Koehler and Mishra (2005) constituted the theoretical basis for the study. Again, the questionnaire and the observation guide constituted the main instruments for data collection. The justification for using the questionnaire was that, the respondents (CRS teachers) were literates who could read and write and the number of CRS teachers (72 respondents) who were involved in the study was large and hence, it was appropriate to use the

questionnaire, rather than interviewing them one after the other. The observation guide was adopted as a backup in order to ascertain the information that was gathered from the CRS teachers using the questionnaire, in terms of their content knowledge, pedagogical knowledge as well as technological knowledge.

Limitations of the Study

There were some significant problems that were encountered during this research which had the tendency of affecting the result of the study. First and foremost, the study population was restricted to public Senior High School in the Central Region of Ghana; therefore, the results of the study could not be generalized to other population in the regions in the country. Also, some of the teachers were reluctant to divulge information to the researcher, due to fear of loss of job. But the researcher assured the respondents of their anonymity and confidentiality. Again, the issue of respondents responding to the questionnaire untruthfully was bound to arise but this problem was dealt with by using observations of lessons. In addition, the use of closed ended questionnaire with pre-defined answers without allowing room for teachers to freely express their perceptions about the topic may affect their answers. The researcher, however, provided an exhaustive list of responses that were relevant to the study.

Organisation of the Study

The study was organised into five main chapters. The first chapter dealt with the introduction of the study, covering the background to the study, statement of the problem, purpose of the study, research questions, and significance of the study, delimitation of the study, limitations of the study as well

as the organization of the study. Chapter Two dealt with the review of related literature. It covered the theoretical framework/conceptual base of the study. It also has a section for empirical review under which studies related to the study would be reviewed. Chapter Three also dealt with the methodology which included: research design; population; sample and sampling procedure; research instrument; validity and reliability of instrument; data collection procedure; as well as data analysis. Chapter Four dealt with the presentation of results/findings of the study. The final chapter, chapter five, provided the summary of the study, conclusions based on the findings, and recommendations.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter takes into consideration relevant previous works and ideas that are in consonance with this study. The researcher reviewed various books, discoveries, thoughts and ideas that have been expressed by many scholars from different persuasions relating to teachers' technological pedagogical content knowledge. The review of related literature was done in three areas; Theoretical/Conceptual framework as well as Empirical Review. The theoretical framework for this study was based on Mishra and Koehler's (2006) Technological Pedagogical Content Knowledge (TPACK) model. Conceptual review included a review of concepts from the following selected areas: Historical development of the pedagogical content knowledge framework; Components of the PCK framework; Pedagogical Knowledge (PK); Content Knowledge (CK); Technological Knowledge (TK); Technological Content Knowledge (TCK); Technological Pedagogical Knowledge (TPK); Pedagogical Content Knowledge (PCK); Technological Pedagogical Content Knowledge (TPACK); The concept of effective teaching; The concept of religious education; Historical development of Religious Education as a subject of study in Ghana; Religious Education: definition, scope of content and characteristics. The empirical review included: pedagogical knowledge of religious education teachers; as well as content knowledge of religious education teachers.

Theoretical/Conceptual Review

The Technological Pedagogical Content Knowledge (TPACK) provides the theoretical and conceptual framework for the study. The basis of the framework is the understanding that teaching is a highly complex activity that draws on many kinds of knowledge. Teaching is a complex cognitive skill occurring in an ill-structured, dynamic environment (Leinhardt & Greeno, 1986; Spiro, Coulson, Feltovich, & Anderson, 1988; Spiro, Feltovich, Jacobson, & Coulson, 1991). Like expertise in other complex domains, including medical diagnosis (Lesgold, Feltovich, Glaser, &Wang, 1981; Pople, 1982), chess (Chase & Simon, 1973; Wilkins, 1980), and writing (Hayes & Flower, 1980; Hillocks, 1986), expertise in teaching is dependent on flexible access to highly organized systems of knowledge (Glaser, 1984; Putnam & Borko, 2000; Shulman, 1986, 1987). There are clearly many knowledge systems that are fundamental to teaching, including knowledge of pupil thinking and learning, and knowledge of subject matter.

Historically, knowledge bases of teacher education have focused on the content knowledge of the teacher (Shulman, 1986; Veal & MaKinster, 1999). More recently, teacher education has shifted its focus primarily to pedagogy, emphasizing general pedagogical classroom practices independent of subject matter and often at the expense of content knowledge (Ball & McDiarmid, 1990). We can represent this bifurcated way of looking at teacher knowledge as two circles independent of each other (Figure 1).

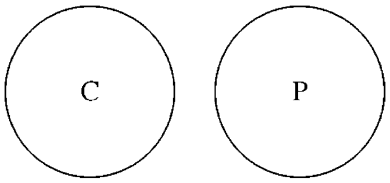

Figure 1: The Two Circles Representing Pedagogical and Content Knowledge

Source: Mishra, and Koehler (2009)

Different approaches toward teacher education have emphasised one or the other domain of knowledge, focusing on knowledge of content(C) or knowledge of pedagogy (P). Shulman (1986) advanced thinking about teacher knowledge by introducing the idea of pedagogical content knowledge (PCK). He claimed that the emphases on teachers' subject knowledge and pedagogy were being treated as mutually exclusive domains in research concerned with these domains (Shulman, 1987). The practical consequence of such exclusion was production of teacher education programs in which a focus on either subject matter or pedagogy dominated. To address this dichotomy, he proposed considering the necessary relationship between the two by introducing the notion of PCK.

PCK exists at the intersection of content and pedagogy. Thus, it goes beyond a simple consideration of content and pedagogy in isolation from one another. PCK represents the blending of content and pedagogy into an understanding of how particular aspects of subject matter are organized, adapted, and represented for instruction. Shulman (1986) argued that having knowledge of subject matter and general pedagogical strategies, though necessary, was not sufficient for capturing the knowledge of good teachers. To characterize the complex ways in which teachers think about how particular content should be

taught, he argued for ‘‘pedagogical content knowledge’’ as the content knowledge that deals with the teaching process, including ‘‘the ways of representing and formulating the subject that make it comprehensible to others’’ (p. 9). For teachers to be successful, they would have to confront both issues (content and pedagogy) simultaneously by embodying ‘‘the aspects of content most germane to its teachability’’ (p. 9). At the heart of PCK is the manner in which subject matter is transformed for teaching. This occurs when the teacher interprets the subject matter and finds different ways to represent it and make it accessible to learners.

The notion of PCK has been extended and critiqued by scholars after Shulman (for instance, see Cochran, King, & DeRuiter, 1993; van Driel, Verloop, & De Vos, 1998). In fact, Shulman’s (1986) initial description of teacher knowledge included many more categories, such as curriculum knowledge and knowledge of educational contexts. Matters are further complicated by the fact that Shulman has himself proposed multiple lists, indifferent publications, that lack, in his own words, ‘‘great cross-article consistency’’ (p. 8). The emphasis on PCK is based on Shulman’s acknowledgement that pedagogical content knowledge is of special interest because it identifies the distinctive bodies of knowledge for teaching. It represents the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction (p. 8).

The emphasis on PCK is consistent with the work of many other scholars and recent educational reform documents. Since its introduction in 1987, PCK has

become a widely useful and used notion. For instance, in the area of science education, scholars such as Anderson and Mitchner (1994); Hewson and Hewson (1988); Cochran, King, and DeRuiter (1993); and professional organizations such as the National Science Teachers Association (NSTA, 1999) and National Council for the Accreditation of Teacher Education (NCATE, 1997) have all emphasized the value of PCK for teacher preparation and teacher professional development. An analysis of Teacher Educator's Handbook (Murray, 1996) shows Shulman as the fourth most cited author of the close to 1,500 authors in the book's author index, with an overwhelming majority of those references made to this concept of PCK (Segall, 2004). The notion of PCK since its introduction in 1987 has permeated the scholarship that deals with teacher education and the subject matter of education (see, for example, Ball, 1996; Cochran, King, & DeRuiter, 1993; Grossman, 1990; Ma, 1999; Shulman, 1987; Wilson, Shulman, & Richert, 1987). It is valued as an epistemological concept that usefully blends the traditionally separated knowledge bases of content and pedagogy.

We can represent Shulman's contribution to the scholarship of teacher knowledge diagrammatically by connecting the two circles of Figure 1 so that their intersection represents PCK as the interplay between pedagogy and content (see Figure 2). In Shulman's (1986) words, this intersection contains within it ''the most regularly taught topics in one's subject area, the most useful forms of representation of those ideas, the most powerful analogies, illustrations, examples, explanations, and demonstrations—in a Joined by Pedagogical Content Knowledge.

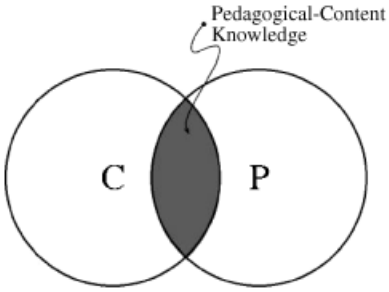

Figure 2: The Two Circles of Pedagogical Knowledge and Content Knowledge

Source: Mishra and Koehler (2009)

Historical Development of the Technological Pedagogical Content Knowledge Framework

Research on TPACK, according to Shulman (1987) has been closely connected with three research paradigms teacher behaviours, teacher thinking and teacher knowledge over past decades. In the 1950s, research on teachers and teacher effectiveness largely focused on observable teacher performance and its causal connection with student academic outcomes mainly through the quantitative approach. This "process product" paradigm according to Richardson (2001), was subsequently criticized for its failure to capture the subtlety and complexity of teaching. Thus alternative research on "teacher thinking" started in the mid-1970s as a reaction against the previous paradigm of "teacher behaviour". The initial trend of this research is summarized as follows: Instead of reducing the complexities of teaching learning situations to a few manageable research variables, one tries to find out how teachers cope with these complexities. In short, what is in the "mind" of teachers could explain classroom processes in one way or another (Halkes & Olson, 1984).

Calderhead（1988）identifies the marked association between teacher reflective thinking and teacher knowledge : the development of teacher's practical knowledge involves the acquisition, comparison, evaluation and synthesis of images, a greater understanding and awareness is required of how different types of knowledge might relate to classroom practice and of the metacognition skills that are needed in the generation and manipulation of teachers' knowledge. Calderhead emphasizes that, the relation between teacher thinking and teacher knowledge shows an evident clue shifting from studies on teachers' observable performances such as skills techniques and acts to an investigation of teachers "invisible minds" such as thinking, planning, decision and conceptions and then to products of teacher thinking and teacher knowledge. According to Carlson, Gess-Newsome, Gardner and Taylor (2013), for more than 30 years the construct of PCK has had a place in both the educational research literature and teacher education. Despite this longevity in the literature, it remains a challenging construct to measure and study. Like many others, we agree that developing high quality PCK may be one of the keys to effective instruction and therefore improved student learning.

Components of the PCK Framework

The term pedagogical content knowledge was introduced into the discourse of teacher education in Shulman's 1985 presidential address to the American Educational Research Association. It was defined as "a second kind of content knowledge", "which goes beyond knowledge of subject matter to the dimension of subject matter knowledge for teaching". It is "the particular form of

content knowledge that embodies the aspects of content most germane to its teachability" (Shulman, 1986).

There are three key components of PCK which are, content knowledge, pedagogical knowledge, and context knowledge. However, due to its significance, a bulk of studies on PCK emerged during the last twenty-five years. "What are the components of PCK" is one of the fundamental questions that researchers try to figure out. Although PCK is theoretically an integrated and coherent whole, the ingredients of which cannot be separated, it is of practical significance to clarify its components. A large volume of studies has been conducted, using the key concept of PCK. The knowledge elements that are explored as PCK components in these studies, however, often vary from one to another. The inconsistent use of PCK has been realized and deplored (Abell, 2008). Notwithstanding, a general description of PCK components has been made since the notion PCK was first introduced by Shulman (1986), and that is what this study reflects on.

In Shulman's 1986 article, a general description of PCK components was made as follows: the most regularly taught topics in one's subject area, the most useful forms of representation of those ideas, and the most powerful analogies, illustrations, examples, explanations and demonstrations. In summary, the ways of representing and formulating the subject that make it comprehensible to others. Pedagogical content knowledge also includes an understanding of what makes the learning of specific topics easy or difficult: the conceptions and preconceptions that students of different ages and backgrounds bring with them to the learning of those most frequently taught topics and lessons. Thus, Shulman's clarification

included three components: knowledge of topics regularly taught in one's subject area, knowledge of forms of representation of those ideas, and knowledge of students' understanding of the topics.

Moreover, in 1987, Shulman expanded and specified his 1986 clarification in another paper co-authored with Gudmundsdottir. They divided PCK into three categories, which were: knowledge of the central topics, concepts, and areas of the subject matter that can be and are taught to students and knowledge of analogies, similes, examples and metaphors by which to explain the subject matter to students, which is influenced by content knowledge, knowledge of the different ways topics can be taught, and the pros and cons of each approach, which is influenced by general pedagogical knowledge, and knowledge of students' preconceptions or misconceptions about the topics they learn, and knowledge of the topics students find interesting, difficult or easy to learn, which is influenced by knowledge of students (Gudmundsdottir & Shulman, 1987).

Comparing these two clarifications, one could realize that more sub-components were included in 1987's clarification. For instance, the component of knowledge of students' understanding of the topics includes two sub-components; the conceptions and preconceptions of students in 1986's clarification, while four sub-components; students' preconceptions, misconceptions, learning interests and learning difficulties were included in 1987's clarification.

Although Shulman did not discuss technology and its relationship to pedagogy and content, we do not believe that these issues were considered unimportant. When Shulman first made his argument, issues surrounding

technologies were not foregrounded to the extent that they are today. Traditional classrooms use a variety of technologies, from textbooks to overhead projectors, from typewriters in English language classrooms to charts of the periodic table on the walls of laboratories. However, until recently, most technologies used in classrooms had been rendered ‘‘transparent’’ (Bruce & Hogan, 1998), or in other words, they had become commonplace and were not even regarded as technologies. In contrast, the more common usage of technology refers to digital computers and computer software, artifacts and mechanisms that are new and not yet a part of the mainstream. Thus, though Shulman’s approach still holds true, what has changed since the 1980s is that technologies have come to the forefront of educational discourse primarily because of the availability of a range of new, primarily digital, technologies and requirements for learning how to apply them to teaching.

These new technologies have changed the nature of the classroom or have the potential to do so. Consider the aspects or examples that Shulman provided as being important to PCK, such as ‘‘the most powerful analogies, illustrations, examples, explanations and demonstrations,’’ or, in other words, ‘‘the ways of representing and formulating subject’’ to make it more accessible and comprehensible. Clearly, technologies play a critical role in each of these aspects. Ranging from drawings on a blackboard or interactive multimedia simulations to etchings on a clay tablet to the pump metaphor of the heart or the computer metaphor of the brain, technologies have constrained and afforded a range of representations, analogies, examples, explanations, and demonstrations that can

help make subject matter more accessible to the learner. Though not all teachers have embraced these new technologies for arrange of reasons—including a fear of change and lack of time and support—the fact that these technologies are here to stay cannot be doubted.

Moreover, the rapid rate of evolution of these new digital technologies prevents them from becoming ‘‘transparent’’ any time soon. Teachers will have to do more than simply learn to use currently available tools; they also will have to learn new techniques and skills as current technologies become obsolete. This is a very different context from earlier conceptualizations of teacher knowledge, in which technologies were standardized and relatively stable. The use of technology for pedagogy of specific subject matter could be expected to remain relatively static over time. Thus, teachers could focus on the variables related to content and pedagogy and be assured that technological contexts would not change too dramatically over their career as a teacher. This new context has foregrounded technology in ways that could not have been imagined a few years ago. Thus, knowledge of technology becomes an important aspect of overall teacher knowledge. What is interesting is that current discussions of the role of technology knowledge seem to share many of the same problems that Shulman identified back in the 1980s. For instance, prior to Shulman’s seminal work on PCK, knowledge of content and knowledge of pedagogy were considered separate and independent from each other. Similarly, today, knowledge of technology is often considered to be separate from knowledge of pedagogy and content. This approach can be represented as three circles, two of which (content and

pedagogy) overlap as described by Shulman, and one circle (technology) stands isolated from these two. Figure 3 represents the knowledge structures that underlie much of the current discourse on educational technology.

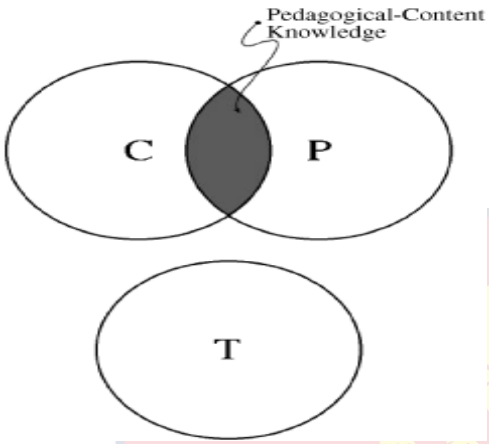

Figure 3: The Three Circles Represent Technological, Pedagogical, and Content Knowledge

Source: Mishra and Koehler (2009)

Content and Pedagogy overlap to form Pedagogical Content Knowledge. While Technology is seen as being a separate and independent knowledge domain, it is relatively trivial to acquire and implement. The design and implementation of workshops or teacher training programs that promote the learning of specific hardware and software skills as being sufficient to round out teachers' knowledge bases for teaching with technology are direct consequences of this perspective.

However, the relationships between content (the actual subject matter that is to be learned and taught), pedagogy (the process and practice or methods of teaching and learning), and technology (both commonplace, like chalkboards, and advanced, such as digital computers) are complex and nuanced. Technologies

often come with their own imperatives that constrain the content that has to be covered and the nature of possible representations. These decisions have a ripple effect by defining, or in other ways, constraining, instructional moves and other pedagogical decisions. So it may be inappropriate to see knowledge of technology as being isolated from knowledge of pedagogy and content.

In contrast to the simple view of technology (Figure 3), our framework (Figure 4) emphasizes the connections, interactions, affordances, and constraints between and among content, pedagogy, and technology. In this model, knowledge about content (C), pedagogy (P), and technology (T) is central for developing good teaching. However, rather than treating these as separate bodies of knowledge, this model additionally emphasizes the complex interplay of these three bodies of knowledge. We do not argue that this TPCK approach is completely new. Other scholars have argued that knowledge about technology cannot be treated as context-free and that good teaching requires an understanding of how technology relates to the pedagogy and content (Hughes, 2005; Keating & Evans, 2001; Lundeberg, Bergland, Klyczek, & Hoffman, 2003; Margerum-Leys & Marx, 2002; Neiss, 2005).

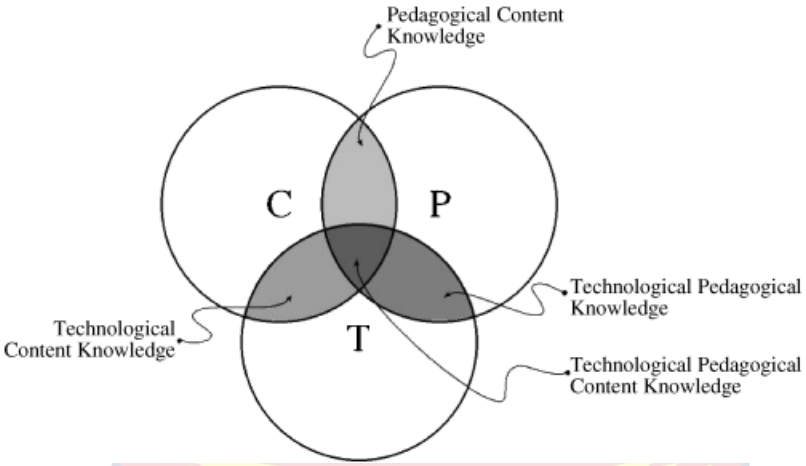

Figure 4: Technological Pedagogical Content Knowledge. The Three Circles, Content, Pedagogy, and Technology, Overlap to Lead to Four More Kinds of Interrelated Knowledge

Source: Mishra and Koehler (2009)

What sets this approach apart is the specificity of our articulation of these relationships among content, pedagogy, and technology. In practical terms, this means that apart from looking at each of these components in isolation, we also need to look at them in pairs: pedagogical content knowledge (PCK), technological content knowledge (TCK), technological pedagogical knowledge (TPK), and all three taken together as technological pedagogical content knowledge (TPACK). This is similar to the move made by Shulman, in which he considered the relationship between content and pedagogy and labeled it pedagogical content knowledge. In our case, a similar consideration leads us to three pairs of knowledge intersection and one triad. One of the pairs, pedagogical content knowledge, was introduced and articulated by Shulman, but we introduce two new pairs and one new triad. Thus, the following elements and relationship are important in the framework proposed above.

Technological Knowledge

Modern teaching and learning requires that the teacher provides the most congenial atmosphere necessary for meaningful as well as practical instruction to take place. Teachers are entrusted with this key role of creating the most congenial atmosphere for learning to take place.

> Thus, a classroom that provides a truly educational environment is a place where children will learn unconsciously as well as consciously. In it they will find interesting things such as pictures about current affairs, working models of things they are learning about display shelves with exhibits of interest for nature study, and toys and books which they can use whenever they have finished their work satisfactorily before the rest of the class (Farrant, 1980, p. 169).

One of the important faculties of using appropriate pedagogy and in fact quality teaching is the teacher's ability to select and use appropriate instructional resources. It is necessary that the teacher acquaints himself/herself with the requisite skills needed for application of instructional resources in the teaching-learning process. Though the importance of the use of instructional resources in teaching cannot in any way be overemphasized, it has its own problems. This underscores the key role that professionalism plays in the effective use of instructional resources.

A well-equipped classroom in terms of instructional resources could enhance learning. It is very important, that teachers who are the foot soldiers of

curriculum implementation realize the key role that they play in selection, use and maintenance of instructional resources in the classroom. Effective learning could be accomplished through seeing, hearing, feeling, manipulation and examining relevant instructional resources. The various senses of human person become the main vehicle that the mental faculty utilizes in order to retain what is learnt. In line with this, it can be articulated that the various senses are, as it were, transit points for effective teaching–learning process. Singh (2006) opined that instructional resources may be seen as a separate field in the theory of education that deals with the development and application of educational resources. Thus, the development, application and evaluation of systems, techniques, technologies and aids to improve the process of human learning is a very important aspect of teaching and learning. It must be noted that instructional resources are not end in themselves but a means to accomplish instructional objectives.

According to Ornstein and Lasley (2000), "Pedagogical aids sometimes called instructional aids or teaching aids, are materials designed for teacher use that are provided as supplements to textbook" (p. 235). They went on to give teacher's manuals, transparencies or cut-outs to duplicate, supplementary tables, graphs, charts, maps, bulletin board displays, parent involvement materials, teacher resource binders, computer software, audio and video cassettes as some examples of these instructional resources. These resources according to them are used before, during and after lessons. In the words of Aggarwal (1995),

> In addition to reading, vicarious experiences can be gained
>
> from still pictures, films, filmstrips, resource persons, simulations,

> mock ups, television and the like. The more concrete and realistic the vicarious experience, the more nearly it approaches the learning effectiveness of the first levels (pp. 296-297).

It is through the use of appropriate and suitable instructional materials that the RME teacher can provide these experiences. Nacino-Brown, Oke and Brown, (1982) gave four varieties of instructional resources as follows:

1. **Visual:** examples are three dimensional materials, printed materials, chalkboards, flannel or felt boards, bulletin boards, still pictures and graphics.
2. **Audio:** examples include radio, record players, and tape records
3. **Audio- visual:** examples are motion pictures and television.
4. **Community resources:** examples include resource persons and places of interest.

These are indispensable as far as effective teaching and learning of RME is concerned.

> There is a great variety of materials around that can be used to make our meanings more vivid and more interesting. The mere use of these materials however, does not guarantee effective communication, or effective teaching. It is their careful selection and skilful handling by the teacher that renders them useful in facilitating learning (Nacino – Brown, Oke & Brown, 1982, p. 165).

It is therefore very necessary that strict professionalism and strategies need to be applied in selecting and using instructional resources in order to achieve maximum impact. In fact the teacher performs very crucial roles in the selection

and use of instructional resources. Herein lays the need for teachers to update and acquaint themselves with the requisite nuances of appropriate as well as suitable use of instructional resources in the teaching of RME in the Junior High Schools. Walkin (1982) added his voice on the need to be circumspective in the use of instructional resources when he said that:

> To be successful in the classroom, aids must supplement the teacher's work and should be flexible in their application. The learning resources centre may well be jammed full of the latest multi-media teaching aids, but this will be of little use to a teacher who lacks the know-how that they require or who does not have the time to set them up in the instructional situation (p. 261).

He continued to say that before a teacher uses any instructional resources, he/she must be fully conversant with its operation and application and must rehearse his/her presentation before confronting the class. These rules are indispensable in the use of instructional resources in the teaching–learning process because the teacher will be able to assess the efficacy of the resources in helping to achieve the stated objectives and also make up for the weaknesses inherent in the resource in question. With the effective use of audio-visual resources in the classroom, Ornstein and Lasley (2000) posited that:

> Display such aids only when you talk about them; explain visuals to your audience; use a marker or highlighter when using an overhead to focus pupils on key points; use the k – i- s –s (keep it

short and simple) principle – minimize detail. Make sure visuals are readable from the back of the room (p. 178).

This underscores the need to follow the principles governing a particular instructional resource. Failure to abide by these principles will definitely undermine and water-down the usefulness as well as the effectiveness of the resource. With regards to the selection and use of instructional resource, Knirk and Gustafson (1986) said that selection should be done only after the designer has developed instructional, objectives and examined the characteristics media. After a learning problem has been identified and a solution designed, the user determines whether appropriate instructional resources or new materials need to be created. In this case, if the instructional resources do not exist in the school, it is the duty of the teacher to search for them and use them appropriately.

Tickton (1971) believed that instructional resources of all varieties, when used with advanced planning and preparation of pupils have been recognized as the basic means of improving the output resulting from classroom instruction. It should help provide every person with access to excellence. In fact not only can instructional resources recognize individual taste, needs and services; but it can also make such individualization manageable (Dale, 1969).

According to Nacino–Brown, Oke and Brown (1982) there are five factors that affect the selection and use of instructional resources. The teacher therefore must consider such factors when choosing from a variety of instructional resources especially when they are all suitable for the purposes. They mentioned the subject matter, method of teaching, age of learners, how and when the

medium would be used or handled, who will use the medium and where to obtain the resource as some of the factors that are to be considered. In this study, the researcher found out if the religious education teachers consider these factors in the selection and use of instructional resources in their teaching.

In the view of Ornstein and Lasley (2000),

> The teacher must incorporate instructional materials into unit plan and lesson plan and modify them in a way that considers the pupils; developmental stages or age, needs and interests, aptitudes, reading levels, prior knowledge, work habits, learning styles and motivation. The following factors should be considered when presenting materials (published or teacher-made) (p. 226). Apart from these factors, a lot of questions, according to them should be raised on a particular material that is purported to be used. Some of them are:
>
> Are the materials understandable?
>
> Are the materials organized clearly?
>
> Are the materials sequenced logically?
>
> Are the materials complementary?
>
> Do the materials complement how pupils learn?

The more the religious education teacher answer "yes" to these questions, the more the resource in question is deemed appropriate and suitable. On the contrary, if the teacher answers "no", to these questions, then the resource under review must be considered again and other alternative chosen.

According to Robens (1970), in order to use instructional resources effectively, the main role of the teacher is to get the learners actively involved

with the material. This means that the RME teacher should ensure that pupils have ample experience in interacting with instructional material in question. This will help the learners to acquaint themselves with the requisite skills of manipulating the resources in the real life situation. In fact, "Use of the aid should be validated and its impact evaluated. An aid should be chosen for its function and predicted effect on the audience" (Walkin, 1982, p. 290). This means that the religious education teacher should be able to assess the efficacy and efficiency of the resources to be used. In the final analysis, modern curriculum development tends to adopt multimedia approach to learning and so competence in the use of instructional resources is essential for learning new curricula (Farrant, 1980).

Benefits of Technology in Teaching and Learning

Education has taken a dynamic approach in the 21st century. The era of technology has come to stay and teaching is expected to be facilitated by the use of technology. This is supported by UNESCO (2002) that educational systems are faced with increasing pressure to use new technologies to teach students the knowledge and skills they need in the 21st century. Fundamentally, teachers are expected to possess the skill of using technology to teach, not only in the local context where they receive their training but also in the international arena. LeCompte (2004) adds that not only do teachers need the skills in the use of technology but they need the skills to serve as technological leaders and peer advisors so that they can provide support to teachers as they attempt to keep pace with the quality and quantity of technology. The use of technological leaders means that, when teachers are prepared to teach with technology, they would not

only enhance their teaching capabilities but also serve as an instrument in providing guided training to in-service teachers.

Teachers would need to be prepared and ready to integrate technology in their teaching in order to fully fit into this new era of teaching and learning facilitated by technology. Teachers can integrate technology in their teaching through a constructivist mind set. The constructivist view encourages teachers to use technology to "expand classroom boundaries, connect students to real-world events, and guide students to become independent learners" (Teo, 2009, p. 7) through active and cognitive learning. Watson (2007) indicates that the integration of technology into the classrooms is integral to providing the education needed for the success of contemporary students (Watson, 2007), and that is the effective way of altering the educational process of the way teachers think. Technology equipped classrooms enhance the teaching and learning process by shifting the approach to classroom instruction from traditional methods to a more constructive method of teaching which ostensibly enhance students learning (Matzen & Edmunds, 2007).

Several scholars have indicated important roles technology play in this new era of teaching. Al-Alwani (as cited in Savas, 2011) indicates that the main benefit of technology in education is that it makes students independent learners who adjust their pace of learning according to their own pace by using Information and Communication Technologies (ICTs). This means that the use of technology in education ensures that students are proficient and reliant on their own abilities unlike the traditional classrooms where students' efficiency is

dependent on the capabilities of the teacher and the pace of the classroom interaction. This also presupposes that students determine the pace of the learning process according to their own pace by using information and communication technologies.

Matray and Proulx (1995) posit that technology makes students more active and engage in lessons and stimulates teamwork. Students participation in the instructional process is heightened when the lesson is influenced by technology as most of the children play around with most of these technologies. Becta (2002) reports the advantages of using technology in education as greater motivation, increased self-esteem and confidence, enhanced questioning skills, promoting initiative and independent learning, improving presentation, developing problem solving capabilities, promoting better information handling skills, increasing 'time on task', improving social and communication skills.

Roschelle, Abrahamson, and Penuel (2004) postulate that the use of technology in the teaching and learning process can provide support for student learning in four major dimensions: "active engagement, collaborative learning, real-world contexts and frequent and immediate feedback" (p. 253). Technology also assists the student learning by promoting "high-order thinking and metacognitive skills that are essential to meaningful learning" (Wang, Kinzie, McGuire, & Pan, 2010, p. 382). Wang et al. continue that technology can promote learning by developing interest and motivation, providing access to information, and scaffolding the learning process tactically and strategically. Brandstrom (2011) commented on the use of the internet in education by indicating that it

facilitates learning, teaching and communication. Digital storytelling platforms and wikis are increasingly being used in the teaching and learning process to motivate and encourage students by taking into consideration their abilities. The use of these tools allows students to develop and foster their self-efficacy through constructivist, student-oriented practices (Adcock & Bolick, 2011). These also allow students and teachers to co-construct knowledge and meaning, which promote constructivism in the classroom. The educational technologies enable teachers to be seen as classroom motivators and information mediators (Schneiter, 2010).

The use of these educational technologies, in addition, allow teachers to present information in more than one format because the multimodal representation of information and ideas increase the chance that more students will learn and retain information in the classroom (DeGennaro, 2010). In support of this, Schneiter (2010) elaborates that in teaching and learning, the use of various educational technologies can help students to understand, visualize, and engage with certain dynamic concepts. Beyond the classrooms, Morris (2012) indicates that teachers use technology for planning, grading, data management, sharing and organizing resources, communicating with colleague teachers and parents, and video conferencing.

Morris further asserts that in the classroom, teachers use technology for multimedia presentations, classroom demonstrations and explorations, class web pages and blogs, images and movie clips, concept mapping, digital storytelling, movie making, and the facilitation of group work and homework assignments. In

all these instances, teachers use personal computers, interactive white boards, LCD projectors, presentation software, the Internet, various Web 2.0 applications, wikis, digital flex books, graphing calculators, spreadsheets and word processors, cell phones and other mobile devices, educational software, mobile data collection units, iPods and iPads, and digital/video cameras (Adcock & Bolick, 2011; Hammond, Fragkouli, Suandi, Crosson, Ingram, Johnston-Wilder, Johnston-Wilder, Kingston, Pope & Wray, 2009; Schneiter, 2010; Steinweg, Williams & Stapleton, 2010; Thieman, 2008).

Commenting on the role of technology to the teacher, Savas (2011) indicates that teachers profit from Information and Communication Technologies to keep record and organize students' information and enable the teachers to get more time for instructional activities. The use of technology in education also enhances the teaching and learning process as teachers are able to communicate with students anytime from anywhere. Thus, with the use of educational technologies, teaching and learning is not limited to the classroom as has always been in the traditional classrooms. The use of technologies also ensures that teachers are more creative and are able to present instructional materials that are more interesting by the use of the properties of information communication technologies (Matray & Proulx, 1995). This means that teaching and learning becomes meaningful and interesting when they are supported by technologies.

Given the enormous role that technology play in teaching and learning in this digital world, it is very essential that student-teachers teach with the emerging technologies when they finally assume the mandate to teach as professional

teachers. It is, therefore, very important to find out if student-teachers are prepared to integrate technology in teaching in order to proffer the necessary support or recommendations.

Pedagogical Knowledge (PK)

Improving student outcomes is also about improving the quality of the teaching workforce. Teacher quality is an important factor in determining gains in student achievement, even after accounting for prior student learning and family background characteristics (Darling- Hammond, 2000). Teachers possess highly-specialized knowledge that continually transforms as new knowledge emerges from practice and research or is shared through professional communities. Pedagogical knowledge refers to the specialized body of knowledge of teachers for creating effective teaching and learning environments for all students. There is agreement that a high level of pedagogical knowledge is part of competent teaching, yet there remains the need to assess teacher knowledge as an outcome of teacher education systems and as a predictor of effective teaching and student achievement (Guerriero & Révai, 2017).

The nature of teachers' pedagogical knowledge and how new knowledge is incorporated into the profession is an especially relevant issue for policy makers (Hattie, 2009). The learning environments of today's classrooms are becoming more diverse and teachers are expected to teach "21st century skills" that are the new priority among countries and partner economies. In our increasingly complex, knowledge-based and interconnected digital societies, the

labour market requires a new set of skills previously of little significance for seeking employment (OECD, 2009).

As professionals, teachers are expected to process and evaluate new knowledge relevant for their core professional practice, and to regularly update their profession's knowledge base This includes teaching '21st century skills' (for example, creativity, critical thinking, problem solving, collaboration, and communication, among others) in increasingly diverse classrooms in many countries. These new demands may require teachers to deviate from traditional teaching methods in innovative ways. Understanding what the current knowledge base looks like will help to determine whether and to what extent re-skilling is required (Guerriero, 2017).

Therefore, understanding what the current knowledge base looks like will help determine whether and to what extent re-skilling is required. Thus, there is a need to derive evidence-based suggestions for educational policy and future research by examining the current state of teachers' pedagogical knowledge and implications for the instructional process. According to OECD (2013), although new research is suggesting that a high level of pedagogical knowledge is part of competent teaching, there is still the need to assess teacher knowledge as a learning outcome of teacher education systems and as a predictor of effective teaching and student achievement.

Every subject has its own peculiar way of transmitting information to its learners and so is Christian Religious Studies. Grimmitt (1978) stated that, every teacher and educationist of experience knows that even the best curriculum and

the most perfect syllabus remain dead unless quickened into life by the right methods of teaching and the right kind of teachers. Grimmitt has laid a firm foundation for teaching methods. He asserts that, sometimes even an unsatisfactory and unimaginative syllabus can be made interesting and significant by the gifted teacher who does not focus his mind on the subject matter to be taught or the information to be imparted but on his students - their interest and aptitudes, their reaction and response. He or she judges the success of his or her lesson not by the amount of matter covered but by the understanding the appreciation and the efficiency achieved by students (Colbey & Kohlberg, 1987; Ocitti, 1994). In this work, the life theme approach, existential approach, as well as the value clarification approach to the teaching of Religious and Moral Education have been elaborated on in addressing teacher's pedagogical knowledge in teaching CRS.

The Life Themes Pedagogy

One of the skills that is pertinent to a particular method is the teacher's "ability to relate content to past and future experiences of learners" (Oliva, 1992, p.142). The heart of the Life-Approach method navigates around this statement. Meanwhile, an attempt needs to be made to examine this method as it is used in teaching religious education in the schools. The following are what some scholars have to say about the meaning of the Life-Approach method.

Langtree (1997) asserted that the confessional approach of teaching religion failed because it made false assumptions about learners' religiosity and failed to relate religion meaningfully to students' lives. This is, very unfortunate

because "within several of the great world religions moreover, there is wide variety of sects and schools of thought" (Anderson, 1984, p. 13). So is it right for a teacher to try to convert his or her learners to their faith where learners come from diverse religious denominations in teaching religious education through the methods they employ?

Kerry (1984) made his stance clear about the Life-Approach method when he posited that "children need to find passages within the Bible which are *related to their own experience and understanding of life***,** as well as being within their own verbal comprehension" (p. 23) (emphasis added). This is a sure way of helping the learners to learn for life and also facilitate the transfer of what has been learnt in real life situations that they face. Kerry (1984) continues to say that: perhaps it would be useful too, to try to step into the child's shoes. Again as series of questions might help the teacher to do this, she might ask:

Following this method will the pupils

1. be active rather than passive learners?
2. handle real objects and materials?
3. be stimulated to explore ideas, problems and issues?
4. see the relevance of the task to their own lives?
5. come to share in the planning of their own learning? (p. 69)

There is no way the learner cannot participate actively, and see the relevance of the content of the Bible to their lives, when the teacher is able to link what is to be learnt with the real life experiences of the learners.

Loukes (1965) defined the Life-Approach method as starting to teach with the real, concrete and the present situation of the learners and letting them arrive at a religious understanding of those experiences. In the same way Muthoni (1992) defines it as the approach which emphasises the human person as receiver of Gods' self-revelation to humanity. The approach demands that God speaks to people through situations and experiences. According to Grimmitt (1973), "Religious concepts 'only come alive' when we are able to relate them sometimes partially, sometimes completely to our life experience" (p. 52). From the foregoing definitions of the Life-Approach method, it is obvious that the method essentially emphasises the use of the learner's day-to-day experience as the basis of teaching Religious Studies.

Onsongo (2002) gave the steps involved in the use of the method as follows:

1. Introduction

   The teacher involves the learners in reflecting on their day to day experiences related to the subject matter. This stage arouses their interest in the content.

2. Lesson Development

   This stage involves four steps where learners are taken through Human experience, The Biblical experience, Explanation and Application and then Response. According to her, these are ideally the steps to go through in using the Life-Approach.

There is a very strong justification for the relevance of the use of the Life-Approach method. Its chief advocates are Harold Loukes, Ronald Goldman and

Michael Grimmitt. These people saw it as an attempt to correct the body-of-knowledge emphasis of the Religious Education syllabi existing in Britain during the time (Onsongo, 2002). Some reasons why the Life -Approach method is preferred to other methods of teaching are given in the following statements:

i. According to DiGiacomo (1989), the topics should be introduced and illustrated, not just from the Bible and official church but also from a variety of sources, including the minor world of teen, the small world of teens together, the outside world of ordinary people, as well as events featuring famous people (p. 45).

ii. Religious beliefs cannot be taught as if they were facts; but they are by nature experiential (Grimmitt, 1973).

iii. The pluralist and materialistic nature of the present-society cannot allow for the use of traditional methods of teaching religion. To some extent, religion has a private affair so the approach in teaching it should be one that can help the learner to make his/her own free choice (Onsongo, 2002). She continues to say that the most important justification for the Life-Approach is that Jesus Christ, the gospel teacher, used the approach.

iv. The presence of religious education in the school curriculum must be justified on educational grounds. This means a shift from the traditional faith-fostering role to a life-centred education (Loukes, 1965).

v. "Ideally, education ought to prepare students to face the challenges of life. For this, education has to be linked with different life skills to measure up to these challenges" (Singh &Rana, 2004, p. 201).

On the whole as stated earlier, the degree of participation of the learner (learner centeredness) and how the content is related to the relevant previous knowledge of the learner makes this method a preferable one. Thus "the unique characteristic of the Life-Approach is that it would be performance oriented, based on action and behaviour modification" (Singh & Rana, 2004, p. 201).

Onsongo (2002) conducted a research on how to use the Life-Approach method in teaching Christian Religious Education in Kenyan Secondary Schools. The study found out that teachers were not adequately professionally trained to use the approach in terms of pre-service training. As a result, the teachers used the approach to a limited extent in teaching Christian Religious Education. It was also found out that the teachers encountered a number of problems in their attempts to use the Life-Approach, namely, shortage of time, an overloaded syllabus; inadequate guidance on how to use the approach, and inadequate teaching-learning resources to support the use of the method. It was suggested at the end of the study that, to improve on the use of the method, the inspectorate division of the Kenyan Education Service should intensify supervision of teachers in Secondary Schools so as to guide teachers, organise seminars and workshops on how to implement the syllabi using Life-Approach. Again, curriculum developers and book authors need to update the main Christian Religious Education text books to make it Life centred in approach.

The little problem that I have on the use of the Life-Approach method is the question of how to make up for the diversity or variations in learners' individual experiences because they come from different religious and social

backgrounds. What should be done in a situation where learners have contradictory experiences because, they come from different religious, economic, and social backgrounds? Here a common life experience which applies to a greater number of them will best suit them for their maximum participation. Learners should be given the opportunity to share their experiences with others and relate what is being learnt to their personal experiences.

Particular attention has been given to this method because undoubtedly, it is a teaching method:

"-that builds on the foundation of knowledge already possessed by pupils

-that encourages children to learn by doing

-that ensures that learning grows out of useful experiences

-that uses teaching aids effectively" (Farrant, 1980, p. 170).

The Existential Pedagogy

The existential pedagogy emphasises individual responsibility, individual personality, individual existence and individual freedom of choice. All people are fully responsible for the meaning of their own existence and creating their own essence of self-definition. Knowledge, as perceived by the existentialist, originates in and is composed of what exists in an individual's consciousness and feelings as a result of one's experiences (Anonymous, n. d.).

According to the *Cambridge Advanced Learner's Dictionary* (2008), "existentialism is the modern system of belief made famous by Jean-Paul Sartre in the 1940s in which the world has no meaning and each person is alone and completely responsible for their own actions, by which they make their own

character" (p. 489). In the same way, Kelly (2004) posits that "every human being, it is claimed, must be defined as a unique individual and not as a mere representative of some wider grouping" (p. 29). In this case the individual must be held responsible for his actions and inactions. In fact, for the existentialist, "The highest interest of the individual must be his own existence" (Onwuka, 1996, p. 153).

Having talked about the meaning of existentialism, the question is what is the role of the teacher in using the existential approach? The teacher must not exert his/her wishes on the members of the class. Each student is an individual and has his or her own personality as reiterated in the explanations above. For a teacher to try to determine what is best for students is effectively to impose his or her wishes on the students, to dominate them. This is destructive of individuality and personality and is wrong in teaching religion. The teacher should rather act as a resource person or a facilitator in the course of teaching CRS in Senior High Schools so that he or she will develop understanding of concepts by encouraging creativity and discovery learning. The learner's individual personality, forming the centre stage of CRS lessons, is a sure way of preventing the teachers from implanting their own beliefs into the learners through non rational means.

> In the personalist and existentialist approach, religious education offers itself as a contribution to the young person's quest for meaning in life. This is the religious education which deals with ultimate problems, with mystery and awareness that which seeks to provoke an enquiry into values

and commitments in living. This is another important strand in the British tradition of religious education (Hull, 1993, pp. 16-17).

Thus in teaching CRS in the Senior High Schools, the attention of the teacher should be on trying to help the learners to find meaning in their individual lives and not the teacher's own life. We cannot draw a very sharp line between the life of the teacher and the life of the learner because there are cases where the learner's life is influenced partially by the teacher's life. Nevertheless, the CRS teacher is expected to teach and not preach.

In the meantime, in teaching CRS, there is the need to use the pedagogy that

i. seeks to create in students certain capacities to understand and think about religion as a unique mode of thought and awareness,

ii. starts with the child's own feelings, acts and experiences and helps children to build conceptual bridges between their existential experiences and the central concepts of religion" (Grimmitt, 1973, p.xv).

The core of the existential approach to the teaching of Christian Religious Studies centres on these three points stated by Grimmitt (1973). This approach to Christian Religious Studies is grounded in making the learner's characteristics, namely the existential experiences become the basis for forming religious concepts. Although it is as important and necessary to the CRS teacher to follow the existential approach in teaching, existential approach has its own limitations in its attempt to enable learners to discover meaning and purposes in their lives, the personal/existential approach tends to become excessively individualistic (Hull, 1993). Obviously this approach tends to personalise religion extremely. Though

this would promote peaceful coexistence of the numerous variations in the various religions, it does not capitalise on the strong similarities and commonalities that exist in various religious denominations. After all "All religions have theology of other religions' whether expressed or not, and today we are all under pressure to review it, relate more positively to people of other faiths and grow, in togetherness and as a community" (World Council of Churches, 1986, p. ix). The question which then comes to mind is: Is it possible to individualize the work of the teaching process to provide specifics for each student? What happens if the existential experiences contradict?

In a nutshell, "Religion permeates into all the departments of life so fully that it is not possible to isolate it. A study of these religious systems is, therefore, ultimately a study of the people themselves in all the complexities of traditional and modern life" (Mbiti, 1979, p. 1). Therefore an approach that focuses on the individual lives of the learners is a laudable one which must as a necessity, be employed in teaching CRS.

Concept Cracking Pedagogy

The Stapleford Project was set up in 1986 by the Association of Christian Teachers in England with the purpose of producing a range of materials to support teaching about Christianity in school religious education. The methodology of the Project has become known by the catch phrase *Concept Cracking*. This has been described in detail elsewhere (Cooling, 1994a & Cooling, 1996), but can be summarized as a two stage process.

1. Stage 1 focuses on the importance of teachers understanding their subject matter and being clear as to exactly which concepts will be the focus of their teaching when covering any particular topic. The key tasks in this stage are, firstly, to unpack the range of concepts that are embedded in the chosen topic and might be the focus of reaching and, secondly, to select one or two of these to be the focus of attention in this particular unit of work. Selection will be on the basis of a number of criteria including the appropriateness for the pupils, the balance in a scheme of work and, of course, the importance of particular concepts within Christianity.
2. Stage 2 entails planning teaching activities which translate the selected concept into a form that makes sense in the pupils' world of experience. This stage entails making links or bridges with the pupils' world and then designing learning activities which help the student both to understand the religious concept and its significance for the believer and to re-apply the concept in a way that helps the student in their own understanding of the world. There are parallels here with the work of other projects and in particular the ideas of "bridges" and "edification" in the Warwick RE Project (Jackson, 1997) and the idea of the study of a religion making "a gift to the child" in the Birmingham University Project (Grimmitt, 1991 & Hull, 1996).

As a practical classroom tool, the *Concept Cracking* approach has been broken down into four specific steps, which can be remembered using the acronym USER. Steps 1 and 2 constitute stage 1and steps 3 and 4 constitute stage

2 above. I will illustrate this using the story from the New Testament where Jesus drives away the traders from the Temple in Jerusalem.

1. **Unpack the Concepts**

Before teaching any topic it is important to be aware of the different theological concepts that underpin it and are important to understanding its meaning and significance. If teachers are not clear about the ideas being covered, the pupils certainly will not be. In this case, the key concepts include anger, injustice, holiness, Jesus as God's son and judgment.

2. **Select One or Two Concepts as the Focus for the Lesson**

If a lesson is not focused on one or two key concepts that are being taught, the pupils will become confused. In this example the concept of righteous anger could be a suitable focus.

3. **Engage with the Pupils' World of Experience**

This is perhaps the hardest and yet the most important stage in the process. The key is to find parallels in the pupils' world which relate to the concept of righteous anger. One possibility would be to ask pupils to give examples of instances when they have been angry and to divide these into occasions when they were right to be angry and occasions when they were wrong to be angry. The purpose of the activity is not so much to make a judgement on the particular instances, but to establish the idea in pupils' minds that there are right and wrong forms of anger and to begin the process of searching for criteria to distinguish between them. This will build the bridge between the pupils' world and the religious concept.

4. Relate to the Religious Concept

This is the point at which to introduce the story from the New Testament. An effective way of doing this is to use the painting called *Christ driving the traders from the Temple* by El Greco (Cooling, 1998) and to ask the pupils to comment on how Jesus' behavior is being portrayed in the painting. In particular they will notice there are two groups of people, those who are the object of his anger and those who are being affirmed. A role play could then be used in which pupils take on the roles of members of the two groups and debate Jesus' behavior. Finally there will be the need for a whole class discussion in which the question of why the Gospel writer thought Jesus' anger was justified would be explored. This should draw out themes like the importance of resisting injustice and exploitation, the holiness of the Temple and Jesus' special relationship with God which made his anger uniquely justifiable as far as the Gospel writer is concerned. Then pupils should be encouraged to express their own views, perhaps though the medium of a diary entry from someone who was present in the Temple, as to whether or not Jesus' anger was justified. This can then lead into an activity where pupils reflect on justified and unjustified anger in their own lives and its management.

Steps one and two represent important preliminary work which must be done by teachers to clarify their own understanding of the topic. This is very important as a way of giving a lesson a clear focus. However, the actual teaching will often begin with step three in order to ensure that the lesson is relevant for the

pupils. Many lessons will have to begin with an activity that is designed to build the bridge between the pupils' world and the religious topic.

Other Pedagogical Strategies for Teaching Religious and Moral Education

The discussion method: Myers (1986) stated that the discussion method is used in "engaging students' interest, challenge students, present thinking process and create the atmosphere where active reflection and interchange replaces caution and passivity", (p 54). This method provides an excellent opportunity for students to practice their oral skills, it helps to clarify students' thinking and listening. It also provides good practice for problem solving. On the contrary, the method is not suitable for all topics. It is likely to be dominated by a few students and it may involve unnecessary argument which may result in waste of instructional time.

Field trip: Bwatwa (1990) asserts that a field trip is a carefully-arranged event and or method in which a group of people visit places of interest for first-hand observation and study. The field trip can range from a short visit to one single location to a tour of several days, covering several areas. Therefore, a field trip method is a method of teaching by organising trips for on-the-spot study, investigation and discovery, (p 38). Nacino, "et al", (1982) contend that field trips are often planned to places where the students will be able to see in practice or reality what they have studied in class. The method provides first-hand learning experiences, makes learning more meaningful and lasting. It also gives opportunity for improving social relationship among students and between students and teachers, (Nibbelt 1980). Unfortunately, many teachers lack the skills to organize field trips; it is time consuming, it is usually costly to be

undertaken and can throw the programme of the school out of gear. In-spite-of the cost involved teachers should occasionally organize field trips for students.

Dramatization: It is the most structured dramatic activity. It is used to assist students to identify themselves with persons, activities and situations that are being studied. It requires a prepared script, memorization of sets of lines, rehearsal and an audience. It is principally used to show linguistic events, to present life in another period or demonstrate some problems of living and to prevent growth of a movement or an idea. Dramatization helps sharpen the students' power of observation, gives students insight into the feeling of others, provide experience in democratic living and contributes to development of positive values and attitudes. It also releases emotions and channels them into constructive use; it fosters group identification and social skills by allowing the young to practice a variety of social roles, (Salts and Brodie, 1982). The demerits of this method include lack of funds, lack of time, lack of resources and language constraints.

Role play: Role play is described by Shaftel and Shaftel (1982) as "a group problem solving in spontaneous enactment, followed by guided decision." They describe role play as a spontaneous acting out of a situation. It is an efficient technique for gaining insight into sensitivity and awareness. It is a potent technique for training in leadership, human relationship skills and developing skills in decision making and problem solving. It makes dull students active and maintains students' interest in a lesson. It is also very useful for extension of

vocabulary, (Lee, 1978). The demerits of this method include lack of time, lack of resources, dominance of brighter students and language constraints.

Resource persons: A resource person helps in providing detailed information about topics which then leads to proper understanding of lessons. By this, lessons then become meaningful, efficient and concretized. The use of resource persons prevents teachers from giving wrong information on a topic. Lessons become interesting, lively and understandable, (Awuah, 2000). Lack of funds, lack of resources and non-availability of resource persons are some of the limitations of this method.

Project method: The project method promotes a democratic way of life, enhances problem solving, promotes cooperation, creativity, freedom of speech and generates meaningful and purposeful activities. The method is also good for character training, and creates in learners a sense of responsibility (Akinpalu, 1981). On the other hand, the method may lack competent teacher who would use the method. It may not be suitable for students who shirk responsibility, it may be time consuming and there may be lack of requisite books to guide the use of the project work.

Lecture method: The lecture method provides information on topics which are not readily available or easily obtainable to students. It trains learners to be good listeners; it ensures the maximum use of students' time and efforts; it improves the recall ability of learners; it has high motivational and inspirational values and provides students excellent opportunities to learn to take down notes, (Tamakloe, "et al", 1996). The limitations of this method are that there is very little scope for

pupils' activity; it does not take into consideration individual differences; it spoon-feeds the students without developing their power of reasoning and the speed of the lecturer may be too fast for the learner to grasp the line of thought.

Question and answer method: It is a way of teaching and learning, where a teacher asks a series of questions that demands responses from learners. It is used to stimulate thought and lead to a deeper understanding. It is used to clarify misunderstandings, and difficult issues which otherwise might not be understood through the normal teaching method. It also gives opportunities for students to go and carry out further research and enquiry about a topic. The limitations of this method includes lack of vocabulary, inattentiveness and ability to understand questions which may be posed to pupils (Flanders, 1999).

Fontana (1981) again made a revelation that there are some teaching methods, which are least explored by many teachers within the context of teaching RME. These unexplored teaching methods are Education drama with its sub components - scripted and extempore drama, socio drama or role play and Dance drama. Others are Music and Art, and Films, Tapes and Communication Media.

In further search for teaching methods for the adoption for RME teachers Fontana and some other scholars in moral and religious education argued for the adoption of the unexplored teaching methods pinpointed earlier. In fact, these methods have been explained and their accompanying advantages highlighted.

Education Drama: Education drama is very broad, it includes: mime, movement improvisation, play acting, role playing socio drama, dance and storytelling.

Education drama as method of teaching has to do with dramatization and its value on the person engaging in it. It has an important contribution to make in schools at all levels (Nduka, 1974). Ocitti (1994) emphasizes that, most teachers are aware that drama has the capacity to capture and stimulate interest and it makes it a good motivator, Drama should however, not be seen merely as an educational aid or a teaching method. On the contrary, drama is an imaginative living learning experience (p.138).

Furthermore, drama is a learning experience or learning situation in its own right. Through drama, we seek to provide the child with an opportunity, not only to expand his personal experiences, but also to examine them in depth from a number of different viewpoints. Majasan, (1967) comes in on drama exposition and states that the aims of education drama serve to indicate how drama as a process seeks to contribute to personal and social awareness. The aims of education drama therefore are: to develop the personality of the growing child or learner; to develop the powers of imagination, self-expression and communication; to develop an awareness of the other's position and the ability to empathise; and to foster group identification. There are other roles that education drama features and these are personal awareness and social awareness.

Music and Art: Music and art play important roles in the impartation of moral lessons to the people of Africa. Consequently, many songs deal with topics or ideas which in essence are religious or moral or both. Indeed, songs or music are remarkably successful in communicating in the language of today some of the "truths" which traditional moral and religious language fails to communicate. It is

clear that music has an important contribution to make to our task of educating pupils towards moral and religious understanding (Foster, 1965). Goldman also noted that "at different levels, RME lessons should provide students with an opportunity to examine moral and religious culture in terms of the values and attitudes which underlie it" He added that there are various approaches or modes, such as, listening to songs, and exploring their lyrics; incorporating songs within lessons to illustrate and develop points; involving the class in writing their own songs and then perhaps introducing them during school's assembly.

The other part of this subsection- art, can be used through series of lessons to teach moral and religious values. For example, on how different artists have depicted Christ and the Christian faith would not only help older pupils to appreciate the nature of symbolism but also how symbols change to meet man's changing circumstances and demands. Lastly, a consideration of trends within contemporary cinema and theatre might also help pupils (pupils) to understand how man's beliefs and values, and how they may be expressed "evolve" in accordance with the present existential situation (Gula, 1989).

Films, Tapes and Communication Media: The last but not the least of the unexplored methods of teaching are the use of films, tapes (compact discs) and communication media in general are discussed in this subsection of the review.

Films: To start with, a good film is one which is able to project into the classroom something of the "feel" or atmosphere of a religion as well as portraying its distinctive external features. Extensive examples are given to buttress the above point. He said, for example, a film dealing with pilgrimage in Islam should

communicate something of the atmosphere of pilgrimage; the feelings of those participating, the brotherhood existing among pilgrims, the holy actions and prayers, the sacrifice and the ensuing celebrations. Additionally, "the noise" of pilgrimage is distinctive; it has a character of its own; it is part of the experience of pilgrimage. To replace this with the monotonous description is to reduce the effectiveness of even the very best of photography" (Woodhouse, 1985, p. 127)

Tapes: The other aspect of this subsection is the using of tape recorders in teaching. Here, Hirst (1968) gives a graphic description of what the tape recorders can do in teaching RME and other subjects in the 'arts' domain. He indicated that, "the tape recorder is an important teaching tool in the classroom. Furthermore, there can be distinction between the use of tape recorder as a means of presenting material to pupils and its use by pupils to present their work. Teacher- made tapes often take a long time and much patience to produce, but they are very useful in presenting a 'stimulus' or development in the lesson. He gave examples to buttress the above point, thus, a Depth Theme in 'sounds' for a class of infant may be introduced by a tape of home, street and street sounds for the pupils to identify and discuss. Again pupil-made tapes are not easily produced but the time and effort expended on overcoming the technical difficulties is easily compensated for by the enthusiasm and enjoyment with which work of this kind arouse in the pupils. The enthusiasm and enjoyment which is transferred to the topic or subject matter from simply recording their own poems and songs, description of their homes and families and accounts of their experiences; by this

token, young pupils contribute to their own linguistic development as well as practice the skill of looking more deeply into the things around them.

Communication Media: The last part of this subsection is communication media and these include radio, telephone, newspapers (magazines included) and the internet. One of the commonest medium of communication media is newspaper producing a class newspaper with junior high school students is another way in which they can be involved in a learning experience which has ramifications beyond their immediate situation Hyde (1967). He added that working on a class newspaper especially with junior high school pupils, should begin with a careful consideration of the reason for newspapers; what a newspaper tries to do; what a newspaper should contain; and what goes to make a good newspaper. Hoose (2000) on the other hand indicated that, "if a class newspaper is decided upon, it is essential that care is taken over the allocation of different tasks to pupils. Initially, it was a good idea for the paper to reflect the class' or the schools' news" (p. 67). This will involve work being produced in class, interviews with teachers, care takers and kitchen staff if there is any, school sports results, articles by pupils on their hobbies reports of visits, photographs, cartoons, crossword puzzle, advertisements and information on forth coming events.

Finally, Hyde (1967) postulates that, topics that appear in a class newspaper or schools' newspaper is likely to become an integrated curriculum on its own right. He suggests that, pupils can be put into groups of six and each of these groups can be made to produce one page covering certain specified topics.

Content Knowledge (CK)

Content knowledge (CK) is knowledge about the actual subject matter that is to be learned or taught. Clearly, teachers must know and understand the subjects that they teach, including knowledge of central facts, concepts, theories, and procedures within a given field; knowledge of explanatory frameworks that organize and connect ideas; and knowledge of the rules of evidence and proof (Shulman, 1986).

Many people look up to religion for moral guidance. There cannot be a successful moral education without religion. However, if the content of a moral education programme is based on a particular religion it becomes dangerous because when the religious beliefs are rejected there appears to be no longer any basis for moral principles (Downey & Kelly, 1978). They further explained that there is no justification for teaching religious doctrines or for attempting to establish faith or belief in them since to do so is to discourage the open and critical approach to knowledge which is the essence of education and to offer us "facts", and "knowledge" whose basis are highly problematic.

Where links between morals and religion have been claimed, these links are forged with the doctrinal aspects of the religion, for example it is because "God is love", that is why we are urged to love our neighbours. This general development draws our attention to the problem surrounding moral assertions as well as those of religious knowledge; it puts religious knowledge at risk. If we cannot justify teaching doctrinal aspects of religion, then we cannot justify teaching moral precepts that are based on them. If our approach to the teaching of

religious and moral education is liberal and open ended, the implication of this is that students are to be encouraged to make up their own minds on religious issues to accept or reject, to stand on their own feet in such matters (Smart, 1968).

If however their considered choice is to reject religion, the result of linking religion and morality will be rejection of morality too. Not only is it undesirable, it is also a logical and psychological impossibility. For while it is possible to live without religion, it is clearly not possible to live except at a level of animal existence, without any set of moral values or principles to guide one's behaviour or one's human choice, (Kirk, 1979). It needs to be mentioned however, that, religion is not the only means to a moral life as people can be morally upright without necessarily being religious.

Content might be described as the knowledge, skills, attitudes and values to be learned(Nicholls & Nicholls, 1972). They further stated that it is usually acknowledged that there is far more to be learned than is possible during the period of school education. According to Igwe (2003) before the selection of content for a course, it should satisfy certain criteria. These are:

1. Significance – this refers to the potentials of the curriculum to contribute to the essential skills, knowledge, abilities and values. The criterion addresses the issues of value, worth and foundational knowledge. Examples of content that provide basic skills are reading and writing for literacy and communication, arithmetic for numeracy, history for cultural heritage and identity.

2. Relevance – content is selected on the basis of the educational purposes and goals decided upon by the society served by the school. It ensures that the content reflects the cumulative traditions, values, needs and aspirations of the society. The emphasis is on inculcating creativity and problem solving skills which emphasises how to think and not simply what to think. Relevance gives curriculum its true cultural base and appropriate context.
3. Utility – utility or functionality means the content must have direct contribution to an individual's personal life and role in the society. Education through the school must be useful to the individual and the society.
4. Interest – it refers to the needs of the individual in terms of motives, readiness, capacity, attitudes, etc. Students' interests relate the curriculum to the child and promote self-esteem, personal fulfillment and mastery learning.
5. Continuity – this demands the selecting of the basis which could progressively be built upon. It involves building appropriate connections in curriculum content either on the basis of prerequisite or a progression from simple to complex, known to unknown, general to specific or progressive differentiation and refinement of concepts.

Consequently, the scope of content of the CRS programme in the Senior High School covers selected Bible passages/themes from the Old Testament, Synoptic Gospels, Acts of the Apostles, the Epistles of James and 1 Peter. These have been carefully selected to expose students to biblical principles and values to help them in making sound value judgments when confronted with complex situations and problems in their lives. The syllabus uses Biblical materials as

sources for critical engagement and discussion of issues confronting Ghanaians today (Teaching Syllabus for Christian Religious Studies, SHS).

Pedagogical Content Knowledge (PCK)

According to Shulman (1987), PCK is the one body of knowledge that is of "special interest" because it represents a "special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding" (p. 8). This body of knowledge allows a teacher to take the content and "transform" it in order to make it learnable for someone else. Teachers then become the gatekeeper mediating between content specialists and students of the discipline. He further states that, a well-developed PCK allows teachers to strongly align the content with pedagogy, while enabling them to easily identify when students are misunderstanding.

Ball, Hill and Bass (2005) identifies two dimensions of pedagogical content knowledge (PCK): A teacher's general comprehension of the subject and knowledge of how to develop specific understanding of the subject. More specifically this is everything a teacher does or knows to do to promote learning and understanding in his or her students. All teachers use both dimensions of PCK in their professional practice (Loo, 2012), but PCK is more refined in some teachers than others, and this leads to different applications of teaching specific knowledge (Shulman, 1986).

Moreover, Gudmundsdottir and Shulman (1987); Monte-Sano and Budano (2013), also postulate that PCK is enacted when teachers provide students with a new representation of the idea/concept. According to them PCK is largely

contingent upon "wisdom in practice", it is not surprising to find that research on PCK in early career teachers largely concludes that PCK exists in such a formative stage that it is difficult to observe. This means that for beginning teachers, those in the first three years of teaching, enactment of PCK begins before they ever encounter students. It begins by deciding what content to teach, and how to organize the content in a way that mirrors how content specialists approach their disciplines. In this regard, Shulman (1987) emphasizes that, teaching "necessarily begins with a teacher's understanding of what is to be learned and how it is to be taught". Thus, no teacher can enact his/her PCK and transform anything for learners without first having content knowledge necessary to teach.

Technological Pedagogical Knowledge (TPK)

Technological Pedagogical Knowledge (TPK) is knowledge of the existence, components, and capabilities of various technologies as they are used in teaching and learning settings, and how teaching might change as a result of using particular technologies (Mishra and Koehler, 2006). Graham, Cox and Velasquez (2009) see TPK as the knowledge of general pedagogical activities that a teacher can engage in using emerging technologies. Again, Schmidt, Baran, Thompson, Mishra, Koehler and Shin (2009), view TPK as "knowledge of how various technologies can be used in teaching and the understanding that using technology may change the way teachers teach" (p. 125). To Owusu (2014), TPK is knowledge of using technology to implement different teaching methods.

From these definitions, it is clear that TPK deals with how teachers are able to make their subject matter knowledge comprehensible and accessible to students through the use of technologies. Therefore, TPK is an understanding that a range of tools exist for a particular teaching task, the abilities to choose a teaching tool based on its fitness, strategies for using the teaching tools, and knowledge of pedagogical strategies and the ability to apply those strategies for use of technologies. Again, it becomes obvious that technological content knowledge is pre-requisite for technological pedagogical knowledge. This is because knowing about the existence of technological aiding devices is crucial, and the art of knowing how to effectively introduce these devices to the appropriate contents or topics and at what particular time in the instructional process epitomizes the whole idea expressed here. It should be noted, therefore, that it is also a general pedagogic activity that embraces teacher craft; thus the whole business of improvising and being innovative so that the ultimate result yields effective content delivery to students. Students going through their pre-service preparation programme should therefore be conscious of this noble demand of the profession in the 21st century implication, teacher education programmes must expose prospective teachers to ways of representing and formulating subject matter with repertoire of emerging digital devises.

Technological Content Knowledge (TCK)

Technological Content Knowledge (TCK) is an understanding that technology and content influence and constrain each other (Mishra & Koehler, 2009). This shows that there is a bidirectional relationship between technology

and content. On one hand, content constrains the representations given with technology, and on the other hand, technology can constrain the kinds of representations possible. This view is in consonance with the views expressed earlier by Mishra and Koehler (2006) that technological content knowledge is about the manner in which technology and content are reciprocally related. That is to say that technology constrains the representation of the subject matter taught. Conversely, technology affords the types of content to be taught. Mishra and Koehler, therefore, indicate that teachers need to know not just the subject matter they teach but also the manner in which the subject matter can be enhanced by the application of technology, and this knowledge must be flexible enough to permit time and context adjustment. In view of this, Clark (2013) suggests that technological content knowledge must be "flexible, creative, and adaptive" to enable teachers manage, direct and employ technology in context-specific ways.

Technological Pedagogical Content Knowledge (TPACK)

Technological Pedagogical Content Knowledge (TPACK) is a form of knowledge that goes beyond the three separate components such as technological knowledge, technological content knowledge and technological pedagogical knowledge. TPACK is a synergistic construct that combines these separate knowledge base for effective teaching. Mishra and Koehler (2009) and Owusu (2014) posit that TPACK treats technology, content, and pedagogy in unionism and blends the three separate constructs (content, technology and pedagogy) in a complex relationship. It is the understanding that arises from the interactions and interplay between and among technology, content, and pedagogical knowledge

that forms the basis of meaningful technology integration in teaching. They further argue that TPACK underlies the basis of good teaching which is informed by technology and requires an understanding of the representation of concepts using technologies. It also embraces the deployment of pedagogical techniques that use constructive ways to teach content, knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face.

The TPACK framework suggests that the integration of technology in teaching and learning requires a thoughtful interweaving of all three sources of teacher knowledge: technology, pedagogy and content. The basis of this argument as suggested by Mishra and Koehler (2006) is that there is no single technological solution that applies for every teacher, every course or every classroom activity. As a result, Mishra and Koehler note that quality teaching requires the understanding of the complex relationships between technology, content and pedagogy, and using this understanding to develop appropriate, context specific strategies and representations. Therefore, teacher preparation programmes should prepare student-teachers towards the use of a more comprehensive framework for teaching such as TPACK. This lends credence to Clark's (2013) position that technology integration should form the basis of teacher preparation in relation to specific Pedagogical Content Knowledge (PCK). This is to enable student-teachers understand how to employ twenty-first century technology for instructional purposes. Clark (2013) further proposes that for student-teachers to

be prepared to integrate technology in their teaching, three conditions must be followed;

1. Student-teachers need to acquire foundational technological knowledge and technical literary to deal with technologies.
2. Student-teachers should be afforded opportunities to experiment with how to combine this technology-specific knowledge with their knowledge of pedagogy.
3. Student-teachers should be able to repurpose technology in their efforts to integrate technology into their specific instructional settings. In essence, student-teachers should be given ample opportunity to learn about technologies and how they can connect these technologies with their pedagogical practices to change classroom instruction.

Applying the TPACK Framework to Teaching

How are teachers to acquire an understanding of the complex relationships among content, pedagogy, and technology? The standard approach suggests that teachers simply need to be trained to use technology. Underlying this approach is a view of technology that sees it as being a universally applicable skill; unlocking the power and potential of technology can be achieved by acquiring basic competency with hardware and software packages. This approach is best exemplified by the plethora of state and national technology standards that have been implemented recently and that emphasize enhancing teachers' knowledge of current versions of hardware and software (CEO Forum on Education and Technology, 2000; Handler & Strudler, 1997; Hirumi & Grau, 1996; National

Council for Accreditation of Teacher Education,1997; U.S. Congress Office of Technology Assessment, 1995; U.S. Department of Education, 2003; Wiebe & Taylor, 1997; Zhao & Conway, 2001).

The leap of faith, however, is that by demonstrating their proficiency with current software and hardware, teachers will be able to successfully incorporate technology into their classrooms. Lankshear (1997) described his emphasis as a form of applied technocratic rationality—a view that technology is self-contained and has an independent integrity, and that to unlock its potential and power requires merely learning certain basic skills. As a consequence of these initiatives by policy makers, teacher educators, and technology enthusiasts, we see a wide range of workshops and teacher education courses about general software tools that have application across content and pedagogical contexts. This content-neutral emphasis on generic software tools assumes that knowing a technology automatically leads to good teaching with technology. Standard techniques of teacher professional development or faculty development, such as workshops or standalone technology courses, are based on the view that technology is self-contained and emphasise this divide between how and where skills are learned (e.g., workshops) and where they are to be applied (e.g., classrooms). This is somewhat akin to the kind of knowledge representation portrayed in Figure 3.Most scholars working in this area agree that traditional methods of technology training for teachers—mainly workshops and courses—are ill-suited to produce the ‘‘deep understanding’’ that can assist teachers in becoming intelligent users of technology for pedagogy (Brand, 1997; Milken Exchange on Education

Technology, 1999; U.S. Department of Education, 1999). As we have argued (Koehler & Mishra, 2005; Mishra & Koehler, 2003), this emphasis on competencies and checklists of things that teachers need to know is inherently problematic for a range of reasons.

The use of specific software packages by teachers not only makes their knowledge too specific to be applied broadly, but it also becomes quickly outdated. Technology is changing so fast that any method that attempts to keep teachers up to date on the latest software, hardware, and terminology is doomed to create knowledge that is out of date every couple of years. Most software tools available today are designed for the world of business and work, not education. As Mishra and Koehler (2003) argued, most software tools are rarely created as solutions to pedagogical problems. More often than not, they are created as potential solutions to problems in the world of business as anticipated by programmers and other developers.

Converting these general tools for classroom teaching is neither trivial nor obvious. It requires the teacher to engage with the affordances and constraints of particular technologies in order to creatively repurpose these technologies to meet specific pedagogical goals of specific content areas. An emphasis on merely learning the technology may lead to an emphasis on pupils learning technology (technology as the subject and content of learning) rather than the subject matter that they are supposed to learn. Context-neutral approaches to technology integration encourage generic solutions to the problem of teaching. However, technology use in the classroom is context bound and is, or at least needs to be,

dependent on subject matter, grade level, pupil background, and the kinds of computers and software programmes available. Our argument is not that such generic uses are never useful. However, despite valuable generic uses of technology (such as grade books), such approaches do not avail the full potential of technology for teaching specific subject matter.

Finally, standard checklists of technology skills are very efficient means of listing what teachers need to know, but offer little suggestion on how teachers are to achieve these skills. This often leads to the development of technology learning situations that adhere to the letter of the standards but go against the spirit of true technology integration. For example, workshops to teach specific hardware or software packages, we argue, lead to the accumulation of inert facts (Whitehead, 1953), as opposed to knowledge integration or application.

Teachers have often been asked to learn to apply these skills in their own classrooms by themselves (Kent & McNergney, 1999), usually through trial and error. Though part of the problem is shortage of resources (time and money), it is believed that there are deeper and more intractable issues related to values, goals, and methods that need to be addressed if we are to develop appropriate and useful ways for teachers to integrate technology in their classrooms. In terms of the TPCK framework that have been proposed, context neutral approaches are likely to fail because they overemphasize technology skills (the ‘‘T’’ in the model) without developing pedagogical technology knowledge, technological content knowledge, or technological pedagogical content knowledge. In other words,

merely knowing how to use technology is not the same as knowing how to teach with it.

A survey by the Milken Family Foundation and the International Society for Technology Education (ISTE) found out that teacher training programmes in general do not provide future teachers with the kinds of experiences necessary to prepare them to use technology effectively in their classrooms (Milken Exchange on Education Technology, 1999). Specifically, they found out that formal standalone IT coursework does not correlate well with technology skills and the ability to integrate technology into teaching. They recommended that teacher preparation programmes increase the level of technology integration in their own academic programmes. More recent standards, such as those of the International Society for Technology Education (ISTE) and the National Council for Accreditation of Teacher Education (NCATE, 1997, revised in 2001), have moved away from an emphasis on just basic skills and have enumerated a series of higher order goals that are essential for effective pedagogy with technology (Glenn, 2002a, 2002b; Handler & Strudler, 1997; Wise, 2001).

A review of the recent teacher education research regarding technology will show numerous examples of teacher education programmes that have implemented instructional technology in ways that encourage integration (for examples see, Fulton, Glenn, & Valdez, 2003; Fulton, Glenn, Valdez, & Blomeyer, 2002; Hacker & Niederhauser, 2000; Loucks-Horsley, Hewson, Love, & Stiles, 1997; Niederhauser, Salem, & Fields, 1999; Niederhauser & Stoddart, 2001; Strudler & Wetzel, 1999). Most of these approaches have involved

providing teachers and teacher candidates with experiences of real educational problems to be solved by technology. Our work on learning technology by design also capitalizes on the idea of involving teachers in authentic problem solving with technology.

The Concept of Religious Education

Religious Education (RE), which replaced Religious Instruction (RI), evolved out of religious schooling and has been part of the school curriculum since the Elementary Education Act 1870, which established elementary education of all children aged 5–13. The Education Act 1944 (often called “the Butler Act” after the Secretary of State responsible for it) established religious instruction as a compulsory subject in order to "lay the basis for a morally stable society rooted in its common Christian heritage" (Chadwick, 1997).

RE is a statutory part of the basic curriculum and all maintained schools by law and academies and free schools, by virtue of their funding agreement, must provide RE for all children attending school. Parents have the right to withdraw their child from all or any part of RE. This includes parents whose children attend a faith school. If pupils are withdrawn from RE, schools have a duty to supervise them, though not to provide additional or alternative teaching (School Standards & Framework Act, 1998).

Religion is the experience and expression of faith. Learning about religion and learning from religion are important for all pupils, as religious education (RE) helps pupils develop an understanding of themselves and others. RE promotes the spiritual, moral, social and cultural development of individuals and of groups and

communities (Qualifications & Curriculum Authority, 2009). In particular, RE offers pupils with learning difficulties opportunities to: develop their self-confidence and awareness, understand the world they live in as individuals and as members of groups, bring their own experiences and understanding of life into the classroom, develop positive attitudes towards others, respecting their beliefs and experience, reflect on and consider their own values and those of others, deal with issues that form the basis for personal choices and behavior. In response to these opportunities, pupils can make progress in RE: by moving from a personal to a wider perspective, by increasing their knowledge of religious beliefs, practices and experiences, through developing understanding of the meaning of stories, symbols, events and pictures, and through developing and communicating their individual responses to a range of views (Qualifications and Curriculum Authority, 2009)

Good planning is essential if RE is to be delivered effectively. One of the criticisms that used to be made of RE provision, particularly when it was delivered entirely through the thematic approach, was that it often lacked continuity and progression. According to Bates (1992), the main criticisms of this approach were 'its lack of coherent structuring, its piecemeal approach to knowledge, its repetitiveness and lack of progression'. Happily, the situation has now changed for the better. Today, all schools are aware of the need for careful long, medium and short term planning in RE as well as in other subjects.

Recognizing good practice in primary school religious education is easier today than it has ever been. One reason for this is that several publications have

been produced in recent years outlining in specific terms what is meant by good practice (Bastide, 1999). These publications suggest a number of teaching strategies for developing concepts, attitudes, skills and knowledge (CASK), which are appropriate for learning in religious education. Key skills vary slightly from publication to publication but typically include empathy, reflection, communication, reasoning, enquiry, analysis and evaluation. The following are characteristic of the key attitudes included for development: self-esteem, respect, open-mindedness, sensitivity, critical awareness, appreciation and wonder (Langtree, 1997). There is therefore a strong emphasis in most recent RE publications and in agreed syllabuses on giving pupils first-hand experience of religion. This will almost certainly include providing pupils with opportunities to visit places of worship, to receive visits from members of different faith communities, and to explore religious artefacts.

During the years following the 1988 Education Reform Act there was considerable debate regarding the desirability of assessing religious education. Those who argued against the idea pointed to the private nature of religion, the undesirability of assessing children's spirituality and the demands that such assessment would make on teachers' time. However, the view taken by the majority today is that if RE is to be taken seriously and given equal standing to other subjects then it should be assessed. Furthermore, it is argued that assessment enables 'teachers, governors and parents to know what is being achieved in religious education' and 'promotes professional efficiency, giving clarity to hard-pressed, often non-specialist teachers' (Watson, 1993). There is general

agreement that assessment in RE should not involve any evaluation of pupils' private beliefs or their spiritual development.

It would therefore be important that, when developing the RE curriculum, schools will take into consideration local requirements and regional variations in cultural and religious experiences, as this subject guidance is intended to support the guidance available through agreed syllabuses and the national curriculum programs of study and show ways of teaching RE to pupils with learning difficulties.

Historical Development of Religious Education as a subject of study in Ghana

The study of religion in Ghanaian public schools has evolved to include the study of ideas and practices of a variety of religious traditions. The population of Ghana today includes significant numbers of people from diverse racial, ethno cultural and religious backgrounds and pupils of Ghanaian public schools seek to foster respect for and understanding of different cultures, including their forms of religious expressions (Wiredu, 1980).

According to Graham (2011), Portugal was one of the first European countries to make an impact on the economic and educational life of this country. They were probably the first to open a school in the country and their aim was to convert the people at Elmina to the Catholic faith. King John III had given instruction to the Governor at Elmina in 1529 "to provide reading, writing and religious teaching for African pupils" (p1). In 1637, the Dutch seized the Elmina Castle and they restarted the school in the Castle. The Dutch Charter of 1621

(renewed in 1640) had also given instruction for the setting up of Christian Schools. McWilliam (1959) stated that in 1701 the Society for the Propagation of the Gospel (S.P.G.) founded in England sent Rev. Thomas Thompson to Cape Coast and he started a School at the Cape Coast Castle. His aim was to convert his students to the Protestant faith. In 1737 the Danes started a school at the Christiansburg Castle; this school was established by the Moravian church. The French missionaries who came to the Gold Coast also founded a school at Axim between 1638-1641. Education in Ghana, both public and private, therefore, had a religious dimension from the beginning.

However, it is very difficult to determine when Religious Education began in the Gold Coast, now Ghana, for its beginnings is as old as the Indigenous Religion of Ghana (African Traditional Religion) of which, the main mode of instruction was formal training for the functionaries (priests and priestesses) and participant-observation for ordinary adherents of the faith. But Religious Education as we understand it today (being part of formal education) could be traced to the time that the Gold Coast people, now Ghanaians, had contact with the Western Europeans. That is, from 1471 when the Portuguese landed on the shores of the country (Buah, 1998). Formal education was started by the colonial administrators in collaboration with the missionaries. The school education was to train people for the systematic economic exploitation of local resources and the extension of European civilization. Christian missionaries saw education as means of proselytizing indigenous people (Hagan, 2009) and to bring Christianity to bear on the pupils (Wise, 1956). In other words, it was meant to make their converts

good Christians. The history of the castle schools attests to this (Anti & Anum, 2003).

The Education Ordinance of 1887 made provision for mission- or church-initiated schools to benefit from government financial support under certain conditions. It is on record that many of the good Senior Secondary Schools (now Senior High Schools) in Ghana were begun by the Christian missionaries before they became government assisted (government took full control by way recruiting teachers and other supporting staff and paying their salaries). Some examples could be cited here: Wesley Girls School in 1836 and Mfantsipim College in 1876 (Methodist), Adisadel College in 1910 (Anglican), St. Augustine College in 1935 and Holy Child in 1945, (Roman Catholic), all in Cape Coast, the citadel of education in Ghana, the Presbyterian Boys School, formerly at Odumasi-Krobo, and now in Legon in Accra in 1938. It is important to note that Religious Education in these mission schools before government interventions was geared towards Christian theology with special emphasis on the doctrines of their respective denominations.

Moreover, according to the Anfom Commission of 1986, the fundamental flaw of the education which was introduced into the country was that, it was an effective agent to cultural disorientation and confusion with very serious disabling effects on too many aspects of the country's social, political and economic affairs. The committee also indicated that the country has a rich culture which is a repository of the intellectual political, ethical and creative development of its people. It varies in expression from group to group. It was necessary to research

into, find out and teach the essence of what is basic so that it becomes the basis of re-orientation of the culture. This will enable the educational system to produce citizens imbued with a culture which is Ghanaian and can stand the test of time, (MoE, 1987).

As a result of the recommendation of the Commission, in 1987, the erstwhile Provisional National Defense Council (PNDC) implemented a new Educational Reform Programme. In order to have an educational system which will reflect the culture of the people, Cultural Studies as a subject was introduced at the Basic Level of Education. This new innovation was put in place to widen the scope of the religious studies course to make it comprehensive, hence Religion, Culture (or Social life) and Music were integrated into the Cultural Studies programme.

Again, in 1998, the Cultural Studies Programme was changed to Religious and Moral Education at the Basic and Senior High School Levels of Education. The subject is now one of the examinable subjects at the Basic Education Certificate Examination. It is believed that the inculcation of human values, ideas of man and religious and moral beliefs should be an integral part of the educational system. This area of study produces a solid base for the development of the personality and good character (MoE, 1987).

Empirical Review

Asare-Danso (2017) assessed the technological pedagogical content knowledge of Religious and Moral Education (RME) tutors in the colleges of education in Ghana. A survey was conducted using 50 tutors from all the 38

public colleges of education in Ghana to respond to a five-point Likert type of questionnaire containing forty-five items. Three main research questions were used to determine college tutors' pedagogical, technological and content knowledge in RME at the colleges of education. The theoretical framework that was used for the study was Mishra and Koehler's (2009) TPACK Framework. The tutors were selected from the colleges of education, using the purposive sampling method during a workshop, which was organized by the Institute of Education of the University of Cape Coast, Ghana. Descriptive statistics was used to analyze the data collected.

Findings of the study revealed that RME tutors of the colleges of education in Ghana demonstrated having good technological, pedagogical and content knowledge. They also demonstrated their ability to use their pedagogical and content knowledge. However, the college tutors revealed their inability to use technology in their teaching, due to lack of technological resources. The study recommended that periodic workshops should be organized for college tutors to upgrade their content and pedagogical knowledge in the subject. Secondly, RME tutors were encouraged to use improvised resource materials. The Curriculum Research and Development Division (CRDD) of the Ministry of Education should provide schools with instructional resources. Finally, the Institute of Education, University of Cape Coast, Ghana, should revise the RME syllabus to expose college tutors to modern pedagogies like Concept Cracking and Gift to the Child.

Owusu (2014) conducted a study on technological pedagogical content knowledge (TPACK) in New Zealand In this study, New Zealand high school

science teachers' TPACK was assessed through an online survey. The data and its analysis revealed that New Zealand's high school science teachers in general had a high perception of their understanding of TPACK and its related constructs. Science teachers had high mean scores on all the constructs on a five- point Likert scale except technological knowledge. There is thus an indication that science teachers in New Zealand perceived themselves as being able to teach with technology effectively. Correlation analysis revealed that all six constructs correlated significantly with TPACK (also referred to as TPCK). Multiple and stepwise regression analyses revealed that Technological Pedagogical Knowledge (TPK) and Technological Content Knowledge (TCK) made statistically significant unique contributions to Technological Pedagogical Content Knowledge (TPCK). Pre-registered teachers indicated that their levels of TCK and Pedagogical Content Knowledge (PCK) were lower than more experienced teachers. This implied that recently graduated teachers found it difficult to appropriate the affordances of technology to affect the content they taught. Also, these recently graduated teachers lacked the experience to represent content in a format that made it comprehensible to their learners.

The contextual factors that influenced teachers' use of technology as well as teachers' TPACK levels were investigated through multiple embedded case studies of six teachers who were regular users of technology in their teaching. The case studies revealed that science teachers used technology to support inquiry learning in a wide range of ways in lower levels of high school but mostly to clarify concepts and theories when it came to the senior level of high school.

Teachers demonstrated different levels of expertise and engagement in the use of technology for transferring different types of knowledge from one teaching and learning context to another and for addressing differences amongst learners. This signaled that science teachers' TPACK apparent developmental levels shifted depending on the context of the assessment requirements of the students. This is a major finding in this study because although previous researchers have assumed that context influences teachers' TPACK characteristics and development, this study provides evidence of how specific aspects of context influences teachers' TPACK. This evidence shows examples of how the development of an individual's TPACK can be considered as dynamic where the interacting constructs and characteristics shift and change based on the context.

The recommendations from this study propose that teacher education programmes should ensure that there is a focus on teaching pre-service teachers how to appropriate the affordances of technology to teach specific content instead of teaching one technology skills based course. The evidence from this study indicates that teachers in New Zealand schools use collegial approaches in the use of technology. Therefore professional learning programmes should target groups of teachers in the same school or cluster of schools rather than targeting individual teachers. This will enable teachers to share ideas and provide leadership for their colleagues in terms of how to use technology.

Again, technology related professional development programmes should move away from enriching teachers' technological skills to emphasising how teachers can appropriate the affordances of technology in their classroom

practices to meet their instructional goals as well as students' learning outcomes. There is a consequent obligation for teacher educators, educationists and stakeholders to enable teachers to understand how best to harness the increased knowledge retrieval capacity that Information and Communication Technology affords, its information sharing abilities as well as the capacity to engage young people to act as experimenters, designers and creators of knowledge.

Kwakye (2016) assessed the Technological Pedagogical Content Knowledge (TPACK) preparedness of student-teachers in the Department of Arts and Social Sciences Education (DASSE) of University of Cape Coast, Ghana. It used the descriptive survey design. The stratified simple random sampling technique was used to sample 370 student-teachers of DASSE for the study. Questionnaire was adopted for the data collection. Descriptive (frequencies and percentages, mean of means and standard deviations) and inferential statistics (independent t-test) were used to analyse the data. The study reveals that the student-teachers in DASSE, UCC have Technological Knowledge.

The study also found that the student-teachers of DASSE, UCC lack Technological Pedagogical Knowledge. In addition, the study has found that the student-teachers of DASSE, UCC lack Technological Content Knowledge. Moreover, the study establishes that the student-teachers of DASSE, UCC lacked Technological Pedagogical Content Knowledge. Lastly, there is no statistically significant difference between the gender of the student-teachers of DASSE, UCC and their TPACK preparedness. Hence, this study recommends that lecturers should continue to model the use of technology so that student-teachers can

increasingly update their technological knowledge through observation and learning. Again, the Academic Board of UCC should advice the teaching departments on the need to infuse technology in their courses they offer for student-teachers.

Chapter Summary

The chapter dealt with the review of literature related to the technological pedagogical content knowledge of teachers in Christian Religious Studies. The review was done under three themes thus, theoretical, conceptual and empirical review.

The theoretical framework for this study was based on Mishra and Koehler's (2006) Technological Pedagogical Content Knowledge (TPACK) model. The basis of the framework is the understanding that teaching is a highly complex activity that draws on many kinds of knowledge. The framework emphasizes the connections, interactions, affordances, and constraints between and among content, pedagogy, and technology. In this model, knowledge about content (C), pedagogy (P), and technology (T) is central for developing good teaching. However, rather than treating these as separate bodies of knowledge, this model additionally emphasizes the complex interplay of these three bodies of knowledge.

The conceptual review included a review on the historical development of the pedagogical content knowledge framework; Components of the PCK framework; Pedagogical Knowledge (PK); Content Knowledge (CK); Technological Knowledge (TK); Technological Content Knowledge (TCK);

Technological Pedagogical Knowledge (TPK); Pedagogical Content Knowledge (PCK); Technological Pedagogical Content Knowledge (TPACK); The concept of effective teaching; The concept of religious education; Historical development of Religious Education as a subject of study in Ghana; Religious Education: definition, scope of content and characteristics. The empirical review included: pedagogical knowledge of religious education teachers; as well as content knowledge of religious education teachers.

CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter presents the methodology followed in carrying out the study. It gives a description of the research design, population, sample and sampling procedure, data collection instruments, validity and reliability of instruments, data collection procedures as well as data processing and analysis.

Research Design

The convergent (concurrent) mixed method design was adopted for the study. The design enabled the researcher to examine the technological pedagogical content knowledge of teachers in Christian Religious Studies in some selected Senior High Schools in the Central Region of Ghana. Convergent mixed method design is used where the researcher converges or merges quantitative and qualitative data in order to provide a comprehensive analysis of the research problem. This method is used especially in understanding contradictions between quantitative and qualitative findings. It is also grounded in the study of participants and findings are majorly based on the experiences of the participants (Creswell, 2009). Mixed methods research has become an increasingly used and accepted approach to conducting social research (Bryman, 2012). The method was adopted for this study because the questionnaire and observation guide were used. Quantitatively, questionnaires were given out to the CRS teachers in the selected Senior High Schools in the Central Region of Ghana. A questionnaire is a series of questions asked to individuals to obtain statistically useful information

about a given topic. When properly constructed and responsibly administered, questionnaires become a vital instrument by which statements can be made about specific groups or people or entire populations. They are valuable method of collecting a wide range of information from a large number of individuals, often referred to as respondents. Adequate questionnaire construction is critical to the success of a survey. Appropriate questions, correct ordering of questions, correct scaling, or good questionnaire format can make the survey worthwhile, as it may accurately reflect the views and opinions of the participants (Ropa & Rani, 2017). Qualitatively, the researcher used the observation guide in order to ascertain whether the claims made by the teachers when responding to the questionnaire was actually so. Observation on the other hand is a research technique used in social sciences as a method of collecting data about people, processes, and cultures. Observation, particularly participant observation has been used regularly to collect data by teacher researchers in their classrooms, by social workers in community settings, and by psychologists recording human behaviour (Kawulich, 2012).

This convergent mixed method design was adopted due to its ability to provide answers to a broader and more complete range of research questions because the researcher is not confined to a single method or approach (Johnson & Onwuegbuzie, 2004). Again, mixed-methods can provide stronger evidence for a study's conclusions through convergence and corroboration of findings (Johnson & Onwuegbuzie, 2004). It is also believed that the inherent biases in any single method could be neutralized through mixed method approach

(Jick, as cited in Creswell, 2009). Also, researchers have the ability to use the strength of one method of research to counter or overcome the weaknesses in another method. Furthermore, mixed methods design allows the use of triangulation to collect data to answer the research questions posed. In triangulation, two or more data collection instruments are administered within the same time frame (Bryman, 2012, Sarantakos, 2013) to gather data. Some of the instruments used to gather data in a mixed methods design include questionnaires and observation. However, mixed method design requires great effort and expertise to adequately use two separate methods at the same time. It can be difficult to compare the results of two analysis using data of different forms. Again, it may be unclear how to resolve discrepancies that arrive while comparing the results. Despite these weaknesses, the researcher deemed it appropriate to adopt the convergent mixed method design for the sake of completeness of data gathering, in that a more comprehensive picture would be generated.

Study Area

The study was conducted in the Central Region of Ghana. The Central Region is one of the 16 administrative regions of Ghana. It is bordered by Ashanti, Eastern Regions to the North, Western Region to the West, Greater Accra Region to the East, and the South by the Gulf of Guinea. The region is renowned for its many elite higher education institutions. At the time of the study, the region had 75 public Senior High Schools. The Central Region has an economy based on mining, fishing and tourism. Central Region attains many

tourist attractions such as castles, forts and beaches stretched along the Central Region's coastline.

Population

Central Region had 115 Senior High Schools (40 private and 75 public schools) (Cape Coast Municipal Assembly, 2020). The researcher however, was interested only in the public Senior High Schools in the Region. The justification for focusing on only public Senior High Schools in the Region was that most public Senior High School teachers were the same teachers who teach in the private schools on part-time basis, therefore the inclusion of these teachers will be a duplication of responses.

The target population for the study comprised all final year Christian Religious Studies teachers in public Senior High Schools in the Central Region. There were 75 public Senior High Schools in the Central Region. Out of these, three (3) schools were purely secondary technical schools that did not offer CRS. Therefore, the target population for the study included all the 72 final year CRS teachers in the 72 public Senior High Schools in the Central Region. All CRS teachers in the Central Region were considered because they were the subject of interest. It was also because of the important role that they play in the selection and application of methods of teaching, use of instructional resources as well as their mastery of content as far TPACK is concerned.

Sample and Sampling Procedure

All 72 final year CRS teachers in the 72 public Senior High Schools in the Central Region were involved in the study. This constituted the sample size of CRS teachers for the study.

The census study was employed to involve all the CRS teachers in the Central Region of Ghana due to their limited number. Census surveys are the types of surveys involving the process of collecting information about each member of a given population. The use of census surveys is usually employed for statistical research and population count. One of the advantages of census surveys over the other types of surveys is accuracy. Since the respondents involved in census surveys are the members of a given population, the survey data to be collected will be more reliable and accurate than the data gathered from sampling surveys. However, among the other types of surveys, census surveys are considered to be the most time consuming and physically demanding. Unlike sampling surveys, census surveys require statistical data from each member of the population and not just a portion of it. Researchers need to gather information from every single member of the given population in order to come up with accurate results so encountering reluctant respondents will be very difficult. Since the researchers need to travel often to gather data, census surveys tend to be more costly too.

Inclusion and Exclusion Criteria

Respondents who did not teach Christian Religious Studies were excluded from the study.

Data Collection Instruments

The questionnaire and observation guide were the data collecting instruments used for the study. Deng (2010) says that a questionnaire is a form prepared and distributed to secure responses to certain questions. It is a systematic compilation of questions that are submitted to a sampling population from which information is desired. Reasons for the choice of the instrument are that, questionnaire is described as structured instrument for gathering data from a potentially large number of respondents, within a shorter possible time when especially the population is easily accessible to make it uneconomical for reasons of time or funds to interview every subject in the study (Osuala, 2005; Deng, 2010; Amedahe & Gyimah, 2008). The questionnaire is also appropriate when the respondents are literates. In the context of this study, the teachers were literates hence, the use of the questionnaire was appropriate. However, the questionnaire has its own limitation as it restricts the responses that respondents may want to give compared with that of the interview guide which is much more flexible. However, the questionnaire was appropriate for the study since it was more convenient and easier to administer on the respondents considering the number of CRS teachers that were involved in the study compared with interviewing each respondent one after the other.

The questionnaire was divided into eight (8) sections consisting of 66 items. Section A considered the demographic information of CRS teachers consisting of five (5) items. Section B looked at the technological knowledge (TK) of CRS teachers with eight (8) items. Section C focused on the pedagogical knowledge (PK) of CRS teachers with thirteen (13) items. Section D considered the content knowledge (CK) of CRS teachers with fourteen (14) items. Section E looked at the technological pedagogical knowledge (TPK) of CRS teachers with seven (7) items. Section F focused on the technological content knowledge (TCK) of CRS teachers with six (6) items. Section G considered the pedagogical content knowledge (PCK) of CRS teachers with six (6) items. Finally, Section H looked at the technological pedagogical content knowledge (TPACK) of CRS teachers with seven (7) items. The questionnaire format was the closed-ended type. In order to ensure quick and easy response, the questionnaire was designed on a five-point Likert scale (Strongly Agree=SA; Agree=A; Uncertain=U; Disagree=D; and Strongly Disagree=SD).

Again, the study adopted the observation guide. According to Sarantakos (1997), "observation is one of the oldest methods of data collection" and "it literally means ... a method of data collection that employs vision as its main means of data collection" (p. 208). The study employed a structured non-participant observation. The observation guide was structured and demanded the open-ended responses. The observation guide considered the technological knowledge (TK) with four (4) items; pedagogical knowledge with six (6) items; as well as the content knowledge (CK) with four (4) items. The application of

observation was due to the fact that the researcher wanted to make up for the deficiencies that might occur with the use of only a questionnaire. Besides, the use of observation was relatively inexpensive, not time consuming and firsthand information could be gathered with that.

Validity and Reliability of Instruments

To ensure soundness and appropriateness of the items, the questionnaire was submitted to my supervisor for proof reading and corrections. This ensured that the questionnaire had good content, face, and criterion and construct validity. After that, a pilot test of the instruments was conducted in the fifteen (15) Senior High schools in the Ga-South Municipality in the Greater Accra Region. This is because the curriculum and syllabus as implemented in this area have the same characteristics in terms of content and pedagogical practices as compared with what pertains in the schools in the Central Region of Ghana. Pilot testing of the instruments was aimed at ensuring that the instruments elicit the responses from the teachers on their technological pedagogical content knowledge in teaching CRS.

The questionnaire for the CRS teachers consisted of eight (8) sections i.e. sections A, B, C, D, E, F, G, and H covering various relevant areas such as demographic information; technological knowledge; pedagogical knowledge; content knowledge; technological pedagogical knowledge; technological content knowledge; pedagogical content knowledge; as well as technological pedagogical content knowledge of CRS teachers. The homogeneity values (Cronbach`s alpha) of the scales vary between .73 and .89. The Cronbach's alpha of .86 was obtained

for the CRS teachers' questionnaire. The 8 sections cover the following areas: demographic information (items no. 1, 2, 3, 4, 5; Cronbach`s alpha 0.72). This area covers background information such as gender, age, years of teaching experience, highest academic qualification and highest professional teaching qualification. Section B (items no. 6, 7, 8, 9, 10, 11; 12; 13; Cronbach`s alpha 0.86) included the technological knowledge of CRS teachers. Section C (Items no. 14. 15, 16, 17, 18, 19, 20, 21; 22; 23; 24; 25; 26; Cronbach`s alpha 0.89) consisted pedagogical knowledge of CRS teachers. Section D (items no. 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; Cronbach`s alpha 0.81): This section covered content knowledge of CRS teachers.

Section E (items no. 41; 42; 43; 44; 45; 46; 47; Cronbach`s alpha 0.89) included technological pedagogical knowledge. Section F (Items no. 48, 49; 50; 51; 52; 53; Cronbach`s alpha 0.83) consisted the technological content knowledge of CRS teachers. Section G (items no. 54, 55, 56, 57, 58, 59; Cronbach`s alpha 0.86): This section covered pedagogical content knowledge. Finally, Section H (items no. 60, 61, 62, 63, 64, 65, 66; Cronbach`s alpha 0.79) included the technological pedagogical content knowledge of CRS teachers. According to De Vellis (1991), such a reliability coefficient is said to be respectable. Therefore, the instrument was considered reliable and appropriate to collect the relevant data to answer the questions posed. Also Fraenkel and Wallen (2000, p. 17), posited that "For research purposes a useful rule of thumb is that reliability should be at .70 and preferably higher". Therefore, the instrument was considered capable of

collecting the relevant data for the study. The queries that came out of the item analyses were catered for.

Data Collection Procedure

The researcher also sought for an introductory letter from the Head of Department of Arts Education of the Faculty of Humanities and Social Sciences Education, University of Cape Coast, in order to conduct the research and administer the questionnaire. The purpose of this letter was to solicit for cooperation and also to create rapport between the researcher and the respondents for the study. The researcher explained the purpose of the research to the respondents in order to clarify any misunderstanding they had. It was made clear to them that the information provided would be treated as confidential. A discussion was held with teachers and head masters of the various Senior High Schools selected for the study to agree on a convenient time to administer the instrument. The CRS teachers were supervised by the researcher to complete the questionnaire. To ensure high response rate, the questionnaire was self-administered and retrieved on the same day. The respondents were given enough time to complete the questionnaire.

With respect to the observation, the time for the teaching of CRS lessons in the schools involved was used. Each of the selected schools was observed during the instructional period. Here, the researcher joined them in class and observed closely the proceedings of the lessons while completing the observation guide. In order to prevent teachers from realizing that the researcher was there to assess the technological pedagogical content knowledge and so attempt to put on

a façade and intentionally do things right, the observation preceded the administration of the questionnaire.

Data Processing and Analysis

This study sought to assess the technological pedagogical content knowledge of teachers in Christian Religious Studies in some selected Senior High Schools in the Central Region of Ghana. To answer the research questions that were formulated to guide the study, the type of statistics that was employed in the analysis of the data was descriptive statistics. Specifically, the data from the questionnaire was used to analyse research questions 1-7 through the computation of frequencies, percentages, as well as mean of means distributions. This was done with the use of computer software called Statistical Product for Service Solutions (SPSS) version 21. The data collected with the use of the observation guide was analysed using the thematic approach according to the themes such as technological knowledge (TK); pedagogical knowledge (PK); as well as content knowledge (CK) of CRS teachers.

Ethical Considerations

Researchers need to protect their research participants; they must develop a trust with respondents, promote the integrity of research, guard against misconduct and impropriety that might reflect on their institution or organizations (Cresswell, 2009). In compliance with these requirements, the consent of the selected participants was sought before the questionnaires were administered. No participant was compelled to participate or answer to the questionnaire. Also, the questionnaires for the study made no provision for the name of respondents

rather; the questionnaires were coded to prevent identification of information by respondents. Thus, the study ensured that all ethical issues concerning confidentiality and anonymity of participants were adhered to.

Chapter Summary

This chapter outlined the general research design for the study and the methods used to collect the data. The convergent mixed method was adopted for the study. The data was gathered from all final year CRS teachers in the 72 public Senior High Schools in the Central Region of Ghana. The census method was used to involve all the teachers in the study. Again, the study made use of questionnaire and observation guide to collect data regarding the technological pedagogical content knowledge of teachers in Christian Religious Studies in some selected Senior High Schools. The chapter dealt with other issues relating to validity and reliability of instrument, use of data collection instruments, data collection procedure, data processing and analysis, as well as ethical considerations.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

The purpose of the study was to assess the technological pedagogical content knowledge of teachers in Christian Religious Studies in some selected Senior High Schools in the Central Region of Ghana. Questionnaire and observation guide were employed to gather the requisite data for the study. The data from the CRS teachers were analyzed through the computation of frequencies, percentages, and mean of means distributions. The descriptive statistics was employed in the data analysis. This chapter presents the interpretations discussions and inferences that were made from the output.

Analysis of Data from Respondents

Table 1 shows the characteristics of CRS teachers from the Senior High Schools in the Central Region of Ghana, who served as respondents for the study.

Table 1: Characteristics of CRS Teachers (n=70)

Variable	Subscale	No.	%
Gender	Male	43	61.4
	Female	27	38.6
Age	20-29 years	8	11.4
	30-39 years	31	44.3
	40-49 years	19	27.1
	50-59 years	12	17.1
Years of teaching	Less than a year	2	2.9

Table 1 continued

experience	1-5 years	28	40.0
	6-10 years	17	24.3
	11-15 years	5	7.1
	16 years and above	18	25.7
Highest Academic	Bachelor's Degree	51	72.9
Qualification	Master of Arts	7	10.0
	Master of Philosophy	12	17.1
Highest Professional	Not Applicable	5	7.1
Qualification	Teacher's Cert "A"	3	4.3
	Diploma in Education	12	17.1
	PGDE	6	8.6
	Bachelor of Education	33	47.1
	Master's in Education	11	15.7

Source: Field Data, 2020

From Table 1, 70 out of the 72 CRS teachers were involved in the study. This represents a return rate of 97.2%. Concerning the gender of the teachers involved in the study, 61.4% were males, whiles 38.6% were females. So the majority of CRS teachers in the study area were males. Also, the majority of the respondents were between 30-39 years. This is because, 11.4% were between 20-29 years, 44.3% were between 30-39 years, 27.1% were between 40-49 years, and 17.1% were between 50-59 years. In line with years of teaching experience, 2.9% had worked for less than a year, 40.0% had taught between 1-5 years, 24.3% had taught between 6-10 years, 7.1% had taught between 11-15 years, and 25.7% had taught for 16 years and above. Therefore, the majority of the teachers had taught

between 1-5 years. This means that the majority of the teachers had not taught for a good number of years. However, it is hoped that the teachers can provide enough information on their technological pedagogical content knowledge in Christian Religious Studies in some selected Senior High Schools in the Central Region of Ghana. Regarding highest academic qualification, 72.9% had Bachelors Degree, 10.0% had Master of Arts, and 17.1% had Master of Philosophy. Thus the majority of the respondents had Bachelors Degree as their highest academic qualification. In line with professional teaching qualification, 7.1% did not have any professional teaching qualification because they did not have any background in education, 4.3% had teacher's cert "A", 17.1% had Diploma in Education, 8.6% had Post Graduate Diploma in Education (PGDE), 47.1% had Bachelor of Education, and 15.7% had Masters in Education. This means that the majority of the respondents were professional teachers who had Bachelor of Education.

This section presents the results and discussions of data collected to answer the seven research questions formulated to guide the study. It comprised data from the questionnaire and the observation guide.

Teachers' Content Knowledge in Teaching CRS in Senior High Schools

Research Question 1: What is the content knowledge of teachers in teaching CRS in Senior High Schools in the Central Region of Ghana?

The aim of this research objective was to find out the content knowledge of CRS teachers in Senior High Schools in the Central Region of Ghana. The responses given by the teachers are shown in Table 2.

Table 2: Teachers' Content Knowledge in Teaching Christian Religious Studies (n=70)

Statement	Strongly Disagree N(%)	Disagree N(%)	Uncertain N(%)	Agree (%)	Strongly Agree (%)
I have sufficient knowledge about CRS	0(0.0)	0(0.0)	2(2.9)	23(32.9)	45(64.3)
The content of CRS consists of topics from Old Testament, Gospels, Acts of the Apostles, and the Epistles of James.	2(2.9)	4(5.7)	0(0.0)	12(17.1)	52(74.3)
David tore his robe and went to his house when he was informed that the child born to him by Bathsheba had died.	26(37.1)	20(28.6)	4(5.7)	6(8.6)	14(20.0)
To prove the land's fertility, the spies brought from the valley of Eschol, pomegranates, citrus, and vines.	3(4.3)	4(5.7)	4(5.7)	19(27.1)	40(57.1)
On the story of the baptism of Jesus among the three synoptic writers,	13(18.6)	22(31.4)	8(11.4)	12(17.1)	15(21.4)

Table 2 continued

Mark gave details on the conversation between John the Baptist and Jesus.					
According to Matthew's account, Jesus called his first four disciples after a great miracle where Simon encountered a great shoal of fish.	25(35.7)	16(22.9)	14(20.0)	8(11.4)	7(10.0)
Mathias was chosen to replace Judas Iscariot after the lot was cast.	0(0.0)	0(0.0)	2(2.9)	14(20.0)	54(77.1)
One cannot be truly religious unless he or she bridles his or her tongue.	12(17.1)	14(20.0)	4(5.7)	17(24.3)	23(32.9)
Faith is made complete by works and not faith alone.	2(2.9)	0(0.0)	0(0.0)	12(17.1)	56(80.0)
Christians are to fulfill their responsibilities to only God and not the state.	40(57.1)	23(32.9)	5(7.1)	0(0.0)	2(2.9)
The life of the early church was such that everything was collectively owned.	0(0.0)	6(8.6)	2(2.9)	22(31.4)	40(57.1)

Table 2 continued

The rationale for teaching CRS is to help students relate biblical ideals and virtues to their lives.	0(0.0)	0(0.0)	0(0.0)	28(40.0)	42(60.0)
One of the aims of CRS is to help students question the authenticity of stories in the Bible.	15(21.4)	19(27.1)	2(2.9)	23(32.9)	11(15.7)
The aim for the teaching of CRS is to improve students' moral standards.	0(0.0)	0(0.0)	6(8.6)	24(34.3)	40(57.1)

Source: Field Data, 2020

The finding depicts that, the majority (45, 64.3%) of the teachers strongly agreed to the statement: "I have sufficient knowledge about CRS". This finding resonates with Shulman (1986) who asserts that, teachers must know and understand the subjects that they teach, including knowledge of central facts, concepts, theories, and procedures within a given field; knowledge of explanatory frameworks that organize and connect ideas; and knowledge of the rules of evidence and proof. Concerning whether the content of CRS consists of topics from Old Testament, Gospels, Acts of the Apostles, and the Epistles of James, the majority (52, 74.3%) of the CRS teachers strongly agreed to the statement. When the CRS teachers were asked whether David tore his robe and went to his house when he was informed that the child born to him by Bathsheba had died, the majority (26, 37.1%) of the teachers strongly disagreed. In relation to the

statement; “To prove the land’s fertility, the spies brought from the valley of Eschol, pomegranates, citrus and vines”, the majority (40, 57.1%) of the CRS teachers strongly agreed. With regards to the statement; “On the story of the baptism of Jesus among the three synoptic writers, Mark gave details on the conversation between John the Baptist and Jesus”, the majority (22, 31.4%) of the teachers disagreed.

Also, most (25, 35.7%) of the respondents strongly disagreed to the statement; “According to Matthew’s account, Jesus called his first four disciples after a great miracle where Simon encountered a great shoal of fish”. Also, the majority (54, 77.1%) of the CRS teachers strongly agreed to the statement; “Mathias was chosen to replace Judas Iscariot after the lot was cast”. Many (23, 32.9%) of the respondents strongly agreed to the statement; “One cannot be truly religious unless he or she bridles his or her tongue”. Again, when CRS teachers were asked whether Faith is made complete by works and not faith alone, the majority (56, 80.0%) strongly agreed. Also, from Table 2, the majority (40, 57.1%) of the CRS teachers strongly disagreed to the statement: “Christians are to fulfill their responsibilities to only God and not the state”. Regarding the statement; “The life of the early church was such that, everything was collectively owned”, the majority (40, 57.1%) of the respondents strongly agreed. As to whether the rationale for teaching CRS is to help students relate biblical ideals and virtues to their lives, the majority (42, 60.0%) of the CRS teachers strongly agreed. In line with the statement: “One of the aims of CRS is to help students question the authenticity of the stories in the Bible”, the majority (23, 32.9%) of

the CRS teachers agreed to the statement, although, a considerable number (19, 27.1%) of the CRS teachers also disagreed to the same statement. Concerning the statement; "The aim for the teaching of CRS is to improve students' moral standards", the majority (40, 57.1%) of the CRS teachers strongly agreed.

Analysis of Data from Observation Sessions Conducted in the Selected Schools

The observation guide was used to complement data that was obtained with the used of the questionnaire in order to ascertain the authenticity of the responses that were gathered from the respondents. In doing this, observation sessions were conducted where the researcher observed some lessons in order to ascertain the content knowledge of CRS teachers in teaching the subject. From the observation sessions that were held, it was realized that, most of the CRS teachers demonstrated sufficient content knowledge about CRS. This is because, the teachers demonstrated knowledge of subject matter in the Old Testament, Synoptic Gospels, Acts of the Apostles, the Epistles of James and 1 Peter. Also, the CRS teachers assisted students to identify appropriate moral values of the biblical stories and cited relevant examples as well as established connections between biblical concepts and real life situations.

From the foregoing, it can be concluded that, the majority of the CRS teachers had a good content knowledge in the teaching of Christian Religious Studies. This is because, the CRS teachers had sufficient knowledge about CRS, and they agreed that the content of CRS consists of topics from Old Testament, Gospels, Acts of the Apostles, and the Epistles of James. To attest that the CRS

teachers were familiar with the content knowledge in the teaching of CRS, the majority of the CRS teachers disagreed that David tore his robe and went to his house when he was informed that the child born to him by Bathsheba had died, disagreed that on the story of the baptism of Jesus among the three synoptic writers, Mark gave details on the conversation between John the Baptist and Jesus, and disagreed that according to Mathew's account, Jesus called his first four disciples after a great miracle where Simon encountered a great shoal of fish. Also, they agreed that Mathias was chosen to replace Judas Iscariot after the lot was cast, agreed that one cannot be truly religious unless he or she bridles his or her tongue, and that faith is made complete by works and not faith alone. Again, they disagreed that Christians are to fulfill their responsibilities to only God and not the state, agreed that the life of the early church was such that, everything was collectively owned, and agreed that the rationale for teaching CRS is to help students relate biblical ideals and virtues to their lives. However, the majority of the CRS teachers indicated that to prove the land's fertility, the spies brought from the valley of Eschol, pomegranates, citrus and vines which is not so because it was rather grapes, pomegranates and figs; and the CRS teachers indicated that, one of the aims of CRS is to help students question the authenticity of the stories in the Bible, but this is not so.

Teachers' Pedagogical Knowledge in Teaching CRS in Senior High Schools

Research Question 2: What is the pedagogical knowledge of teachers in teaching CRS in Senior High Schools in the Central Region of Ghana?

The study sought to ascertain the pedagogical knowledge of teachers in the teaching of CRS in Senior High Schools in the Central Region of Ghana. The responses given by the CRS teachers are shown in Table 3.

Table 3: Teachers' Pedagogical Knowledge in Teaching Christian Religious Studies (n=70)

Statement	M	SD
I relate CRS with real, present and future experiences of learners as basis.	4.77	0.49
In using the life themes pedagogy, there are three steps involved and they are: the biblical experience, human experience and explanation.	4.46	0.56
According to the life themes pedagogy, religious beliefs must be taught as if they were facts because they are by nature experiential.	4.17	0.82
In using the existential pedagogy, CRS teachers must exert their wishes on members of the class.	3.20	1.21
The existential pedagogy is grounded on the fact that, the existential experiences should be the basis for forming religious concepts.	4.33	0.61

Table 3 continued

CRS should help students to build conceptual bridges between existential experiences and the central concepts of religion.	3.76	1.08
I am conversant with the concept cracking approach to the teaching of CRS.	3.93	0.73
In using the concept cracking approach, there are three steps/stages involved.	4.01	0.75
The second stage of the concept cracking approach is where by the CRS teacher engages with the pupils' world of experience.	4.06	0.95
The teacher-learner interaction is very minimal because I mostly use the lecture method in teaching.	3.10	1.44
I make use of role-play in order to offer students the opportunity to relate CRS lessons to their own life.	4.43	0.50
I adopt my teaching style to cater for individual differences in the classroom.	4.46	0.65
I adopt my teaching to suit the understanding of my students.	4.57	0.55

Source: Field Data, 2020

Scale:
1 = Strongly Disagree; 2 = Disagree; 3 = Uncertain;
4 = Agree; 5 = Strongly Agree
Mean of means = 4.10
Mean of standard deviation = .80

Table 3 sought to find out the pedagogical knowledge of teachers in the teaching of CRS in Senior High Schools in the Central Region of Ghana. The means and standard deviation were obtained based on the responses recorded for each of the items on the questionnaire that were given to the respondents. The computation was done with the use of the Statistical Package for Service Solutions version 21. The coding of the items were done in line with the scale provided under Table 3 (1= Strongly Disagree; 2=Disagree; 3= Uncertain; 4= Agree; and 5= Strongly Agree). A mean of means of 4.10 and a mean of standard deviation of 0.80 were realized. Further discussions of individual items are presented in the paragraphs below.

From Table 3, a mean of 4.77 and a standard deviation of 0.49 were achieved for the statement: "I relate CRS with real, present and future experiences of learners as basis". This means that, the respondents strongly agreed to the statement. This finding resonates with that of Olivia (1992) that, one of the skills that is pertinent to the life themes is the teacher's ability to relate content to past and future experiences of learners. Similarly, Grimmitt (1973) asserts that, religious concepts 'only come alive' when we are able to relate them sometimes partially, sometimes completely to our life experience. Again, when the CRS teachers were asked whether in using the life themes pedagogy, there are three steps involved and they are: the biblical experience, human experience and explanation, they agreed to the statement. Here, a mean of 4.46 and a standard deviation of 0.56 were obtained for this item showing the respondents agreed to the statement. This contradicts Onsongo (2002) who gave the steps involved in

the use of the method as introduction and lesson development involving four steps which are human experience the biblical experience, explanation and application. Also, from Table 3, the respondents agreed that according to the life themes pedagogy, religious beliefs must be taught as if they were facts because they are by nature experiential. This is evidenced by the mean score of 4.17 and a standard deviation of 0.82 for this item. The mean is approximately 4, showing that the respondents agreed to the statement. This finding contradicts that of Grimmitt (1973) who asserts that religious beliefs cannot be taught as if they were facts; but they are by nature experiential.

Regarding the statement; "In using the existential pedagogy, CRS teachers must exert their wishes on members of the class", the majority of the CRS teachers were uncertain about the statement. This can be seen from the mean of 3.20 and a standard deviation of 1.21 that were realized. Also, a mean of 4.33 and a standard deviation 0.61 were recorded for the item "The existential pedagogy is grounded on the fact that, the existential experiences should be the basis for forming religious concepts". This means that, the majority of the CRS teachers agreed to this statement. This is because the mean falls on scale 4 (agree) looking at the scale under Table 3.This finding supports that of Grimmitt (1973) that the existential approach to Christian Religious Studies is grounded in making the learner's characteristics, namely the existential experiences become the basis for forming religious concepts. The finding depicts that, most of the CRS teachers were uncertain as to whether CRS should help students to build conceptual bridges between existential experiences and the central concepts of religion. With

a mean of 3.76 and a standard deviation of 1.08 it could be concluded that the mean falls into the scale of 3 (uncertain). This finding is in agreement with that of Grimmitt (1973) that, the existential pedagogy starts with the child's own feelings, acts and experiences and helps children to build conceptual bridges between their existential experiences and the central concepts of religion. Again, when the respondents were asked whether they were conversant with the concept cracking approach to the teaching of CRS, they agreed to the statement. Here, a mean of 3.93 and a standard deviation of 0.73 were obtained for this item showing the respondents agreed to the statement.

Again, from Table 3, the CRS teachers agreed that in using the concept cracking approach there are three steps/stages involved. This is evidenced by the mean score of 4.01 and a standard deviation of 0.75 for this item. The mean is approximately 4, showing that the respondents agreed. This finding is in disagreement with Cooling (1996) who summarized the concept cracking approach as a two stage process with stage 1 constituting two steps and stage 2 also involving two steps. Regarding the statement; "The second stage of the concept cracking approach is whereby the CRS teacher engages with pupils' world of experience", the majority of the teachers agreed to the statement. This can be seen from the mean of 4.06 and a standard deviation of 0.95 that were realized.

This finding is in disagreement with Cooling (1996) who identified that the second stage of the concept cracking approach is where by the CRS teacher selects one or two concepts as the focus for the lesson. Also, a mean of 3.10 and a

standard deviation 1.44 were recorded for the item "The teacher-learner interaction is very minimal because I mostly use the lecture method in teaching" This means that, the majority of the CRS teachers were uncertain about the statement. This is because the mean falls on scale 3 (uncertain) when approximated to the nearest whole number looking at the scale under Table 3.The high standard deviation obtained which is higher than the mean of standard deviation of 0.80 indicates that there were variations in the responses and that not all the CRS teachers were uncertain about the statement. Yet it still holds that the majority of the CRS teachers were uncertain about the statement.

Again, the majority of the respondents agreed that they make use of role-play in order to offer students the opportunity to relate CRS lessons to their own life. With this, a mean of 4.43 and a standard deviation of 0.50 were achieved. Concerning the statement: "I adopt my teaching style to cater for individual differences in the classroom", the majority of the CRS teachers agreed to the statement. With this, a mean of 4.46 and a standard deviation of 0.65 were obtained. Again, the majority of the CRS teachers strongly agreed that they adopt their teaching to suit the understanding of students. Here, a mean of 4.57 and a standard deviation of 0.55 were obtained.

Analysis of Data from Observation Sessions Conducted in the Selected Schools

In order to have a vivid description of issues concerning the pedagogical knowledge of CRS teachers, instructional processes were observed. The data collected with the use of the observation guide was to serve as back-up

information to check whether the data gathered with the questionnaires were truly reflecting the situation on the ground. From the observation sessions, it was realized that, most of the CRS teachers related biblical concepts to real life situations. Also, most of the CRS teachers' delivery of lessons was consistent with the rationale for teaching CRS i.e. to help students relate biblical ideals and virtues to their lives. In terms of questioning techniques, most of the CRS teachers demonstrated the use of proper questioning techniques, with a few probing and leading questions in order to encourage students' participation. A few others too could not use the questioning skills appropriately.

Again, most of the CRS teachers demonstrated good classroom management skills and instructional time was effectively and efficiently used. Concerning teachers' use of repertoire of instructional strategies that stimulate learners' interest in CRS lessons, it was realized that, the CRS teachers mostly used the lecture method, and occasionally used the discussion method, as well as the question and answer method. On the use of reinforcement techniques, it was observed that a few of the CRS teachers used the reinforcement techniques appropriately but most of the CRS teachers did not vary the use of reinforcement strategies.

From the above discussions, it can be concluded that, although the CRS teachers claimed to have pedagogical knowledge in teaching CRS, they did not have knowledge about various contemporary pedagogies for teaching the subject. This is because, CRS teachers indicated that they relate CRS with real, present and future experiences of learners as basis; adopt their teaching to suit the

understanding of their students; adopt their teaching style to cater for individual differences in the classroom; and make use of the role-play method in order to offer students the opportunity to relate CRS lessons to their own life. However, the CRS teachers did not have knowledge about contemporary pedagogies such as: life themes pedagogy, existential pedagogy, and the concept cracking approach for the teaching of CRS. This is because, the CRS teachers indicated that the life themes pedagogy had three steps/stages instead of four stages; and they agreed that according to the life themes pedagogy, religious beliefs must be taught as if they were facts because they are by nature experiential, but this statement is not true. In terms of the existential pedagogy, the CRS teachers are not supposed to exert their wishes on members of the class but the teachers were uncertain about the statement. Again, although the teachers indicated that they were conversant with the concept cracking approach, they indicated that the concept cracking approach had three steps/stages instead of four stages; and they also agreed that the second stage of the concept cracking approach is where by the CRS teacher engages with the students' world of experience, but this is rather at the third stage of the concept cracking approach.

Teachers' Technological Knowledge in Teaching CRS in Senior High Schools

Research Question 3: What is the technological knowledge of teachers in teaching CRS in Senior High Schools in the Central Region of Ghana?

The aim of this research objective was to find out the technological knowledge of teachers in the teaching of CRS in Senior High Schools in the Central Region of Ghana. The responses given by the pupils are shown in Table 4.

Table 4: Teachers' Technological Knowledge in Teaching Christian Religious Studies (n=70)

Statement	M	SD
I am competent in using instructional resources.	4.57	0.53
I use instructional resources for lessons.	4.50	0.50
I keep up with important new technologies.	4.24	0.60
I know about a lot of different technologies.	4.17	0.74
I use audio-visuals (example TV and motion pictures) in teaching.	3.57	1.27
I use visual resources (examples chalkboards, felt board, bulletin, boards and flash cards).	4.29	0.74
I use community resources (example resource persons and places of interest) in teaching.	4.01	0.89
I use audio materials (example radio and tape recorders) in teaching.	4.07	0.95

Source: Field Data, 2020

Scale:

1 = Strongly Disagree; 2 = Disagree; 3 = Uncertain;
4 = Agree; 5 = Strongly Agree
Mean of means = 4.18
Mean of standard deviation = .78

Table 4 sought to find out the technological knowledge of teachers in the teaching of CRS in Senior High Schools in the Central Region of Ghana. The means and standard deviation were obtained based on the responses recorded for each of the items on the questionnaire that were given to the CRS teachers. A

mean of means of 4.18 and a mean of standard deviation of 0.78 were realized. This means that the majority of the CRS teachers agreed to most of the statements that were posed to them. Further discussions of individual items are presented in the paragraphs below.

From Table 4, a mean of 4.57 and a standard deviation of 0.53 were achieved for the statement: "I am competent in using instructional resources". This means that, the CRS teachers strongly agreed to the statement. In support of this finding Farrant (1980) posits that, modern curriculum development tends to adopt multimedia approach to learning and so competence in the use of instructional resources is essential for learning new curricula. Again, when the CRS teachers were asked whether they use instructional resources for lessons, the respondents strongly agreed to the statement.

Here, a mean of 4.50 and a standard deviation of 0.50 were obtained for this item showing the respondents strongly agreed to the statement. In line with this finding, Ornstein and Lasley (2000) assert that, the teacher must incorporate instructional materials into unit plan and lesson plan and modify them in a way that considers the pupils; developmental stages or age, needs and interests, aptitudes, reading levels, prior knowledge, work habits, learning styles and motivation. Also, from Table 4, the CRS teachers agreed that they keep up with important new technologies. This is evidenced by the mean score of 4.24 and a standard deviation of 0.60 for this item. The mean is approximately 4 (agree) according to the scale under Table 4. Regarding the statement; "I know about a lot of different technologies", the majority of the CRS teachers agreed to the

statement. This can be seen from the mean of 4.17 and a standard deviation of 0.74 that were realized.

Also, a mean of 3.57 and a standard deviation 1.27 were recorded for the item "I use audio-visuals (example TV and motion pictures) in teaching". This means that, the majority of the CRS teachers agreed that they use audio-visuals in teaching. This is because the mean falls on scale 4 (agree) when approximated to the nearest whole number looking at the scale under Table 4. The finding depicts that, most of the CRS teachers agreed that they use visual resources (examples chalkboards, felt board, bulletin boards and flash cards). With a mean of 4.29 and a standard deviation of 0.74 it could be concluded that the mean falls into the scale of 4 (agree). Thus, the majority of the CRS teachers agreed to the statement. This finding supports that of Aggarwal (1995) that, in addition to reading, vicarious experiences can be gained from still pictures, films, filmstrips, resource persons, simulations, mock ups, television and the like.

The more concrete and realistic the vicarious experience, the more nearly it approaches the learning effectiveness of the first levels. Again, when the respondents were asked whether they use community resources (example resource persons and places of interest) in teaching, they agreed to the statement. Here, a mean of 4.01 and a standard deviation of 0.89 were obtained for this item showing the respondents agreed to the statement. Also, from Table 4, the CRS teachers agreed that they use audio materials (example radio and tape recorders) in teaching. This is evidenced by the mean score of 4.07 and a standard deviation of

0.95 for this item. The mean is approximately 4, showing that the respondents agreed to the statement.

Analysis of Data from Observation Sessions Conducted in the Selected Schools

The observation guide was used as a back-up data to complement data that was gathered from the respondents using the questionnaire. From the observation sessions that were held with the selected schools, it was realized that, the CRS teachers did not use audio-visual resources at all in the teaching of CRS lessons. Visual resources were mainly board illustrations and a few of the teachers showed students some pictures in the textbook. No audio resource was used in the delivery of the lesson with the exception of the teacher's voice which could be heard loud and clear. Again, the researcher observed that none of the CRS teachers made use of community resources in their delivery of their lessons.

From the above discussions, it can be concluded that the CRS teachers had adequate technological knowledge in teaching Christian Religious Studies. This is because, the CRS teachers are competent in using instructional resources; use instructional resources for lessons; keep up with important new technologies; and know about a lot of different technologies. Again, the CRS teachers use audio-visuals (example TV and motion pictures) in teaching; use visual resources (examples chalkboards, felt board, bulletin boards and flash cards); use community resources (example resource persons and places of interest) in teaching; and use audio materials (example radio and tape recorders) in teaching.

Teachers' Technological Pedagogical Knowledge in Teaching CRS in Senior High Schools

Research Question 4: What is the technological pedagogical knowledge of teachers in teaching CRS in Senior High Schools in the Central Region of Ghana?

The aim of this research objective was to find out the technological pedagogical knowledge of teachers in the teaching of CRS in Senior High Schools in the Central Region of Ghana. The views of CRS teachers are presented in Table 5.

Table 5: Teachers' Technological Pedagogical Knowledge in Teaching Christian Religious Studies (n=70)

Statement	M	SD
I use technologies that enhance the teaching approaches for CRS lessons.	4.13	0.70
I use technologies that enhance students' learning of CRS lessons.	4.11	0.53
I use technology to relate biblical texts to real life scenarios during CRS lessons.	4.21	0.72
I use technology to assess students' learning.	3.49	1.14
I assist my students to collaborate with each other using technology.	3.90	0.97
I ensure that my students do their group presentations using technology.	3.54	1.22
I am concerned with how technology can	4.03	0.45

Table 5 continued

influence the teaching approaches I use in the classroom.	

Source: Field Data, 2020

Scale:

1 = Strongly Disagree; 2 = Disagree; 3 = Uncertain;
4 = Agree; 5 =Strongly Agree
Mean of means = 3.92
Mean of standard deviation = .82

Table 5 sought to find out the technological pedagogical knowledge of teachers in the teaching of CRS in Senior High Schools in the Central Region of Ghana. A mean of means of 3.92 and a mean of standard deviation of 0.82 were realized. This means that the majority of the CRS teachers agreed to most of the statements that were posed to them. Further discussions of individual items are presented in the paragraphs below.

From Table 5, a mean of 4.13 and a standard deviation of 0.70 were achieved for the statement: "I use technologies that enhance the teaching approaches for CRS lessons". This means that, the CRS teachers agreed to the statement. Schmidt, Baran, Thompson, Mishra, Koehler and Shin (2009), view TPK as "knowledge of how various technologies can be used in teaching and the understanding that using technology may change the way teachers teach" (p. 125). To Owusu (2014), TPK is knowledge of using technology to implement different teaching methods. Again, when the CRS teachers were asked whether they use technologies that enhance students' learning of CRS lessons, the respondents agreed to the statement. Here, a mean of 4.11 and a standard deviation of 0.53

were obtained for this item showing the respondents agreed that they use technologies that enhance students' learning of CRS lessons.

Also, from Table 5, the CRS teachers agreed that they use technology to relate biblical texts to real life scenarios during CRS lessons. This is evidenced by the mean score of 4.21 and a standard deviation of 0.72 for this item. The mean is approximately 4, showing that the respondents agreed to the statement. Regarding the statement: "I use technology to assess students' learning", the majority of the CRS teachers were uncertain about the statement. This can be seen from the mean of 3.49 and a standard deviation of 1.14 that were realized. However, the high standard deviation obtained which is greater than the mean of standard deviation of 0.82 indicates that there were variations and that not all the CRS teachers were uncertain about the statement. However, it still remains that the majority of the CRS teachers were uncertain about the statement.

Also, a mean of 3.90 and a standard deviation 0.97 were recorded for the item "I assist my students to collaborate with each other using technology". This means that, the majority of the CRS teachers agreed to the statement. This is because the mean falls on scale 4 (agree) looking at the scale under Table 5. This finding contradicts that of Kwakye (2016) who assessed the Technological Pedagogical Content Knowledge (TPACK) preparedness of student-teachers in the Department of Arts and Social Sciences Education (DASSE) of University of Cape Coast, Ghana and found out that, student-teachers of UCC lacked Technological Pedagogical Knowledge. The finding depicts that, most of the CRS teachers agreed that they ensure that their students do their groups presentations

using technology. With a mean of 3.54 and a standard deviation of 1.22 it could be concluded that the mean falls into the scale of 4 (agree). Again, when the respondents were asked whether they are concerned with how technology can influence the teaching approaches they use in the classroom, they agreed to the statement. Here, a mean of 4.03 and a standard deviation of 0.45 were obtained for this item showing that the CRS teachers are concerned with how technology can influence the teaching approaches they use in the classroom.

From the above discussions, it can be concluded that, the teachers had adequate technological pedagogical knowledge in teaching Christian Religious Studies. This is because, the CRS teachers used technologies that enhance the teaching approaches for CRS lessons; used technologies that enhance students' learning of CRS lessons; used technology to relate biblical texts to real life scenarios during CRS lessons; and assist their students to collaborate with each other using technology. Also, the CRS teachers ensured that their students do their group presentations using technology and were concerned with how technology can influence the teaching approaches they use in the classroom. However, the CRS teachers were uncertain as to whether they used technology to assess students' learning.

Teachers' Technological Content Knowledge in Teaching CRS in Senior High Schools

Research Question 5: What is the technological content knowledge of teachers in teaching CRS in Senior High Schools in the Central Region of Ghana?

This research objective sought to find out the technological content knowledge of teachers in the teaching of CRS in Senior High Schools in the Central Region of Ghana. The views of CRS teachers are presented in Table 6.

Table 6: Teachers' Technological Content Knowledge in Teaching Christian Religious Studies (n=70)

Statement	M	SD
I present my CRS lessons with the application of technology.	3.89	1.12
I make use of technologies in order to enhance the understanding of specific concepts in CRS.	3.84	1.10
I know about the technologies that I have to use for effective teaching of CRS topics.	4.36	0.70
I can use appropriate technologies (i.e. multimedia resources, simulation) to teach various topics in CRS.	4.27	0.58
I know about technologies that I can use for enhancing the understanding of specific concepts in CRS.	4.24	0.91
I can use technology representations (i.e. multimedia visual demonstrations, etc.) to demonstrate specific concepts in CRS.	4.44	0.53

Source: Field Data, 2020

Scale:

1 = Strongly Disagree; 2 = Disagree; 3 = Uncertain;
4 = Agree; 5 =Strongly Agree
Mean of means = 4.17
Mean of standard deviation = .82

A mean of means of 4.17 and a mean of standard deviation of 0.82 that were achieved indicates that, the majority of the CRS teachers agreed to most of the statements that were posed to them concerning the technological content knowledge of teachers in the teaching of CRS in Senior High Schools in the Central Region of Ghana. Details of the individual items are presented in the subsequent paragraphs.

Table 6 depicts that, a mean of 3.89 and a standard deviation of 1.12 were achieved for the statement: "I present my CRS lessons with the application of technology". This means the CRS teachers agreed to the statement. This finding resonates with Mishra and Koehler (2006) who assert that, technological content knowledge is about the manner in which technology and content are reciprocally related. Again, when the CRS teachers were asked whether they make use of technologies in order to enhance the understanding of specific concepts in CRS, the respondents agreed to the statement. Here, a mean of 3.84 and a standard deviation of 1.10 were obtained for this item showing the respondents agreed that they make use of technologies in order to enhance the understanding of specific concepts in CRS. Also, from Table 6, the CRS teachers know about technologies that they have to use for effective teaching of CRS topics. This is evidenced by the mean score of 4.36 and a standard deviation of 0.70 for this item. The mean is approximately 4, showing that the respondents agreed to the statement.

Regarding the statement: "I can use appropriate technologies (i.e. multimedia resources, simulation) to teach various topics in CRS", the majority of the CRS teachers agreed to the statement. This can be seen from the mean of 4.27 and a standard deviation of 0.58 that were realized. This finding contradicts that of Kwakye (2016) who assessed the Technological Pedagogical Content Knowledge (TPACK) preparedness of student-teachers in the Department of Arts and Social Sciences Education (DASSE) of University of Cape Coast, Ghana and found out that, student-teachers of UCC lacked Technological Content Knowledge. Also, a mean of 4.24 and a standard deviation 0.91 were recorded for the item "I know about technologies that I can use for enhancing the understanding of specific concepts in CRS". This means that, the majority of the CRS teachers agreed to the statement. This is because the mean falls on scale 4 (agree) looking at the scale under Table 6. The finding depicts that, most of the CRS teachers agreed that they can use technology representations (i.e. multimedia, visual demonstrations, etc.) to demonstrate specific concepts in CRS. With a mean of 4.44 and a standard deviation of 0.53 it could be concluded that the mean falls into the scale of 4 (agree).

From the above discussions, it can be concluded that, CRS teachers had adequate technological content knowledge in teaching Christian Religious Studies. This is because, the CRS teachers present their CRS lessons with the application of technology; make use of technologies in order to enhance the understanding of specific concepts in CRS; know about the technologies that they have to use for effective teaching of CRS topics; and can use appropriate

technologies (i.e. multimedia resources, simulations) to teach various topics in CRS. Again, the CRS teachers know about technologies that they can use for enhancing the understanding of specific concepts in CRS; and can use technology representations (i.e. multimedia, visual demonstrations, etc.) to demonstrate specific concepts in CRS.

Teachers' Pedagogical Content Knowledge in Teaching CRS in Senior High Schools

Research Question 6: What is the pedagogical content knowledge of teachers in teaching CRS in Senior High Schools in the Central Region of Ghana?

The objective of this research question was to find out the pedagogical content knowledge of teachers in the teaching of CRS in Senior High Schools in the Central Region of Ghana. The responses from the CRS teachers are presented in Table 7.

Table 7: Teachers' Pedagogical Content Knowledge in Teaching Christian Religious Studies (n=70)

Statement	M	SD
I present CRS content using appropriate approaches that meet the needs of various learners.	4.80	0.40
I know about pedagogies that I have to use to enhance the learning of CRS.	4.56	0.50
I know about the pedagogies that I have to use to enhance the teaching of the content of CRS.	4.54	0.50
I can use appropriate instructional strategies (i.e. life themes, existential approach, concept cracking approach, etc.) to deliver the content of CRS.	4.70	0.46

Table 7 continued

I know about instructional strategies that I can use for enhancing the understanding of specific concepts in CRS.	4.49	0.50
I can use instructional strategies (i.e. lecture, role-play, etc.) to present specific concepts in CRS.	4.57	0.50

Source: Field Data, 2020

Scale:
1 = Strongly Disagree; 2 = Disagree; 3 = Uncertain;
4 = Agree; 5 =Strongly Agree
Mean of means = 4.61
Mean of standard deviation = 0.48

From Table 7, a mean of means of 4.61 and a mean of standard deviation of 0.48 were realized showing that the majority of the CRS teachers strongly agreed that they had adequate pedagogical content knowledge in teaching Christian Religious Studies. Further discussions of the individual items are discussed below.

The finding depicts that, most of the CRS teachers strongly agreed that they present CRS content using appropriate approaches that meet the needs of various learners. With a mean of 4.80 and a standard deviation of 0.40 it could be concluded that the mean falls into the scale of 5 (strongly agree). Again, when the respondents were asked whether they know about pedagogies that they have to use to enhance the learning of CRS, they strongly agreed to the statement. Here, a mean of 4.56 and a standard deviation of 0.50 were obtained for this item showing that the CRS teachers know about pedagogies that they have to use to enhance the learning of CRS. Also, from Table 7, the CRS teachers strongly agreed that they know about the pedagogies that they have to use to enhance the teaching of the

content of CRS. This is evidenced by the mean score of 4.54 and a standard deviation of 0.50 for this item. The mean is approximately 5 (strongly agree) according to the scale under Table 7.

Concerning the statement; "I can use appropriate instructional strategies (i.e. life themes, existential approach, concept cracking approach, etc.) to deliver the content of CRS, the majority of the CRS teachers strongly agreed to the statement. This can be seen from the mean of 4.70 and a standard deviation of 0.46 that were realized. Again, when the CRS teachers were asked whether they know about instructional strategies that they can use for enhancing the understanding of specific concepts in CRS, they agreed to the statement. Here, a mean of 4.49 and a standard deviation of 0.50 were obtained for this item. Also, from Table 7, the CRS teachers strongly agreed that they can use instructional strategies (i.e. lecture, role-play, etc.) to present specific concepts in CRS. This is evidenced by the mean score of 4.57 and a standard deviation of 0.50 for this item. The mean falls on scale 5 (strongly agree) looking at the scale under Table 7.

From the above, it can be concluded that the CRS teachers had adequate pedagogical content knowledge in teaching Christian Religious Studies. This is because, the CRS teachers present CRS content using appropriate approaches that meet the needs of various learners; know about pedagogies that they have to use to enhance the learning of CRS; know about the pedagogies that they have to use to enhance the teaching of the content of CRS; and can use appropriate instructional strategies (i.e. life themes, existential approach, concept cracking

approach, etc.) to deliver the content of CRS. Also, the CRS teachers know about instructional strategies that they can use for enhancing the understanding of specific concepts in CRS; and can use instructional strategies (i.e. lecture, role-play, etc.) to present specific concepts in CRS.

Teachers' Technological Pedagogical Content Knowledge in Teaching CRS in Senior High Schools

Research Question 7: What is the technological pedagogical content knowledge of teachers in teaching CRS in Senior High Schools in the Central Region of Ghana?

The aim of this research objective was to find out the technological pedagogical content knowledge of teachers in the teaching of CRS in Senior High Schools in the Central Region of Ghana. The responses from the CRS teachers are presented in Table 8.

Table 8: Technological Pedagogical Content Knowledge in Teaching Christian Religious Studies (n=70)

Statement	M	SD
I can teach lessons that appropriately combine CRS content, technologies, and teaching approaches.	4.63	0.49
I can select technologies to use in my classroom that enhance what I teach, how I teach and what students learn.	4.44	0.50
I can use strategies that combine content, technologies, and teaching approaches in my classroom.	4.41	0.50
I can use technologies that enhance the understanding of the content for a lesson.	4.40	0.49
I can find and use online materials that	4.34	0.76

effectivelv demonstrate a specific principle in		
Table 8 continued		
I can structure activities to help students to construct different representations on the content of CRS using appropriate technologies.	4.46	0.50
I can design inquiry activities to guide students to make sense of the content knowledge with appropriate technologies (e.g. simulations, web-based materials).	4.32	0.85

Source: Field Data, 2020

Scale:

1 = Strongly Disagree; 2 = Disagree; 3 = Uncertain;
4 = Agree; 5 =Strongly Agree
Mean of means = 4.43
Mean of standard deviation = .58

A mean of means of 4.43 and a mean of standard deviation of 0.58 were realized showing that the majority of the CRS teachers agreed that they had adequate technological pedagogical content knowledge in teaching Christian Religious Studies. Details of the individual items are discussed in the subsequent paragraphs.

Most of the CRS teachers can teach lessons that appropriately combine CRS content, technologies, and teaching approaches. With a mean of 4.63 and a standard deviation of 0.49 it could be concluded that the mean falls into the scale of 5 (strongly agree). This finding is in agreement with Asare-Danso (2017) who assessed the technological pedagogical content knowledge of Religious and Moral Education (RME) tutors in the colleges of education in Ghana and found out that, RME tutors of the colleges of education in Ghana demonstrated having good

technological, pedagogical and content knowledge. Similarly, Mishra and Koehler (2009) and Owusu (2014) explain that, Technological Pedagogical Content Knowledge (TPACK) treats technology, content, and pedagogy in unionism and blends the three separate constructs (content, technology and pedagogy) in a complex relationship. Again, when the respondents were asked whether they can select technologies to use in their classrooms that enhance what they teach, how they teach, and what students learn, they agreed to the statement. Here, a mean of 4.44 and a standard deviation of 0.50 were obtained for this item showing that the CRS teachers can select technologies to use in their classrooms that enhance what they teach, how they teach, and what students learn.

Also, from Table 8, the CRS teachers can use strategies that combine content, technologies, and teaching approaches in their classrooms. This is evidenced by the mean score of 4.41 and a standard deviation of 0.50 for this item. The mean is approximately 4 (agree) according to the scale under Table 8. Concerning whether the CRS teachers can use technologies that enhance the understanding of the content for a lesson, the majority of the respondents agreed to the statement. This can be seen from the mean of 4.40 and a standard deviation of 0.49 that were realized.

Again, when the CRS teachers were asked whether they can find and use online materials that effectively demonstrate a specific principle in CRS, they agreed to the statement. Here, a mean of 4.34 and a standard deviation of 0.76 were obtained for this item. Also, from Table 8, the CRS teachers agreed that they can structure activities to help students to construct different representations of

the content of CRS using appropriate technologies. This is evidenced by the mean score of 4.46 and a standard deviation of 0.50 for this item. The mean falls on scale 4 (agree) looking at the scale under Table 8. The finding also depicts that, most of the CRS teachers can design inquiry activities to guide students to make sense of the content knowledge with appropriate technologies (e.g. simulations, web-based materials). With a mean of 4.32 and a standard deviation of 0.85 it could be concluded that the mean falls into the scale of 4 (agree).

It can be concluded that, the CRS teachers agreed that they had adequate technological pedagogical content knowledge in teaching Christian Religious Studies. This is because, the CRS teachers can teach lessons that appropriately combine CRS content, technologies, and the teaching approaches; select technologies to use in their classrooms that enhance what they teach, how they teach, and what students learn; use strategies that combine content, technologies, and teaching approaches in their classroom; and can use technologies that enhance the understanding of the content for a lesson. Again, the CRS teachers can find and use online materials that effectively demonstrate a specific principle in CRS; can structure activities to help students to construct different representations of the content of CRS using appropriate technologies; and can design inquiry activities to guide students to make sense of the content knowledge with appropriate technologies (e.g. simulations, web-based materials).

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Overview

This chapter marks the concluding part of the study. It aims at highlighting the main findings. It also presents a summary of the research process, the conclusions and offers the implications for future research.

Summary of the Study

Teaching is a challenging profession. The responsibility of organising and planning pupils' learning is entrusted to the teacher. Teaching is not merely instruction, but the systematic promotion of learning by whatever means. To enhance learning, teachers, including Christian Religious Studies teachers, need to develop a nuanced understanding of the complex relationships between technology, content, and pedagogy, and use this understanding to develop appropriate, context-specific strategies and representations (Stenhouse1987, as cited in Mensah, 2014). Efficient or quality teachers must have a sound knowledge of what their people must know and have the ability to relate the subject matter (content), method, sequence and pace of work to individual needs; to use the environment and appropriate media to support learning (technology); use a range of teaching strategies skillfully (pedagogy); and have enthusiasm for the subject (Farrant, 1980, as cited in Adentwi, 2005).

In simple terms, Christian Religious Studies teachers should have the ability to combine technology with pedagogy and content in a way that will inspire learners to enjoy learning and perform better. It is in this light that the

technological pedagogical content knowledge (TPACK) has emerged as a promising theoretical framework for helping teachers and teacher educators to make sense of the knowledge needed for technology integration in the classroom (Mishra & Koehler, 2006).Therefore, this study sought to assess the technological pedagogical content knowledge of teachers in Christian Religious Studies in some selected Senior High Schools in the Central Region of Ghana.

In order to find answers to the research questions that were formulated to guide the study, the convergent mixed method research design was adopted for the study. The study covered all Christian Religious Studies teachers in public Senior High Schools in the Central Region of Ghana. All the 72 final year CRS teachers were involved in the study using the census method. The questionnaire and observation guide were the instruments used in collecting data to address the research questions. The questionnaire was the five point Likert scale type to ensure quick and easy response to the items. It is worthy to note that, the instruments were subjected to reliability and validity test. The data gathered was analysed using the computation of frequencies, percentages, means and standard deviations. The following were the main findings of the study.

Key Findings

1. It was found out that the CRS teachers had a good content knowledge in the teaching of Christian Religious Studies. This is because, the CRS teachers had sufficient knowledge about CRS, and they agreed that the content of CRS consists of topics from Old Testament, Gospels, Acts of the Apostles, and the Epistles of James. To attest that the CRS teachers were familiar with the

content knowledge in the teaching of CRS, the majority of the CRS teachers disagreed that David tore his robe and went to his house when he was informed that the child born to him by Bathsheba had died, and they also disagreed that on the story of the baptism of Jesus among the three synoptic writers, Mark gave details on the conversation between John the Baptist and Jesus. Again, they disagreed that according to Mathew's account, Jesus called his first four disciples after a great miracle where Simon encountered a great shoal of fish. However, the CRS teachers were unfamiliar with a few of the contents of the Old Testament as well as the aims of teaching Christian Religious Studies. This is because, the CRS teachers indicated that to prove the land's fertility, the spies brought from the valley of Eschol, pomegranates, citrus and vines which is not so because it was rather grapes, pomegranates and figs; and the CRS teachers indicated that, one of the aims of CRS is to help students question the authenticity of the stories in the Bible, but this is not so.

2. The findings of the study revealed that, although CRS teachers indicated that they used a number of pedagogies in teaching the subject, they did not have knowledge about various contemporary pedagogies for teaching Christian Religious Studies. This is because, CRS teachers indicated that they: related CRS with real, present and future experiences of learners as basis; adopted their teaching to suit the understanding of their students; adopted their teaching style to cater for individual differences in the classroom; and make use of the role-play method in order to offer students the opportunity to relate

CRS lessons to their own life. However, the CRS teachers did not have knowledge about contemporary pedagogies such as: life themes pedagogy, existential pedagogy, and the concept cracking pedagogy for the teaching of CRS. This is because, the CRS teachers agreed that according to the life themes pedagogy, religious beliefs must be taught as if they were facts because they are by nature experiential, but this statement is not true. In terms of the existential pedagogy, the CRS teachers are not supposed to exert their wishes on members of the class but the teachers were uncertain about the statement. Again, although the teachers indicated that they were conversant with the concept cracking approach, they indicated that the concept cracking approach had three steps/stages instead of four stages; and they also agreed that the second stage of the concept cracking approach is where the CRS teacher engages with the pupils' world of experience, but this is rather at the third stage of the concept cracking approach.

3. It was found out that, the CRS teachers had adequate technological knowledge in teaching Christian Religious Studies. This is because, the CRS teachers indicated that they are competent in using instructional resources; use instructional resources for lessons; keep up with important new technologies; and know about a lot of different technologies. Again, the CRS teachers use audio-visuals (example TV and motion pictures) in teaching; use visual resources (examples chalkboards, felt board, bulletin boards and flash cards); use community resources (example resource persons and places of interest) in

teaching; and use audio materials (example radio and tape recorders) in teaching.

4. It was found out that, the CRS teachers had adequate technological pedagogical knowledge in teaching Christian Religious Studies. This is because, the CRS teachers used technologies that enhance the teaching approaches for CRS lessons; used technologies that enhance students' learning of CRS lessons; used technology to relate biblical texts to real life scenarios during CRS lessons; and assist their students to collaborate with each other using technology. Also, the CRS teachers ensured that their students do their group presentations using technology and were concerned with how technology can influence the teaching approaches they use in the classroom. However, the CRS teachers were uncertain as to whether they used technology to assess students' learning.
5. It was found out that, CRS teachers had adequate technological content knowledge in teaching Christian Religious Studies. This is because, the CRS teachers presented their CRS lessons with the application of technology; made use of technologies in order to enhance the understanding of specific concepts in CRS; knew about the technologies that they had to use for effective teaching of CRS topics; and could use appropriate technologies (i.e. multimedia resources, simulations) to teach various topics in CRS. Again, the CRS teachers knew about technologies that they could use for enhancing the understanding of specific concepts in CRS; and could use technology

representations (i.e. multimedia, visual demonstrations, etc.) to demonstrate specific concepts in CRS.

6. It was found out that, the CRS teachers had adequate pedagogical content knowledge in teaching Christian Religious Studies. This is because, the CRS teachers presented CRS content using appropriate approaches that met the needs of various learners; knew about pedagogies that they had to use to enhance the learning of CRS; knew about the pedagogies that they had to use to enhance the teaching of the content of CRS; and could use appropriate instructional strategies (i.e. life themes, existential approach, concept cracking approach, etc.) to deliver the content of CRS. Also, the CRS teachers knew about instructional strategies that they could use for enhancing the understanding of specific concepts in CRS; and could use instructional strategies (i.e. lecture, role-play, etc.) to present specific concepts in CRS.
7. It was found out that, the CRS teachers had adequate technological pedagogical content knowledge in teaching Christian Religious Studies. This is because, the CRS teachers could teach lessons that appropriately combined CRS content, technologies, and the teaching approaches; select technologies to use in their classrooms that enhanced what they taught, how they taught, and what students learned; used strategies that combined content, technologies, and teaching approaches in their classroom; and could use technologies that enhanced the understanding of the content for a lesson. Again, the CRS teachers could find and use online materials that effectively demonstrated a specific principle in CRS; could structure activities to help

students to construct different representations of the content of CRS, using appropriate technologies; and could design inquiry activities to guide students to make sense of the content knowledge with appropriate technologies (e.g. simulations, web-based materials).

Conclusions

The following conclusions could be drawn from the findings of the study. In the first place, it can be concluded that, the CRS teachers had a good content knowledge in the teaching of Christian Religious Studies. However, the CRS teachers were unfamiliar with a few of the contents of the Old Testament, as well as the aims of teaching Christian Religious Studies. This is because, the CRS teachers indicated that to prove the land's fertility, the spies brought from the valley of Eschol, pomegranates, citrus and vines which was not so because it was rather grapes, pomegranates and figs; and the CRS teachers indicated that, one of the aims of CRS was to help students question the authenticity of the stories in the Bible, but this was not so. These findings raised a lot of questions. Perhaps, the CRS teachers were not conversant with the aims for teaching CRS. It could also be that, the CRS teachers had challenges with some topics in the Old Testament.

Also, it can be concluded that although CRS teachers used a number of pedagogies in teaching the subject, they did not have knowledge about various contemporary pedagogies for teaching Christian Religious Studies, such as: life themes pedagogy, existential pedagogy, and the concept cracking pedagogy for the teaching of CRS. Perhaps, CRS teachers did not know about the contemporary

pedagogies for the teaching of the subject. It could also be that, the CRS teachers lacked adequate information about how to use them.

Again, it can be concluded that, the CRS teachers had adequate technological knowledge in teaching Christian Religious Studies. However, the observation sessions revealed an entirely different picture because the CRS teachers did not make use of the technological knowledge they claimed they possessed. The only common instructional resources that the CRS teachers used were the Revised Standard Version (RSV) Bible and some pamphlets that consisted of compiled notes made by some of the teachers. This situation raises a lot of questions. Perhaps, the CRS teachers were not truthful when they were filling out the questionnaires. It could also be that the CRS teachers had adequate knowledge but the various instructional resources were neither available nor adequate for use.

It can be concluded that, the teachers had adequate technological pedagogical knowledge in teaching Christian Religious Studies. This is because, the CRS teachers used technologies that enhance the teaching approaches for CRS lessons; used technologies that enhance students' learning of CRS lessons; used technology to relate biblical texts to real life scenarios during CRS lessons; and assisted their students to collaborate with each other using technology. However, the CRS teachers were uncertain as to whether they used technology to assess students' learning. It may be that the CRS teachers did not know how to use technology to assess students' learning.

Also, it can be concluded that, CRS teachers indicated that they had adequate technological content knowledge in teaching Christian Religious Studies. However, this was not brought to bear in their lessons that were observed at the time of data collection. It is therefore unclear whether teachers truly possessed the technological content knowledge for teaching CRS as they indicated or perhaps, they did not give the researcher the true picture of situations on the ground due to face-saving mechanisms.

It can be concluded that the CRS teachers had adequate pedagogical content knowledge in teaching Christian Religious Studies. It is surprising that, the CRS teachers indicated that they knew about pedagogies that they had to use to enhance the learning of CRS, and that they knew about the pedagogies that they had to use to enhance the teaching of the content of CRS. Yet, during the observation sessions, most CRS lessons were monotonous because, the CRS teachers predominantly used the lecture method and occasionally used the questions and answer method as well as the discussion method. Role-play method, dramatization and field trip methods were rarely used. Perhaps, the CRS teachers did not know how to use these teaching methods appropriately or they might have considered that, the use of these methods may consume a lot of time.

Again, CRS teachers indicated that they had adequate technological pedagogical content knowledge in teaching Christian Religious Studies. However, it is one thing knowing something and it is another making use of it. If indeed CRS teachers had adequate technological pedagogical content knowledge in

teaching CRS, then they should have made use of it because, the observation sessions during data collection did not attest to these claims.

Recommendations

Based on the findings and conclusions drawn from the study, the following recommendations have been made.

1. It is commendable that, CRS teachers had a good content knowledge in the teaching of the Christian Religious Studies. However, the CRS teachers were not conversant with some topics in the Old Testament. Therefore, it is suggested that, CRS teachers should identify areas/topics that they have challenges or difficulties with and seek for assistance. CRS teachers should study and be conversant with the aims and goals for teaching Christian Religious Studies, so that they can tailor their lessons according to the aims for teaching the subject.
2. Also, since it was realized that the CRS teachers did not have knowledge about various contemporary pedagogies such as: life themes pedagogy, existential pedagogy, and the concept cracking pedagogy for teaching CRS, it is recommended that, the Ministry of Education, Ghana Education Service and National Council for Curriculum and Assessment should organize workshops for teachers to be abreast with some of these contemporary pedagogies for the teaching of CRS in Senior High Schools.
3. The Ministry of Education in collaboration with the various headmasters, parents and teachers should ensure adequate provision and supply of both school and community-based resources that would enhance effective

teaching and learning of Christian Religious Studies. Teachers should be trained to develop and improvise simple teaching and learning materials for their lessons. This will reduce the over dependence of teachers on the Ministry of Education (MOE) for the supply of teaching-learning materials. Also, CRS teachers should endeavor to use frequently instructional resources such as: visual resources, audio resources, religious objects in the community, and visit religious sites in the community, in order to make the teaching and learning of CRS interesting and practical to students.

4. Christian Religious Studies teachers should endeavor to blend the use of technologies with pedagogical knowledge in teaching CRS. The Ministry of Education and Ghana Education Service should provide in-service training for CRS teachers on how to use technology to assess students' learning.
5. It is recommended that, CRS teachers should present their CRS lessons with the application of technology and make use of technologies in order to enhance the understanding of specific concepts in CRS. Also, CRS teachers should use appropriate technologies (i.e. multimedia resources, simulations) to teach various topics in CRS. Again, the CRS teachers should use technology representations (i.e. multimedia, visual demonstrations, etc.) to demonstrate specific concepts in CRS.
6. Also, it is recommended that CRS teachers adopt learner-centred approaches to their lessons and employ a variety of strategies in delivering their CRS contents to their learners. Teachers should endeavor to use strategies such as brainstorming, discussion method, role-play method, dramatization and field

trip methods as such pedagogies inspire content and continues to linger on in the minds of learners due to their powerful effects.

7. It is recommended that, CRS teachers should teach lessons that appropriately combine CRS content, technologies, and the teaching pedagogies and use strategies that combine content, technologies, and teaching approaches in their classrooms. Again, the CRS teachers should find and use online materials that effectively demonstrate a specific principle in CRS; structure activities to help students to construct different representations of the content of CRS using appropriate technologies; and can design inquiry activities to guide students to make sense of the content knowledge with appropriate technologies (e.g. simulations, web-based materials).

Areas for Further Research

This study assessed the technological pedagogical content knowledge of teachers in Christian Religious Studies in some selected Senior High Schools in the Central Region of Ghana. The study could be replicated in Senior High Schools in other regions in the country to find out what persists there. Also, the study identified that, the CRS teachers indicated they have technological content knowledge, technological pedagogical knowledge, and technological pedagogical content knowledge, but they did not use or implement the knowledge they claimed to possess. It is unknown why the CRS teachers possess the knowledge of such constructs but do not implement them in the course of their lessons. Could it be that they encounter certain challenges that do not enable them to implement the

knowledge they possess? Future studies may decide to conduct further investigations into this phenomenon.

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APPENDICES

APPENDIX A: QUESTIONNAIRE FOR CRS TEACHERS

UNIVERSITY OF CAPE COAST

DEPARTMENT OF ARTS EDUCATION

This questionnaire assesses the technological pedagogical content knowledge of teachers in Christian Religious Studies in some selected Senior High Schools in the Central Region of Ghana. This questionnaire is purely for academic work. I therefore ask for your maximum co-operation and assure you that information provided here will be treated with outmost confidentiality.

SECTION A: DEMOGRAPHIC INFORMATION

Please respond to each of the following items by ticking (√) the appropriate response box.

1. Gender:

a. Male [ ]

b. Female[ ]

2. Age of Respondents:

a. 20-29 years [ ]

b. 30-39 years [ ]

c. 40 -49 years. [ ]

d. 50-59 years [ ]

e. 60 years and above [ ]

3. Years of teaching experience:

a. less than a year [ ]

b. 1 - 5 years [ ]

c. 6 -10 years [ ]

d. 11 – 15 years [ ]

e. 16 years and above [ ]

4. What is your highest academic qualification?

a. Bachelor's Degree [ ]

b. Master of Arts [ ]

c. Master of Philosophy [ ]

d. Other (specify)……

5. What is your highest professional teaching qualification?

a. Teacher's Cert 'A' [ ]

b. Diploma in Education [ ]

c. Post Graduate Diploma in Education [ ]

d. Bachelor of Education [ ]

e. Masters in Education [ ]

f. Other (specify)……

SECTION- B: TECHNOLOGICAL KNOWLEDGE (TK)

Please tick (√) the appropriate box to indicate your opinion on these statements key: Strongly Agree (SA); Agree (A); Uncertain (U); Disagree (D); Strongly Disagree (SD)

Statement	**SA**	**A**	**U**	**D**	**SD**
I am competent in using instructional resources.					
I use instructional resources for lessons.					
I keep up with important new technologies.					

I know about a lot of different technologies.					
. I use audio-visuals (example TV and motion pictures) in teaching.					
. I use visual resources (examples chalkboards, felt board, bulletin, boards and flash cards).					
. I use community resources (example resource persons and places of interest) in teaching.					
. I use audio materials (example radio and tape recorders) in teaching.					

SECTION- C: PEDAGOGICAL KNOWLEDGE (PK)

Please tick (√) the appropriate box to indicate your opinion on these statements key: Strongly Agree (SA); Agree (A); Uncertain (U); Disagree (D); Strongly Disagree (SD)

Statement	**SA**	**A**	**U**	**D**	**SD**
. I relate CRS with real, present and future experiences of learners as basis.					
. In using the life themes pedagogy, there are three steps involved and they are: The					

Biblical experience, Human experience and Explanation.					
. According to the life themes pedagogy, religious beliefs must be taught as if they were facts because they are by nature experiential.					
. In using the existential pedagogy, CRS teachers must exert their wishes on members of the class.					
. The existential pedagogy is grounded on the fact that, the existential experiences should be the basis for forming religious concepts.					
. CRS should help students to build conceptual bridges between existential experiences and the central concepts of religion.					
. I am conversant with the concept cracking approach to the teaching of CRS.					
. In using the concept cracking approach, there are three steps/stages involved.					
. The second stage of the concept cracking approach is where by the CRS teacher					

engages with the pupils' world of experience.					
. The teacher- learner interaction is very minimal because I mostly use the lecture method in teaching.					
. I make use of role- play in order to offer students the opportunity to relate CRS lessons to their own life.					
. I adopt my teaching style to cater for individual differences in the classroom.					
. I adopt my teaching to suit the understanding of my students.					

SECTION- D: CONTENT KNOWLEDGE (CK)

Please tick the appropriate box to indicate your opinion on these statements. Key: Strongly Agree (SA); Agree (A); Uncertain (U); Disagree (D); Strongly Disagree (SD)

Statement	**SA**	**A**	**U**	**D**	**SD**
. I have sufficient knowledge about CRS.					
. The content of CRS consists of the Old Testament, Gospels, Acts of the Apostles, and the Epistles of James.					
. David tore his robe and went to his house when					

he was informed that the child born to him by Bathsheba had died.					
. To prove the land's fertility, the spies brought from the valley of Eschol, pomegranates, citrus and vines.					
. On the story of the baptism of Jesus among the three synoptic writers, Mark gave details on the conversation between John the Baptist and Jesus.					
. According to Matthew's account, Jesus called his first four disciples after a great miracle where Simon encountered a great shoal of fish.					
. Mathias was chosen to replace Judas Iscariot after the lot was cast.					
. One cannot be truly religious unless he or she bridles his or her tongue.					
. Faith is made complete by works and not faith alone.					
. Christians are to fulfill their responsibilities to only God and not the state.					
. The life of the early church was such that, everything was collectively owned.					
. The rationale for teaching CRS is to help					

students relate biblical ideals and virtues to their lives.					
. One of the aims of CRS is to help students question the authenticity of the stories in the Bible.					
. The aim for the teaching of CRS is to improve students' moral standards.					

SECTION- E: TECHNOLOGICAL PEDAGOGICAL KNOWLEDGE (TPK)

Please tick the appropriate box to indicate your opinion on these statements. Key: Strongly Agree (SA); Agree (A); Uncertain (U); Disagree (D); Strongly Disagree (SD)

Statement	**SA**	**A**	**U**	**D**	**SD**
. I use technologies that enhance the teaching approaches for CRS lessons.					
. I use technologies that enhance students' learning of CRS lessons.					
. I use technology to relate biblical texts to real life scenarios during CRS lessons.					
. I use technology to assess students' learning.					
. I assist my students to collaborate with each other using technology.					

I ensure that my students to do their group presentations using technology.					
I am concerned with how technology can influence the teaching approaches I use in the classroom.					

SECTION- F: TECHNOLOGICAL CONTENT KNOWLEDGE (TCK)

Please tick the appropriate box to indicate your opinion on these statements. Key: Strongly Agree (SA); Agree (A); Uncertain (U); Disagree (D); Strongly Disagree (SD)

Statement	**SA**	**A**	**U**	**D**	**SD**
I present my CRS lessons with the application of technology.					
I make use of technologies in order to enhance the understanding of specific concepts in CRS.					
I know about the technologies that I have to use for effective teaching of CRS topics.					
I can use appropriate technologies (i.e. multimedia resources, simulation) to teach various topics in CRS.					
I know about technologies that I can use for enhancing the understanding of specific					

concepts in CRS.					
. I can use technology representations (i.e. multimedia, visual demonstrations, etc.) to demonstrate specific concepts in CRS.					

SECTION- G: PEDAGOGICAL CONTENT KNOWLEDGE (PCK)

Please tick the appropriate box to indicate your opinion on these statements. Key: Strongly Agree (SA); Agree (A); Uncertain (U); Disagree (D); Strongly Disagree (SD)

Statement	**SA**	**A**	**U**	**D**	**SD**
. I present CRS content using appropriate approaches that meets the needs of various learners.					
. I know about pedagogies that I have to use enhance learning of CRS.					
. I know about the pedagogies that I have to use to enhance the teaching of content of CRS.					
. I can use appropriate instructional strategies (i.e. life themes, existential approach, concept cracking approach, etc.) to deliver the content of CRS.					
. I know about instructional strategies that I					

can use for enhancing the understanding of specific concepts in CRS.					
. I can use instructional strategies (i.e. lecture, role-play, etc.) to present specific concepts in CRS.					

SECTION- H: TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE (TPACK)

Please tick the appropriate box to indicate your opinion on these statements. Key: Strongly Agree (SA); Agree (A); Uncertain (U); Disagree (D); Strongly Disagree (SD)

Statement	**SA**	**A**	**U**	**D**	**SD**
. I can teach lessons that appropriately combine CRS content, technologies, and teaching approaches.					
. I can select technologies to use in my classroom that enhance what I teach, how I teach, and what students learn.					
. I can use strategies that combine content, technologies, and teaching approaches in my classroom.					
. I can use technologies that enhance the understanding of the content for a lesson.					
. I can find and use online materials that					

effectively demonstrate a specific principle in CRS.					
. I can structure activities to help students to construct different representations of the content of CRS using appropriate technologies.					
. I can design inquiry activities to guide students to make sense of the content knowledge with appropriate technologies (e.g. simulations, web-based materials).					

Thank You

APPENDIX B: OBSERVATION GUIDE FOR CRS LESSONS

UNIVERSITY OF CAPE COAST

DEPARTMENT OF ARTS EDUCATION

Item	Field notes
Technological Knowledge Teacher's use of audio-visual materials Teacher's use of visual resources Teacher's use of audio resources Teacher's use of community resources	
Pedagogical Knowledge Teacher relates biblical concepts to real life situations. Teacher's delivery of lesson is consistent with the rationale for teaching CRS i.e. to help students relate biblical ideals and virtues to their lives. Teacher uses appropriate questioning techniques. Classroom management Teacher's use of repertoire of instructional strategies that stimulates learners' interest in CRS lessons. Teacher varies and appropriately uses reinforcement techniques.	

Content Knowledge . Teacher demonstrates sufficient content knowledge about CRS. . Teacher demonstrates knowledge of subject matter in the Old Testament, Synoptic Gospels, Acts of the Apostles, the Epistles of James, and 1 Peter. . Teacher assists students to identify appropriate moral values of the biblical stories. . Teacher cites relevant examples and establishes connections between biblical concepts and real life situations.	

UNIVERSITY OF CAPE COAST
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FACULTY OF HUMANITIES AND SOCIAL SCIENCES EDUCATION

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OUR REF: DAsE/1
YOUR REF:

Date: 5th June, 2020

TO WHOM IT MAY CONCERN
(LETTER OF INTRODUCTORY)

This is to certify that **MS. COMFORT AFARI-YANKSON** is an M.Phil. student of the Department of Arts Education of the University of Cape Coast, Ghana. She is required to carry out a research study on the topic "**AN ASSESSMENT OF TEACHERS' TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE IN CHRISTIAN RELIGIOUS STUDIES: A SURVEY**".

I would be grateful if you would offer her any assistance that she needs.

Yours faithfully,

REV. PROF. SETH ASARE-DANSO PHD
HEAD OF DEPARTMENT