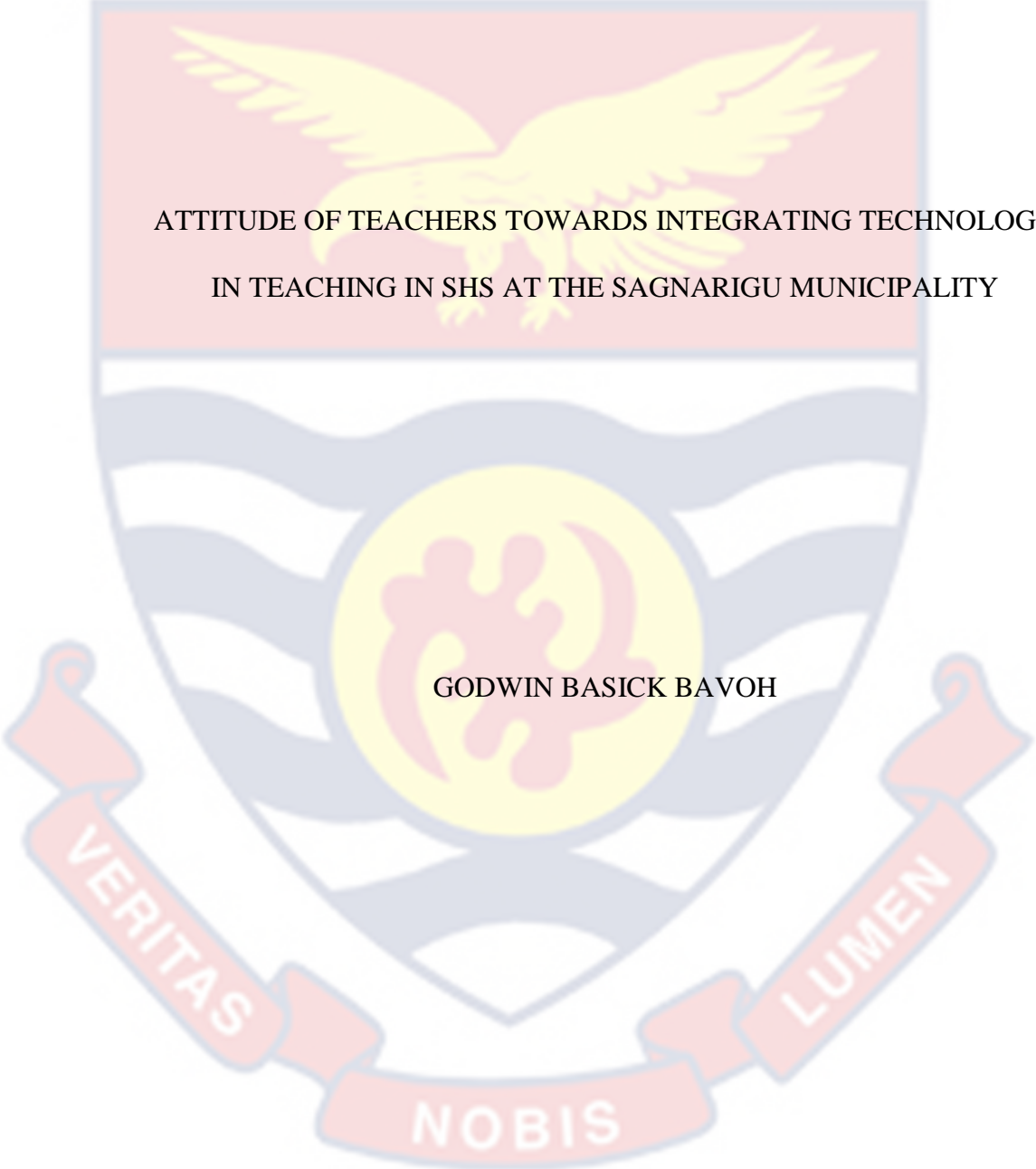UNIVERSITY OF CAPE COAST

ATTITUDE OF TEACHERS TOWARDS INTEGRATING TECHNOLOGY

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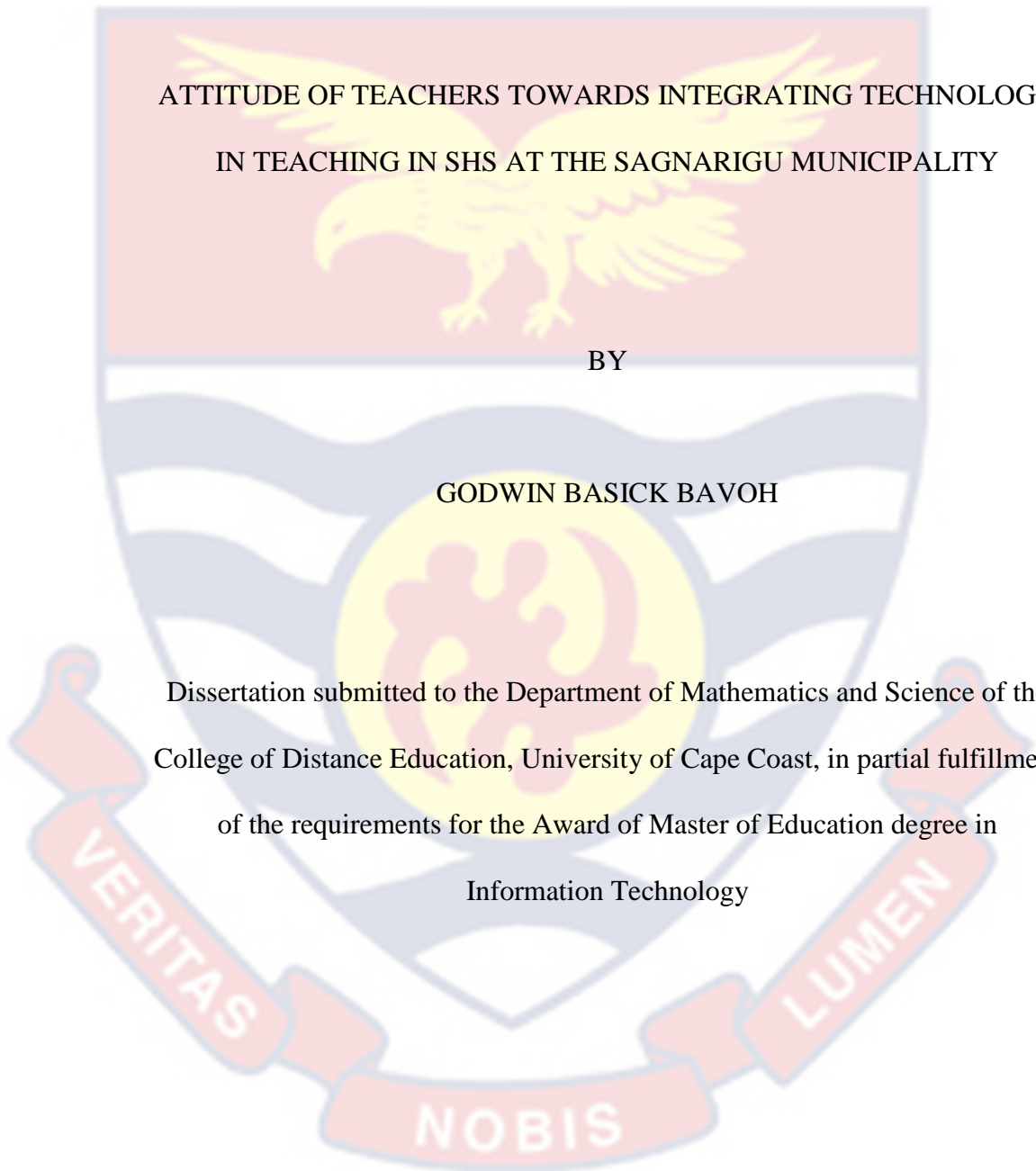
GODWIN BASICK BAVOH

2023

UNIVERSITY OF CAPE COAST

ATTITUDE OF TEACHERS TOWARDS INTEGRATING TECHNOLOGY

IN TEACHING IN SHS AT THE SAGNARIGU MUNICIPALITY

BY

GODWIN BASICK BAVOH

Dissertation submitted to the Department of Mathematics and Science of the

College of Distance Education, University of Cape Coast, in partial fulfillment

of the requirements for the Award of Master of Education degree in

Information Technology

AUGUST 2023

DECLARATION

Candidate's Declaration

I hereby declare that this research is the result of our own original work and that no part of it has been presented for another degree in this university or elsewhere.
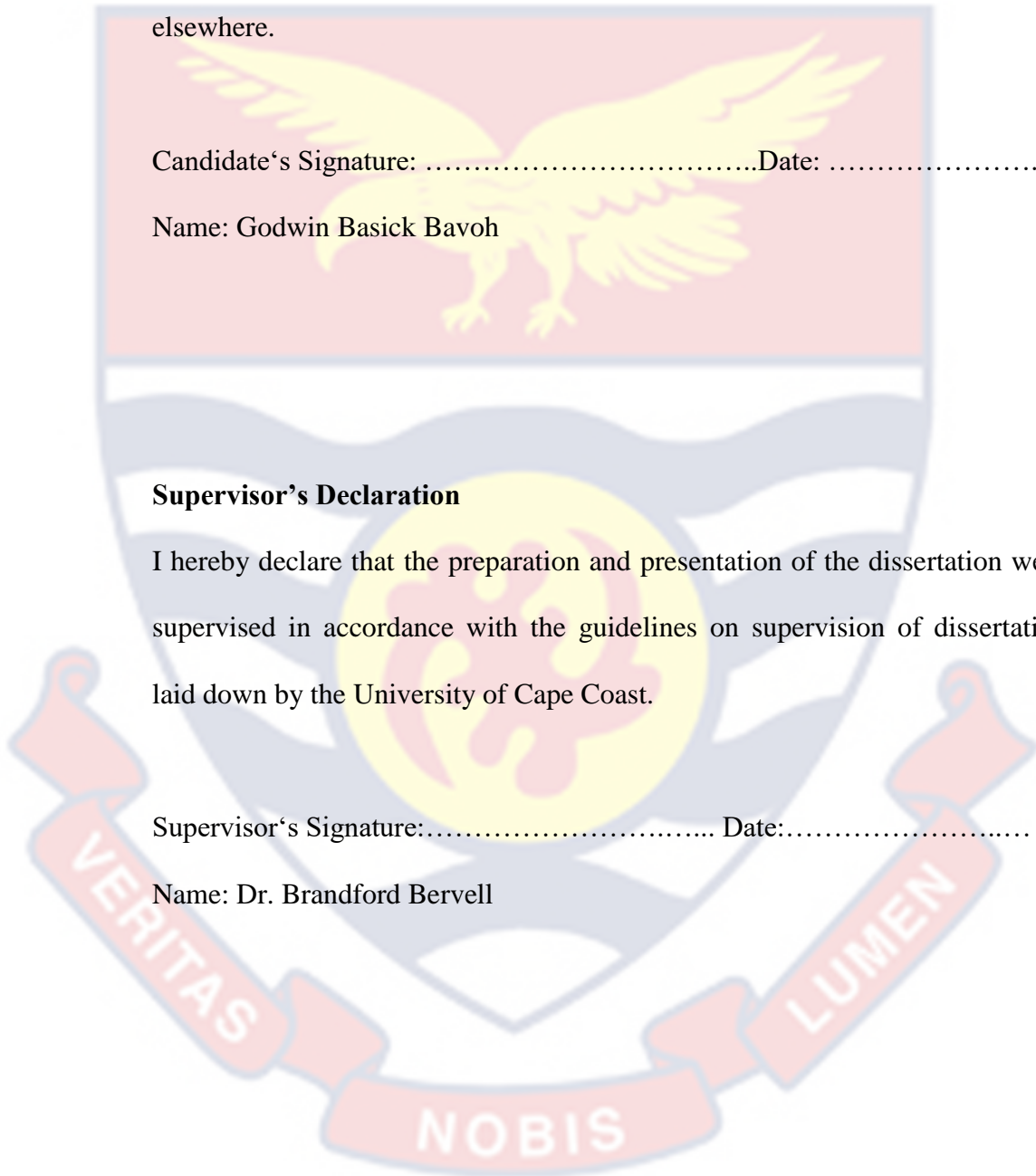
Candidate's Signature: …………………………..Date: ………………….

Name: Godwin Basick Bavoh

Supervisor's Declaration

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

Supervisor's Signature:……………………….... Date:………………….…

Name: Dr. Brandford Bervell

ABSTRACT

The study aimed to assess the attitude of teachers towards integrating technology in teaching in Senior High Schools at the Sagnarigu Municipality. The purposive sampling approach was used to select 179 respondents for the study. The correlational research design from the positivist philosophical position and the quantitative approach was adopted for the study. Using the partial least square structural equation modelling (PLS-SEM) analysis, the study found that the attitude of teachers towards computers significantly influenced their attitude towards the internet, learning management systems, and their behavioral intention towards integrating ICT into education. The attitude of teachers towards the internet was significantly related to their attitude towards online learning and their behavioral intention towards integrating ICT into education. Additionally, there was a significant relationship between the attitude of teachers towards learning management systems and online learning. Based on the findings, the study recommends that authorities in the four government Senior High Schools in the Sagnarigu District should provide training for teachers on how to use available learning management systems for teaching, support their teachers in acquiring and stock their ICT laboratories with adequate and functioning computers for educational use. Management of these schools should pay attention to teachers' attitudes towards the internet and influence their attitudes towards teachers' behavioral intention towards integrating ICT into education by providing online tools as well as training on how to use these online tools to deliver academic content.

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Finally, I would like to express my sincere appreciation to all those who contributed to the success of this dissertation in one way or the other. Your support has been invaluable, and I am forever grateful.
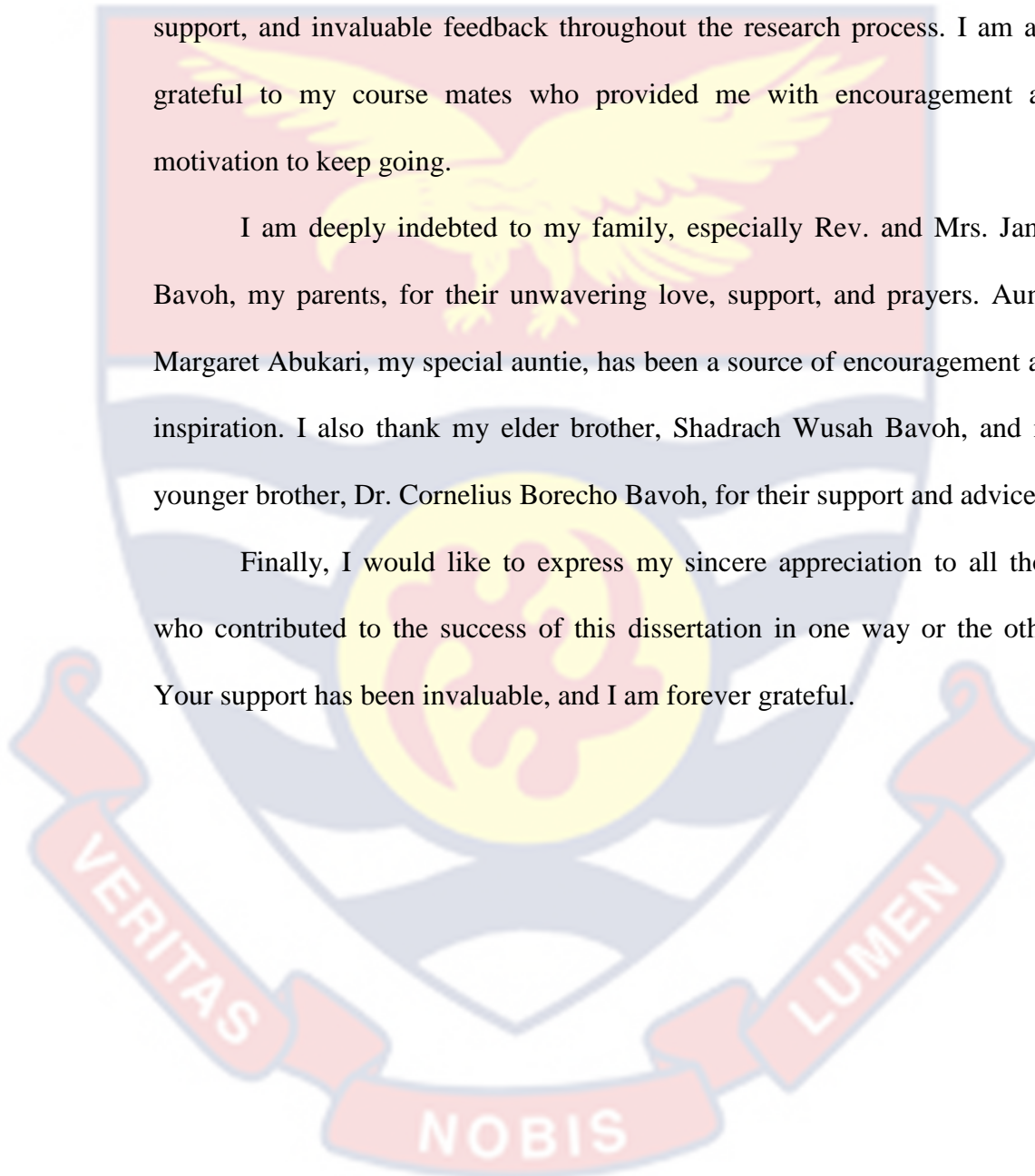
DEDICATION

To my beloved wife, Mrs. Gloria Ntewusu, and our son, Cyril Bunya-
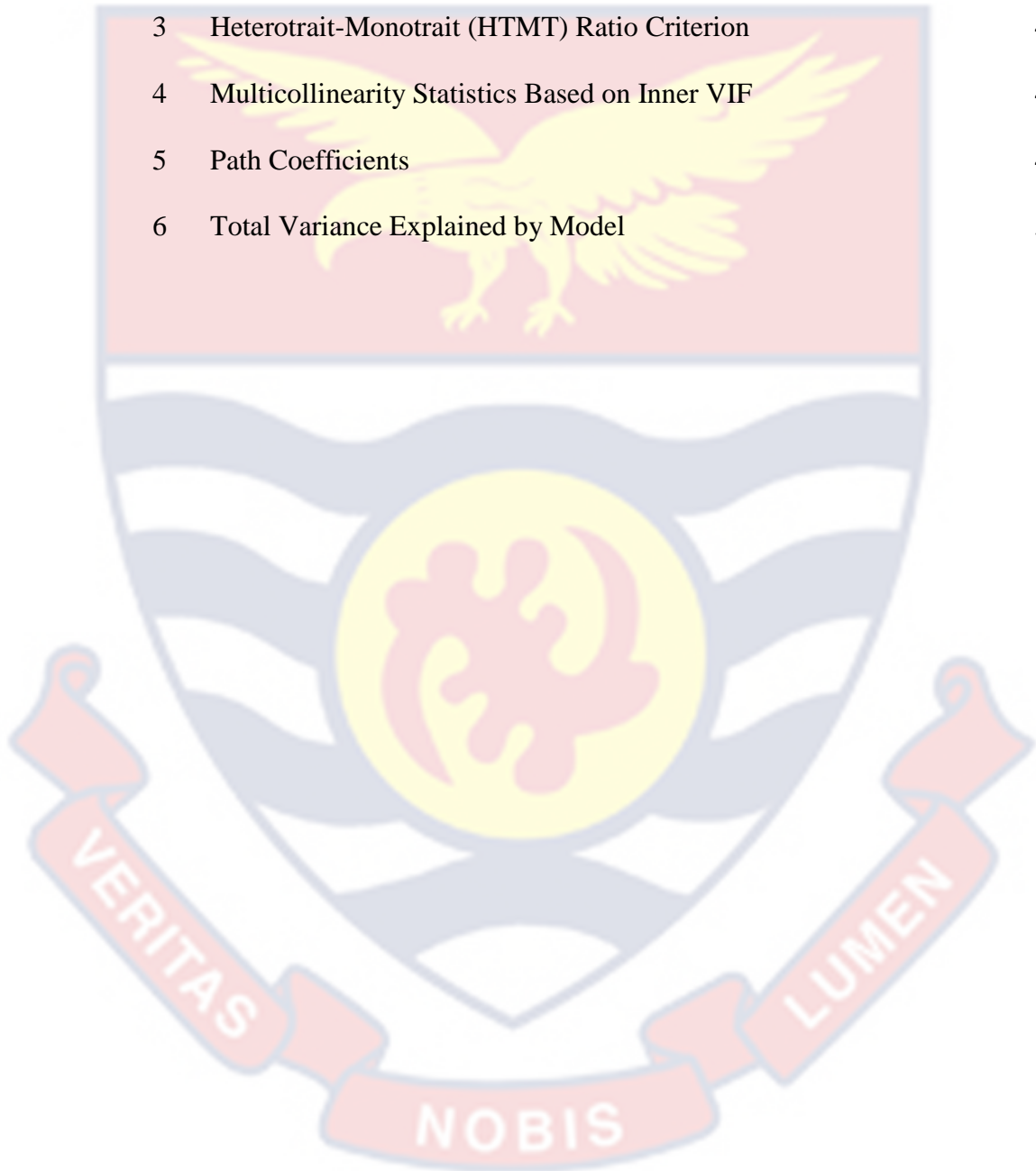
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CHAPTER ONE

INTRODUCTION

Background to the Study

Since 1990, numerous countries have been advancing the utilization of Information Communication Technologies (ICT) in education and training, especially to grow admittance to and work on the nature of schooling (Lawrence & Tar, 2018). Simultaneously, globalization and shift to an information-based economy expects that schooling organizations foster individual capacity to apply information technology in unique settings. ICTs have been recognized as a way to achieve these goals. In spite of the fact that ICT is presently at the focal point of training change endeavors, not all nations are as of now ready to profit from this turn of events and advances that innovation can offer. Huge obstructions frequently alluded to as advanced partition limit the capacity of certain nations to exploit mechanical turn of events (Kozma & Anderson, 2002). The emerging nations are confronted with difficulties connected with access, teaching method or appraisal while utilizing ICTs to improve and build up training (Kozma & Anderson, 2002).

It is essential to take note that the idea, strategies and utilisation of the term ICTs are continually developing quickly; beginning from the fame of the issue of PCs in schooling during the 1980s, when moderately modest miniature PCs opened up for the customer market, later, close to the furthest limit of 1980s the term was supplanted by IT (Information Technology); meaning a shift of concentration from processing innovation to the ability to store, examine and recover data. This was trailed by the presentation of the term ICTs (Information Communication Technologies) around 1992 when

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email and World Wide Web (Internet) opened up to the overall population (Pelgrum & Law 2003). However, at first, instructors saw the utilization of ICTs in the study hall for the most part as an approach to showing PC proficiency, it plays a more extensive part: that of conveying numerous sorts of learning at a lower cost and with top notch than the customary techniques for educating permit. What's more, schools and colleges progressively use ICTs to diminish cost, further develop proficiency and organization (Blurton, 2002). There has anyway been a wide uniqueness between the degrees of interests in created nations versus the emerging nations, Ghana included, in any case expresses that this divergence isn't really something terrible as emerging nations can gain from created nations on ICT combination. The Government of Ghana perceives the advantages of Technology Integration in Education at all degrees of schooling in the country.

The Ghana Economic Recovery Strategy for Wealth and Employment (2003-2007), stresses that ICT is significant for acknowledgment of the expected improvement in the curriculum. The vision of Ministry of Education Science and Technology is to work with ICT as an all-inclusive device for instruction in education (Bester, Smit, De Beer & Myburgh, 2021). To accomplish this vision, each instructive organisation, educators, students and particular local area ought to be furnished with fitting technological framework, skills and approaches for utilization and progress of education. A basic viewpoint to the effective execution of technology coordination related targets is the arranging perspective. Pelgrum and Law (2003), demonstrate that strategy creators and instructive organizers assume a focal part and show that there are strategies and arranging suggestions in each step of execution.

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The integration of technology into teaching has been widely recognized as a critical aspect of modern education (Ertmer & Ottenbreit-Leftwich, 2010). In Ghana, the government has invested in technology infrastructure, curriculum development, and teacher training to promote digital literacy and technology enabled learning (Ministry of Education, 2016). However, there is limited research on the attitudes of teachers towards integrating technology into teaching in senior high schools in Ghana (Arkorful, Barfi & Aboagye, 2021). Previous studies have identified several factors that can influence teachers' attitudes towards technology integration, including their perceptions of usefulness and ease of use, self-efficacy, and beliefs about the role of technology in education (Teo, 2015). Nevertheless, there is a need for context-specific research on the attitudes of teachers towards technology integration in Ghana, as these factors may differ across different cultural contexts. Hence, the aim of this research study is to explore the attitudes of teachers towards integrating technology into teaching in senior high schools in Ghana. The study aims to identify factors that influence teachers' attitudes towards technology integration and explore the relationship between teachers' attitudes and their use of technology in the classroom. The findings of this study may provide insights into challenges and opportunities for technology integration in Ghanaian senior high schools and inform the development of effective strategies to promote and support technology-enabled learning.

Statement of the Problem

Careful planning depends on how well educators and authorities understand and value the elements of education (Jhurree, 2005). In Ghana, the

government and the Ghana Education Service have recognized the significance of ICT implementation in schools and have put significant attention on the digitization agenda, particularly in promoting ICT integration in education (Ministry of Education, 2016). However, while some countries like Netherland and Finland have reported up to 41% of ICT integration in education and learning, the proportion remains significantly low in Africa, including Ghana (Warschauer, 2004).

One of the challenges to successful technology integration in education in Ghana is the attitude of teachers towards integrating information technology in their teaching. Research has found that teachers' attitudes towards technology integration can influence their willingness to use technology in the classroom (Teo, 2015). In Ghana, there is limited research on the attitudes of teachers towards integrating technology into teaching in senior high schools. Few secondary schools in Ghana had a small number of computers, and for most schools that had a reasonable number of computers, the primary use was in teaching Computer Studies (Boadu, Awuah, Ababio & Eduaquah, 2014).

The recent outbreak of the Covid-19 pandemic has further highlighted the importance of technology integration in education, particularly in remote learning and online instruction. The pandemic has forced schools to adopt technology in their teaching methods, and this has exposed the gaps and challenges in technology integration in education, including access to technology, teacher training, and infrastructure (Kundu & Bej, 2021). Given the fact that teachers attitude towards integrating information technology in Ghana has been absent in literature, this study seeks to fill the gap by

examining the attitude of SHS teachers at the Sagnarigu municipality towards integrating technology in teaching.

Purpose of the Study

The purpose of this study is to assess the attitude of teachers in integrating technology in teaching in Senior High Schools.

Objectives of the Study

Specifically, the study seeks to ascertain;

1. the relationship between attitude of teachers towards computers and attitude of teachers towards the internet.

2. the relationship between the attitude of teachers towards computers and the attitude of teachers towards learning management systems.

3. the relationship between the attitude of teachers towards computers and the attitude of teachers towards online learning.

4. the relationship between the attitude of teachers towards learning management system and the attitude of teachers towards online learning.

5. the relationship between the attitude of teachers towards learning management system and teachers' behavioral intention towards integrating ICT in education.

6. the relationship between attitude of teachers towards computers and teachers' behavioral intention towards integrating ICT in education.

7. the relationship between the attitude of teachers towards internet and teachers' behavioral intentions towards integrating ICT in education

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8. the relationship between the attitude of teachers towards online learning and teachers' behavioral intention towards integrating ICT in education.

Research Hypotheses

H_1: There is a significant relationship between attitude of teachers towards computers and attitude of teachers towards the internet.

H_2: There is a significant relationship between the attitude of teachers towards computers and the attitude of teachers towards learning management systems.

H_3: There is a significant relationship between the attitude of teachers towards computers and the attitude of teachers towards online learning.

H_4: There is a significant relationship between the attitude of teachers towards learning management system and teachers' behavioral intention towards integrating ICT in education.

H_5: There is a significant relationship between attitude of teachers towards computers and teachers' behavioral intention towards integrating ICT in education.

H_6: There is a significant relationship between attitude of teachers towards computers and teachers' behavioral intention towards integrating ICT in education.

H_7: There is a significant relationship between the attitude of teachers towards internet and teachers' behavioral intentions towards integrating ICT in education.

H_8: There is a significant relationship between the attitude of teachers towards online learning and teachers' behavioral intentions towards integrating ICT in education.

Significance of the Study

The study's aim is to understand the attitudes of teachers towards integrating technology into teaching in senior high schools in the Sagnarigu Municipal of Ghana. The findings of the study may help the Ministry of Education (MoE), Ghana Educational Service (GES), and the National Council for Curriculum Assessment to identify barriers and facilitators to successful technology integration in education and inform the development of effective strategies to promote and support technology-enabled learning. Additionally, the study may contribute to the existing literature on the attitudes of teachers towards technology integration in education, particularly in the African context where research in this area is limited.

Limitations of the Study

Some questions of innovation and teaching practices depended on the level of ICT knowledge of the respondents and some respondents had limited knowledge owing to their level of ICT awareness. This was solved by use of contingency question items such that one only responded to items that applied to him or her. An observation checklist was also used to confirm, where it was possible, the reliability of responses in the questionnaire items. However, the findings may still be useful as a baseline for future study to assess the extent of such change.

Delimitation of the Study

   This study focused entirely on attitude of teachers in integrating Technology in teaching and learning activities but did not focus on other variables. Despite the fact that Sagnarigu Municipality is a suburb of Tamale, there is still more to be done in development; hence, the discoveries of this research may be generalized to other Municipals and Districts with caution since some conditions in the Municipal may be exclusive and different from other areas especially those in inner-city set-ups.

Definition of Terms

Access: Opportunity or right to make use of something. Technology access and usage is usually determined by the number of ICT equipment available.

Computer training: the process of enlightening an individual on how to use the computers.

Digital Content: Refers to information that is published and distributed in electronic form such as softwares.

Hardware Refers: to physical or tangible components of a computer including computer motherboard and its accessories.

Information Communication Technology: any product that will store, retrieve, manipulate, transmit and analyze information electronically in digital form including the internet, broadcasting technologies and mobile phones. For purpose of this research the term ICT will be operationalized to imply only computers and related peripheral devices for instance projectors, printers and scanners.

Information Communication Technology Integration: use of any product that will store, retrieve, manipulate, transmit and analyze information

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electronically to introduce, reinforce, supplement and extend learning or acquisition of skills.

Multimedia: It's a combination of various digital means of communication in computers. (images, sound, video and text).

Peripheral: any auxiliary or external device connected to a host computer and it expands the computer capability for instance printers, scanners, LCD projectors. In this study the term ICT tool has been used generally to include the computer themselves, their peripherals or any other related facility.

Software: program that instructs a computer to process data. Software's can be categorized into open source and proprietary.

Technology: The practical application of knowledge especially in a particular area.

World Wide Web: It is information superhighway; it comprises networks that are joined globally.

Learning Management System (LMS): a software application or platform that is used to manage, deliver, and track educational content and resources.

Internet: a global network of computers and servers that are connected to each other, allowing users to access and share information and resources across the world.

Computer: an electronic device that can perform a variety of operations, including processing data, storing information, and communicating with other devices.

Online learning: a form of education that is delivered over the internet or other computer networks. Online learning can take many forms, including online courses, webinars, virtual classrooms, and educational videos

Organization of the Study

The study is into five chapters. The first chapter contains the background and statement of the problem, purpose, objectives, significance, limitations, delimitations of the study, and definition of terms. Chapter two of the study captures the review of existing literature in relation to the purpose of the study. It contains the conceptual review, theoretical, and empirical review. Chapter three deals with the methods employed in the study. It includes the research design, target population, study sample size and sampling procedure, research instruments, validity for the instruments, reliability of the instruments, data collection and data analysis technique. Chapter four consists of data presentation analysis and discussions of the findings. The fifth chapter of the study comprises of summary, conclusion, recommendations and suggestions for further research.
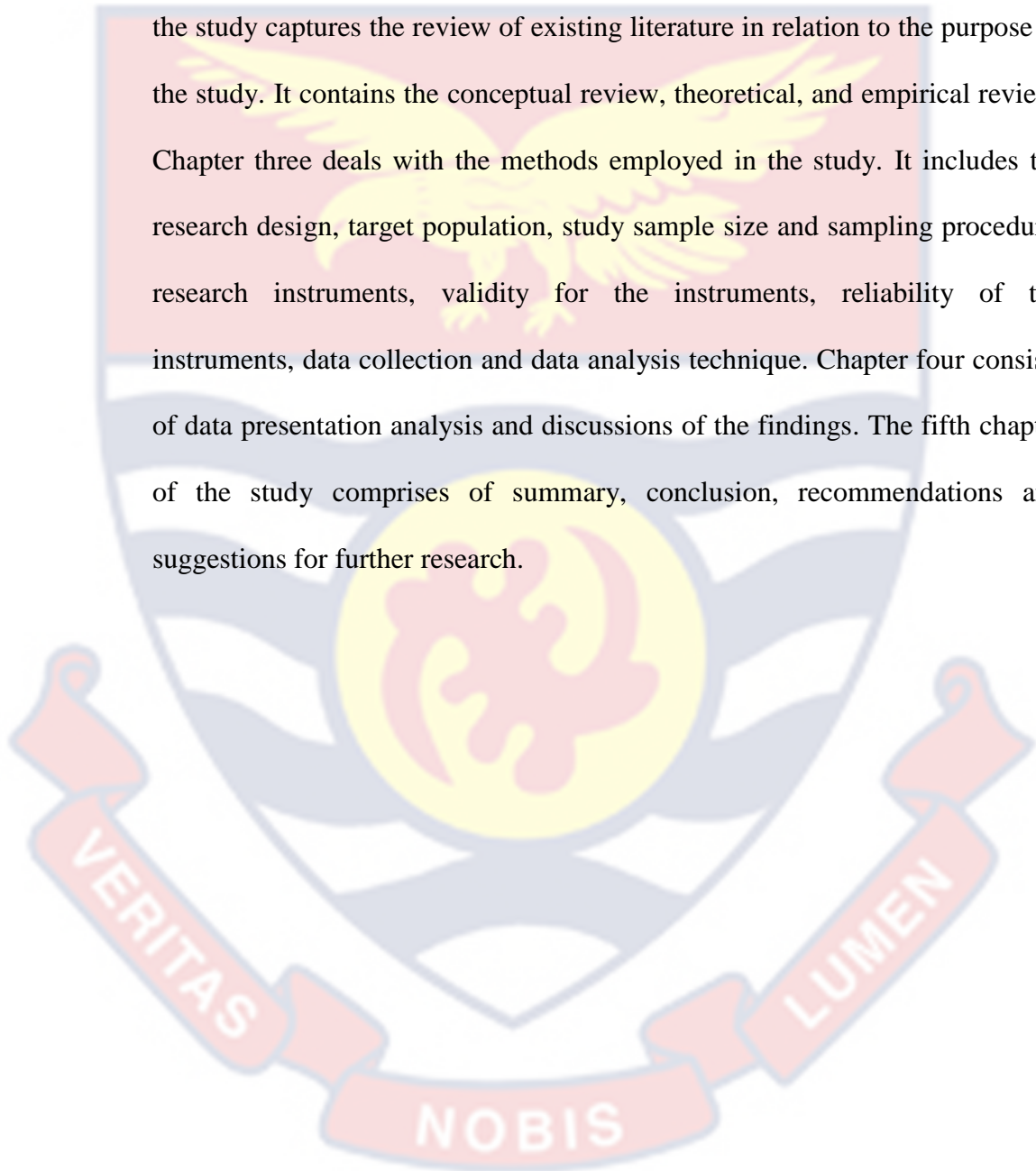
CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter presents a detailed review of literature pertaining to the study. It reviews concepts of technology integration, teachers' attitude towards computers, online earning, learning management system, and behavioral intentions in relation to teachers integrating technology in teaching.

Technology Integration in Teaching

Teachers are looking for methods and tools that make use of technology to enhance student learning as it continues to change our daily lives (Bowen, 2012). Personalized learning plans, digital standards-based content, and high-quality professional development have been shown to improve student accomplishment, engagement, and critical-thinking abilities as well as give kids access to learning opportunities that would otherwise be difficult to obtain (Vandrark & Schneider, 2012).

According to Hall and Khan (2003), apprehensive users can successfully acquire and employ technology for a specific goal through a consistent approach. They made the point that users make a series of decisions as a result of weighing the benefits and drawbacks of using particular technologies. This is when technology adoption takes place. Understanding the circumstances and conditions needed for educators to adopt new technologies, such as the economic, sociopolitical, attitudinal, and pedagogical ones, is crucial in the higher education sector (Shohel & Kirkwood, 2012). Additionally, there is broad agreement in the research that key facilitators of technology are comprehending technological challenges, teacher

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competencies, teacher's role, pedagogical concerns, organizational and financial support, safety and privacy concerns (Mayes, Natividad & Spector, 2015).

According to Alazam, Bakar, Hamzah and Asmiran (2013), the degree of technology integration in the classroom and one's proficiency with using technology are closely related. Similar to this, numerous researches have indicated that users' technological proficiency and knowledge levels influence how effectively technology is integrated into the classroom (Paryono & Quito, 2010; Saud, M., Shuaibu, Tahir, Buntat, Yahaya & Gital, 2011). Furthermore, Alazam et al. (2013) found that there were little possibilities for pre-service and in-service training on how to use technology effectively in the classroom, which contributed to teachers' lack of technological proficiency.

Some studies identify the scarcity of computers and access to them, the slow development of ICT infrastructure, the cost of training materials, and inadequate ICT competency skills as major impediments to technology adoption (Bonsu et al., 2013). Early studies on ICT adoption in Fiji noted that impediments to adoption included insufficient infrastructure, a lack of understanding of the utility of technologies, a lack of skills, and cultural issues (Lynch, Szorenyi, & Lodhia, 2002). Similar to this, Al-Senaidi, Lin and Poirot (2009) noted that obstacles to technology integration can include a lack of resources, institutional resistance, skepticism about the advantages of ICT, and a lack of time. According to Shohel and Kirkwood (2012), perceptions of risk and uncertainty might lead to reluctance to technology adoption.

Technology Integration in the Ghanaian Teaching Setting

Technology integration has become a watchword in education nowadays. Information and Communication Technology (ICT) integration initiatives in education have drawn the attention of many stakeholders and governments all over the world. Education stakeholders in Ghana have been worried about how students and teachers utilize computers in class and how this helps learning since the early 1990s (Boakye & Banini, 2008). Education providers understood that Ghanaian professionals could not compete for positions on the global market because of their restricted skill sets, particularly in the field of information technology, in the middle of the 1990s (Malcolm & Godwyll, 2008).

The World Links for Development (WorLD) program was launched in Ghana in 1997. This program was developed to employ technology to give teachers and students access to a world of learning. The program's objectives include helping teachers and students incorporate technology into their curricula, fostering teacher-student collaboration on projects and distance learning, assisting students in using computers and the internet as communication and research tools, and creating local educational content for the internet (Boakye & Banini, 2008).

Numerous studies have focused on how teachers utilize technology to teach arithmetic and the variables that affect this use. According to Keong, Horani, and Daniel (2005), mathematics teachers employ less technology in their lessons. Furthermore, Lau and Sim's (2008) research on Malaysian maths and science teachers shows that, they regularly use the internet for surfing (53%), but less frequently for peer communication (26%), and personal

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development (12%). Their research also showed that teachers' frequent use of word processing (71%), presentation tools (50%) and courseware (63%), as well as their preparation and delivery of classes, may be related to their computer proficiency. Similar research by Delialioglu and Yildirim (2007) shows that teachers mostly use technology to create handouts and exams rather than really employing it in their classrooms. Furthermore, according to Cuban and Shipps (2000), very few teachers use computers in the classroom on a regular basis. Although instructors are highly motivated and interested in learning about the potential of technology, in reality, technology use is rather limited and is concentrated on a small number of applications, with word processing being the most common use.

In a similar vein, Boakye and Banini (2008) assert that while most SHS teachers in Ghana do not utilize technology in the classroom, they frequently use it to create lesson plans, access the web, and send emails. In all universities, according to Mereku et al. (2009), exam questions are typed, and in certain cases, educators employ technology to process students' test results.

The expectations of today's society have changed dramatically in the twenty-first century as a result of the rapid development of Information, Communication, and Technologies (ICTs). Today's global educational institutions work to restructure their curricula and classroom settings in order to close the teaching and learning technology gap between developed and developing nations. This is done in recognition of the effects of new technologies on the workplace and daily life. In order to give learners knowledge of certain subject areas, encourage meaningful learning, and increase professional productivity, this restructuring process demands

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effective diffusion of technologies into the current environment (Tomei, 2005).

Information and Communication Technologies (ICTs) are being used more and more often across Africa, including in Ghanaian schools (Tella, Ayeni & Popoola, 2007). According to Tella, Ayeni and Popoola (2007) while there is a great deal of information on how ICTs are being propagated and used in high schools in developed nations, there is little data available about how ICTs are being disseminated and used by teachers in Ghanaian schools. Additionally, it is believed that rural and urban schools use ICTs in distinct ways (Aduwa-Ogiegbaen & Iyamu, 2005).

ICT's contribution to the nation's economy has received significant attention from the Ghanaian government. Ghana's medium-term development strategy, as outlined in the Ghana Poverty Reduction Strategy Paper (GPRS I&II) and the Education Strategic Plan 2003-2015, all call for the use of ICT to connect with the poor in Ghana. Ghana's ICT for Accelerated Development (ICT4AD) policy was enacted into law by the Ghanaian Parliament in 2004 and is currently in various phases of implementation. The Ministry of Education created an ICT in education framework paper to incorporate ICTs in classrooms as a result of this policy.

Teachers' Attitude towards Technology Integration

According to Cener, Acun, and Demirhan (2015), technology has become a significant part of our daily lives and of education. It has been discussed among educators for more than 30 years how important it is to incorporate technology into the teaching and learning process (Mishra & Koehler, 2008). According to academics and educators, integrating technology

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into the classroom enhances teaching (Williams, Linn, Ammon, & Gearhart, 2004), facilitates student learning (Enriquez, 2010), fosters the development of higher order thinking (Fox & Henri, 2005), and enables teachers to create classroom environments that are more student-centered (Teo, Chai, Hung & Lee, 2008). Many nations have made significant financial investments to increase the availability of technology in schools because of these anticipated outcomes.

The Republic of Ghana has undertaken numerous initiatives to provide instructors with cutting-edge technology during the past few decades, just like other industrialized nations. For instance, in order to enhance the quality of education through the use of technology integration, the former government donated laptops (RLG brand, assembled in Ghana) and instructional materials to schools and instructors. The current government of the Republic of Government has donated thousands of computers to schools and teachers in an effort to boost educational equality and ICT use in the classroom.

However, there are a number of obstacles in the way of technology adoption in the educational sector. One of the most frequently reported barriers to technology adoption is a lack of professional development (Ertmer, Ottenbreit-Leftwich, Sadk, Sendurur & Sendurur, 2012). The findings indicated that teachers who participated in technology-related professional development (in-service training) have positive perspectives on using technology in their instruction (Gray, Thomas & Lewis, 2010). Additionally, by offering pre-service teachers educational technology courses, they can learn about technology integration before they begin their careers (An, Wilder & Lim, 2011). Teachers' negative attitudes and beliefs against technology

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(including personal anxiety) are another factor in the lack of technology adoption. According to several research, one of the most significant components of technology integration is teachers' beliefs and attitudes (Kim, Kim, Lee, Spector & DeMeester, 2013). An attitude that can be applied to technology in numerous ways is referred to as technology anxiety (Biggs & Moore, 1993). It can also be described as a person's emotional condition when utilizing technology or technology-related equipment (Bozionelos, 2001). According to Pajares (1992), studying teachers' attitudes is necessary to comprehend how they teach because these attitudes are seen to be indicators of a variety of classroom behaviors. According to Hofer, Grandgenett, Harris & Swan (2011), teachers will likely find it difficult to implement technology because of their insufficient training and superficial curricula. In other words, using specialist technology in the classroom requires far more content knowledge than using general tools.

Also, because usage of computers in the classroom affects teachers' attitudes toward computers, improving teachers' computer abilities necessitates changing those views. Albion emphasized that among the important concerns that need to be addressed are the ideas and attitudes of teachers toward technology integration. Watson (2001) said that it is crucial for teachers to have a favorable attitude toward computers as an information and communication technology in order to enable computer integration and prevent teacher opposition in their classrooms. The findings of certain researchers (Hermans, Tondeur, Van Braak & Valcke, 2008; Teo, 2009), who discovered that teachers' attitudes toward computers have a significant impact

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on their usage of computers and belief in the value of their use, supported this point of view.

Research has revealed that teachers' attitudes about and perceptions about the significance of computer use have a major impact on the successful application of computers in the classroom (Hermans, 2008). Al-Oteawi (2002) concluded that the teachers who had the most negative attitudes regarding the use of computers in the classroom lacked knowledge and expertise in using them. Pelton and Pelton (1999) discovered that instructors' lack of expertise and experience contributes to their lack of confidence when it comes to integrating computers into their lesson plans. Before teachers to successfully incorporate technology into the social studies curriculum, Rice, Sorcinelli and Austin (2000) contend that they must have positive attitudes toward technology as well as the skills and resources to do so. However, their relationship to gender has added a new dimension to attitudes, abilities, and beliefs. The amount of studies conducted in recent years to examine if there are gender variations in ICT usage are convincing evidence of this. Research have shown that men are more likely than women to have positive attitudes toward using computers (Schumacher & Morahan-Martin, 2001).

Teachers' Attitude towards Computers

Affective, cognitive, and conative components make up the concept of attitude (Fishbein & Ajzen, 1975). The deployment of technology in the classroom and the instructors' perception of its value are both influenced by their attitudes toward computers (Meelissen, 2008; Paraskeva, Bouta, & Papagianna, 2008). Teachers' attitudes about computers are a crucial component of the characteristics that are thought to influence the successful

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integration of computers in the classroom, according to Huang and Liaw (2005).

An attitude is a level of intensity expressed positive, negative, or mixed judgment of a thing. It is a way to convey whether you think anything about a person, place, object, or event is good or negative (Eagly & Chaiken, 1998). These are the basic factors that influence how we perceive and behave in relation to all facets of our social environment (Eagly & Chaiken, 1998). A complex arrangement of evaluative thoughts, emotions, and dispositions for particular behaviors makes up attitudes.

"Attitude is a mental and neurological state of readiness, structured by experience, exerting a directive or dynamic impact upon the individual's behavior to all things and situations with which it is associated," says Allport (2016). "An attitude is a dispositional willingness to respond to specific organizations, persons, or objects in a consistent manner which has been acquired and has become one's typical pattern of response." (Ajzen, 2005).

A growing number of people use computers, which have an impact on many aspects of our social and professional lives as well as many of our social and leisure activities (Leung & Lee, 2005). Computer expertise and knowledge have a growingly favorable correlation with both professional and personal success as more tasks entail human-computer interaction (Leung & Lee, 2005). Therefore, it is crucial that students' classroom interactions with technology be fair and impartial for males and females as we transition to a technology-based society. In most cases, the teacher is key to effective implementation of the use of computers in the educational system and given that teachers have tremendous potential to transmit beliefs and values to

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students, it is important to understand the biases and stereotypes that teachers may hold about the use of computers and the factors that act as facilitators to teachers' positive computer usage.

Any attempts to integrate technology into a curriculum will be greatly influenced by the attitudes and support of the participating teachers. It has been stated that teachers are less willing to try integrating technology into their teaching and learning if they believe or perceive that prospective computer applications won't meet their demands or those of their students. The way teachers feel about computers is one of the things that has an impact on how well computers are used in the classroom (Huang & Liaw, 2005). Various dimensions are made up of attitude. Nearly all schools in many developed nations have the infrastructure necessary to perform ICT-mediated teaching and learning (Burnip, 2006). Computers must be successfully integrated into the curriculum if teachers are to adopt a positive attitude toward computing. Studying teachers' attitudes on using computers in the classroom is important since it is a key indicator of future computer use in the classroom (Myers & Halpin, 2002).

Khine (2001), discovered a strong correlation between computer attitude and institutional use. This finding was supported by (Lau & Yuen, 2014), who found that 216 Secondary School teachers in Hong Kong reported using computers in the classroom. Their results showed that affective attitudes, general usefulness, behavioral control, and pedagogical use were significant factors influencing the use of ICT. Most teachers, according to Kumar (2003), think that the amount of computer expertise has a favorable impact on attitude toward computers.

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According to Jackson, Ervin, Gardner, and Schmitt (2001), female users are more likely than male users to have negative reactions to computers, and these differences may have contributed to the various ways in which people utilize computers. School authorities must make sure teachers can use technology into the curriculum in order to achieve greatness in schools. As a result, the foundation must be established at the level of the student or pre-service teacher. Any other approach would result in future educators with rudimentary technological abilities. Pre-service teachers should be given the tools and experiences necessary for the routine tasks of their future employment, such as classroom instruction, research, and problem solving, during their training. Pre-service instructors can arrange their setting and modify their educational tactics by using technology (Zhang & Espinosa, 1997). In order to effectively build teacher training curricula that will educate teachers to meet the challenges of the information age, teacher educators must comprehend the factors that influence pre-service teachers' attitudes about computers (Fisher, 2000).

Teachers' attitudes towards computers in Ghana cannot be overlooked when looking at the attitude of teachers towards computers in the classrooms. The use of computers in the educational system in Ghana has been in operation for some decades now. But the question is "is it the same in the classroom?" From observations, it appears that the average Ghanaian teacher sees the computer as a tool to help him/her set examination questions and the remaining use of the computer is for watching movies, playing songs and games, etc. the few teachers in Ghana who actually make good use of technology and computers are those teachers who already have some passion

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and have gone through professional training on how to use the computer effectively. Moreover, older teachers seem not to have in-depth knowledge and skills on how to use the computer to aid teaching and learning, hence developing negative perceptions about it.

Teachers' Attitude towards Internet

Web technology is advancing quickly every day, and people all around the world now live their lives online (Atkinson & Castro, 2008). As new practices are formed, it is evident that cultures' ways of life are changing. Even while using the internet is one of the new social norms, its convenience in terms of communication and other areas make it one of the key drivers of this transition. The fact that the Internet is so widely utilized suggests that it may also be used more frequently for educational purposes. Since teachers have a very vital role in education, the determination of teachers' attitudes towards internet use is also important.

The term "web technologies" describes the use of hypertext markup language in computer and device communication (Atkinson & Castro, 2008). It involves utilizing hypertext markup language, it is communication over the internet and the creation, delivery, or management of web content (HTML).

A web document that is written in Hypertext Markup Language (HTML) is known as a web page (Atkinson & Castro, 2008). It is claimed to have reduced the world to a small village in which individuals and objects may speak with one another without any difficulty (Atkinson & Castro, 2008). Information that was previously unavailable or could have been challenging to discover is now accessible, thanks to the www (World Wide Web).

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It is necessary that teachers should adjust their lifestyles and teaching methods to the changes in society and new technology. Children and teenagers are more likely than adults to use the internet, which is a part of life (Bremer, 2005). This may be seen as a chance for the instructors. Teachers can make sure that more students use the internet for learning and teaching. Because teachers serve as role models for pupils and society at large, their attitudes regarding the internet are crucial. Every element of life, both personal and professional, is affected by the existence of the internet (Tuncer & Platzer, 2000). According to Akkoyunlu (2002), Efforts to utilize the internet more effectively in teaching are directly related to teachers' being information literate. He also stated that the information literacy of teachers is expressed as "skills to gather, analyze, organize and present information". The internet opens classrooms to the world and the internet brings the world to classrooms. This emphasizes the importance of using the internet in teaching settings and procedures, is something that teachers should place high on their priority lists.

The reason for this may be the tendency of experienced teachers to use the Internet more functionally and usefully. The most notable discovery is that female teachers have more positive attitudes than male teachers regarding the use of the Internet in social interaction and communication (Jackson, Ervin, Gardner & Schmitt, 2001). This finding is in line with the use of the Internet in communication. That is to say, female teachers have a more positive attitude than male teachers towards the use of the Internet in communication (Jackson, Ervin, Gardner & Schmitt, 2001). Teachers, who have been on the job for 1 - 6 years have the most positive attitude towards the use of the internet in social interaction (Tekerek & Ercan, 2012). In today's world where

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unsynchronized and internet-based education-teaching practices have become more common, the attitude of teachers towards the use of the internet is an important issue that needs to be considered as far as teaching and learning are concerned.

Teachers' Attitude towards Learning Management System

According to Schlager (2016), a learning management system (LMS) is a software application or web-based technology used to plan, implement and assess a specific learning process. It is used for eLearning practices and, in its most common form, consists of two elements: a server that performs the base functionality and a user interface that is operated by instructors, students, and administrators. Typically, a learning management system provides an instructor with a way to create and deliver content, monitor student participation, and assess student performance. A learning management system may also provide students with the ability to use interactive features such as threaded discussions, video conferencing, and discussion forums. LMS are frequently used by businesses of all sizes, national government agencies, local governments, traditional educational institutions, and online/eLearning-based institutions. The systems can improve traditional educational methods, while also saving organizations time and money. An effective system will allow instructors and administrators to efficiently manage elements such as user registration, content, calendars, user access, communication, certifications, and notifications.

According to Swan, Lin and van't Hooft (2008), digital technology use in various forms is becoming more and more important in teaching and this is a fact at all educational levels in the majority of the world. Regarding their

potential to revolutionize educational practices, numerous initiatives to digitize education have nevertheless been called into question (Cuban, Kirkpatrick & Peck, 2001). The fact of education today is that a lot of teachers interact with students using and through mediating technologies (Dede, 1996).

After the covid-19 pandemic era, Ghana has seen a drastic and significant change in the integration of technology in the educational sector (Sarpong et al.,2021). All sectors of education in Ghana were advised by the government to employ technology to enhance teaching and learning in midst of the pandemic (Agormedah, Henaku, Ayite & Ansah, 2020). This made educationists, institutions, and instructors realize that there are more benefits to ICT integration in education. The Secondary schools in Ghana could not have been left out. It is therefore very important to look at the attitude of teachers towards LMS (Learning Management System). This is because most Secondary school teachers have the belief that a face-to-face form of teaching is the best way to help the student learn and so do not see the need for spending time and energy to integrate LMS. Most teachers in Ghana also believe that integrating ICT is about knowing how to use the computer to type exam questions and print them out (Agormedah, Henaku, Ayite & Ansah, 2020).

Teachers' Attitude Towards Online Learning

Some teachers have started delivering their classes in a variety of ways recently, including in-person, online, and hybrid. Until recently, the predominant format for instruction was in-person. However, it has been discovered that traditional classroom training (in person) does not significantly affect teaching principles or creativity (Junco, Heiberger & Loken, 2011).

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Additionally, it has had no significant long-term effects on pedagogy (Duncan-Howell, 2020). On the other hand, with online learning and teaching, instructors can instruct from any location at any time, and they can use social media and collaboration tools to have more meaningful conversations with their learners. On the basis of this, online learning has steadily acquired a place in theory and practice in education. The Internet and other technologies, such as telephone, videotape, satellite transmission, or computer, are used to enable the open and distributed learning environment known as the online learning environment. These methods are used to mediate necessary communications (Jonassen, 2004). This type of education is available in synchronous and asynchronous formats.

Online learning is instruction delivered through the use of the internet. Among other names, it is frequently referred to as "elearning." Online learning is only one sort of "distance learning," which refers to all learning that occurs remotely and outside of a regular classroom (Mason & Rennie, 2006).

During the COVID-19 epidemic, teachers' attitudes on the online learning experience were investigated. Moroccan high school teachers' attitudes regarding using Microsoft Teams and their level of anxiety were studied by Razkane, Sayeh, and Yeou (2021). The researchers discovered that teachers' levels of anxiety and platform control significantly influenced their choice to use such e-Learning technologies in their instruction. There is a significant correlation between prior experience with distant learning and readiness to use this method of instruction going forward. The absence of consistent Internet connection and digital infrastructure, as well as disciplinary difficulties, were among the challenges the teachers faced, according to Sari

and Nayir (2020). The biggest challenges that teachers confront, according to their observations, are weak infrastructure, a lack of management, and a lack of digital literacy (Ferri, Grifoni & Guzzo, 2020). Additionally, they noted that although teachers with negative attitudes pointed to both internal and external issues, those with positive attitudes primarily voiced complaints about external barriers.

Despite various limitations, it appears that e-Teaching is a promising delivery method. For instance, Al-Anezi and Alajmi (2021) stated that English language instructors in higher education in Kuwait had a high level of approval for implementing online learning methods. Moreover, Ali (2020) looked into how teaching and learning could carry on following the restriction of COVID-19. The findings indicated that most educational institutions all across the world were moving toward distance education.

Behavioral Intentions towards ICT Integration in Education

Information and communication technology (ICT) has played a crucial role in the successful integration of instructors and technology for high-quality teaching and learning (Sangrà & González-Sanmamed, 2010). There have been numerous studies done on the adoption and acceptance of technology, but there are few on the behavioral intentions of teachers to utilize ICT (Sangrà & González-Sanmamed, 2010). Because of this, prior literature has addressed a number of problems and challenges that prevent the successful deployment of ICT in education, including a lack of policy, inadequate resources, a lack of ability, and good infrastructure (Sangrà & González-Sanmamed, 2010). According to Blessinger and Wankel (2013), digital learning is a live, interactive process that gives students the freedom to get

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upper instruction whenever and wherever they choose. It provides students with a more dynamic platform for exciting learning that is more meaningful and authentic in every professional field, whether it be career or technical education, or project-based learning.

A study by Rudhumbu, Du Plessis, and Mudau (2021) in Zimbabwe studied the determinants of behavioral intentions of secondary school teachers to adopt and use technology. According to the study, secondary school teachers' behavioral intentions to embrace and use ICT are significantly and favorably influenced by teaching using ICT. These findings imply that teachers who regularly incorporate technology into their lessons tend to find it useful and are eventually quite likely to form behavioral intentions to embrace and use it. These results agree with those of past investigations. Anni (2018) found in their study that teachers who utilize ICT for teaching regard technology as helpful for completing their jobs and have the tendency to accept and use it. Orser, Riding and Li (2019) also found that teachers who use ICT in their instruction eventually develop behavioral intentions to adopt the technology in their classrooms because they believe that using such ICT will make the performance of their tasks easier and more productive.

Rudhumbu, Du Plessis, and Mudau (2021) also showed that teachers' professional growth in ICT has a considerable and advantageous impact on their behavioral intents to accept and use it. This shows that because of the knowledge and abilities they would have learned, teachers who undergo professional development training in ICT may have behavioral intentions to embrace and use the ICT (Rudhumbu, Du Plessis & Mudau, 2021). According to a study by Anni (2018), instructors who receive regular ICT training

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become more comfortable using the technology and are more likely to have behavioral intents to use it. This is in contrast to teachers who do not receive regular training.

ICT Integration Barriers in Education

Schools and instructors that want to incorporate technology into the curriculum face a number of obstacles. These include:

1. the accessibility of computers

2. the availability of curriculum materials

3. the beliefs of the teachers

4. the technology and subject-matter expertise of the teachers

5. the technical, administrative, and peer support.

As a tool for teaching and preparing students to fulfill the new academic requirements, technology should be included into curricula, according to a 2012 U.S. Department of Education recommendation. According to Farooq and Soomro (2018), teacher education groups, they also mention that it might be difficult for teachers who are committed to integrating computer technology in the classroom to overcome the obstacles that would arise. Lack of equipment, inadequate equipment support, organizational culture, teacher beliefs and attitudes regarding teaching, and acceptance of the shift to digital teaching are the challenges. National Professional Associations (NPA) and federal agencies of America have long advocated for the need to train teachers to incorporate technology into their lessons (Hew & Brush, 2007). Wozney et al. (2006) looked into the elements affecting a teacher's choice to include technology into the classroom. They concentrated on how

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valuable teachers thought technology to be, how successful they believed they would be utilizing it, and how expensive they believed it to be.

Consequently, Wozney et al. (2006) discovered that the influence of motivating factors provides one reason for why access to computers having more does not always result in meaningful employment of technologies in the classroom. According to Ertmer (1999) and Hew and Brush (2007), there are numerous obstacles to incorporating technology into the classroom. They classified technology integration barriers in two major categories: first-order barriers, which refer to obstacles that are external to teachers, including barriers such as lack of resources, institution, subject culture, and assessment; and second-order barriers, which are intrinsic to teachers and include obstacles such as attitudes, beliefs, knowledge, and skills. Pointing out that the first- and second-order barriers are inextricably linked together, Ertmer (1999), and Hew and Brush (2007), suggest that it is necessary to address both types of barriers rather than addressing them separately. Mumtaz (2000) believes that a major barrier to school use of technology is a lack of resources. For instance, a teacher's ability to use technology may be severely constrained by a lack of computers and software in the classroom.

According to Aguti and Fraser (2006), a major obstacle to technology integration in the majority of developing nations is instructors' lack of convenient access to technologies. Other researchers (Benson& Palaskas, 2006; Snoeyink & Ertmer, 2001) have identified resources as an important part of the implementation of an innovation. According to Benson & Palaskas (2006), adequate resources refer to the number of ICT resources currently

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Figure 1 shows the conceptual framework of the attitude model of ICT integration in education. From the above attitude model of ICT integration in education it can be seen that;

1. Teachers' attitude toward computers determines their attitude toward the internet.

2. Teachers' attitude toward computers determines their attitude toward LMS.

3. Attitude towards the internet determines attitude towards online learning.

4. Attitude towards LMS determines their attitude towards online learning.

5. Teachers' attitude toward LMS determines their behavioral intention toward ICT integration in education.

6. Teachers' attitude toward computers determines their behavioral intention toward ICT integration in education.

7. Attitude towards the internet determines attitude towards behavioral intention towards ICT integration in education.

8. Attitude towards online learning determines attitude towards behavioral intention towards ICT integration in education.

From the literature reviewed, the following gaps were identified

1. Extent of Technology Integration. An insufficient understanding of the actual extent to which technology is integrated into teaching in Senior High Schools (SHS) in Ghana and specifically within the Sagnarigu Municipality was identified as a gap.

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2. Barriers and Challenges. Another gap is the lack of a detailed examination of the specific barriers and challenges faced by teachers in the Sagnarigu Municipality when integrating technology into their teaching practices.

3. Impact on Teaching and Learning Outcomes. A gap in the existing research is the limited exploration of the actual impact of technology integration on teaching methodologies and student learning outcomes.

4. Teacher Attitudes and Professional Development. The did not thoroughly examine the attitudes of teachers towards technology integration and the role of professional development in shaping these attitudes.

Conclusion

This chapter provided an overview of the literature that is fundamental to the current study. This chapter revealed the theoretical perspective as the foundation of the current study. The chapter reviewed among others, teachers' attitudes toward computers, teachers' attitudes towards the internet, teachers' attitudes towards LMS, teachers towards online learning and behavioral intentions toward ICT integration in education. Finally, the chapter provides other factors affecting ICT Integration barriers in Education. Positive attitudes from teachers toward technology have been recognized as an obligatory condition for the effective use of technology in classrooms.

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CHAPTER THREE

RESEARCH METHODS

Introduction

The research methods for this study are covered in this section. The following sub-headings make up its structure: research design, target population, sample size and sampling method, research instrument, instrument validity, instrument reliability, data collection method, and data analysis.

Research Design

The framework of a study is called a research design. It unites every component of an investigation. It demonstrates how all of the project's key components work together to try and answer the main research question, Kombo and Tromp (2006). The study employed a correlational survey design. Clark, Foster, Bryman and Sloan (2021) defines a correlational survey as a type of research that investigates the relationship between two or more variables by collecting data on the variables and analyzing the data to determine if there is a correlation between them. Since the purpose of this study was to assess the attitude of teachers in integrating technology in teaching in Senior High Schools, a correlational survey seemed appropriate. Correlational survey designs play a pivotal role in research by enabling the identification of relationships between variables. Through the measurement of multiple factors, researchers can analyze the degree of association between these variables, providing valuable insights into their interconnectedness. This method is particularly important for understanding patterns and predicting outcomes in various fields, such as education, business, or healthcare, where decision-making relies on an understanding of how different factors are

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related. While correlational studies do not establish causation, they offer a practical and ethical approach to exploring naturally occurring relationships when controlled experiments may be impractical or ethically unfeasible, contributing to informed decision-making and planning.

Study Area

The study area is Sagnarigu Municipality in the Capital town of Northern Region of Ghana. The Northern Region is one of the sixteen regions of Ghana. It is located in the north of the country and was the largest of the sixteen regions, covering an area of 70,384 square kilometers, 31 percent of Ghana's area until December 2018 when the Savannah Region and North East Region were created from it. The Northern Region of Ghana currently contains sixteen districts. Eleven are ordinary districts in addition to one metropolitan and four municipal districts. Under every municipality, metropolis and district are many towns and villages.

Sagnarigu Municipal District is one of the sixteen districts in Northern Region of Ghana. Originally it was formerly part of the then-larger Tamale Municipal District in 1988, which was created from the former West Dagomba District Council, until a small northern part of the district was split off to create Sagnarigu District on 24 June 2012; thus, the remaining part has been retained as Tamale Metropolitan District (which was elevated to metropolitan district assembly status in August 2004). However, on 15 March 2018, it was elevated to municipal district assembly status to become Sagnarigu Municipal District. The municipality is located in the northwest part of Northern Region and has Sagnarigu as its capital city (which is also the capital city of the Northern Region). Sagnarigu Municipal District has four (4) Government

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Senior High Schools: Tamale Senior High School (TAMASCO), Northern School of Business (NOBISCO), Tamale Islamic Science Senior High School and Kalpohin Senior High School.

Population

A population in research refers to a group of people with common observable features that a researcher hopes to apply in research (Fraenkel & Wallen, 1990). As per Fink (1995), a unit's inclusion measures depend on the respondents' characteristics and criterion interest in the study. For this reason, the researcher targeted all the 562 teachers in the four Government Senior High Schools in the Sagnarigu District mentioned in the study area. This target population of teachers was chosen because these target populations are the unit of analysis in this study.

Sampling Procedure

For this study, the researcher relied on the purposive sampling techniques to select 179 respondents for the study. Purposive sampling is a procedure that relies on the researcher's judgment, in which the researcher selects from a sample of the study population that is most likely to provide him with precisely the information he is seeking since they are knowledgeable about the subject under investigation (Ritchie, Lewis & Elam, 2013). Due to the study's purpose, the approach was used to select respondents from the four SHS within the study area. The simple random sampling technique was also employed give respondents equal chance to be selected and also get satisfactory and appropriate information on the study being conducted. All four schools had equal chance but the researcher therefore investigated 44 respondents each from 3 schools and 47 from one school. However, the

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choice of sample size was influenced by many variables, including the researcher's time and financial constraints. Using Yamane, (1967)'s proposed formula, the study's sample size was determined as below;

n= $\frac{N}{1+Ne^2}$, where n= sample size, N= sample population, e= margin of error

n= $\frac{324}{1+324(0.05)^2}$

n= 179

From the calculation, the sample size for the study will be 179 teachers.

Data Collection Instrument

A questionnaire filled out by respondents themselves was utilized to collect the data. In the first part A, respondents were asked to provide some personal information. Part B gathered information on how teachers feel about using computers. Part C of the survey asked teachers to share their views about the internet. The mindset of students towards LMS was the subject of the fourth segment D. Section E, the fifth portion analyzed the teachers' perspectives on distance education. Section F, the last one, assessed the pupils' preparedness for studying online.

The questionnaire's rating system was a five-point Likert scale, with extremes of agreement and disagreement represented. A self-administered survey was used due to its cheap cost and ease of administration (Cohen, 2013).

Data Collection Procedure

In carrying out research of this nature, there are two sources of data that are mostly employed; primary data and secondary data. The primary data is the immediate data or data gathered from the field which include questionnaire whereas the secondary data is data already gathered by someone

which includes publications, journal articles, books etc. (Saunders, Lewis, & Thornhill, 2007). The survey instrument aided the researcher in gathering primary data from respondents who consisted solely of teachers. An introductory letter clarifying the research and introducing the researcher was sent to Senior High Schools within the Sagnarigu District. A follow up was done with personal visit to the school and afterwards, the researcher arranged with key contacts at each department to inspire teachers to complete survey instrument and return them. Four weeks was utilized for the data collection and within each school, the researcher used one week to administer and retrieved all the questionnaires. This was done to get the data relevant to carry out the research.

Validity and Reliability Test

To ensure the validity and reliability of the data collected, the survey tool underwent pretesting and was reviewed by the project supervisor for accuracy and validation. The survey instrument was tested beforehand to confirm the accuracy and reliability of the ideas presented. Additionally, 12 teachers from the selected schools, who were not involved in the study, were asked to complete the survey and provide feedback on a critique form. The form asked the teachers to indicate if they found any questions confusing, biased, or if the sequence of questions made sense. The pretesting process indicated that the teachers had a clear understanding of the concepts presented, confirming the face validity of the survey items. Moreover, the questions aligned with the study objectives and were consistent with the questionnaire.

Data Processing and Analysis

Before analysis, the data went through a screening process in line with recommended practices (Field, 2018). A codebook was created to organize the data, which was then entered into Statistical Package for Social Sciences (SPSS) version 22.0. Each item on the questionnaire was analyzed separately, and some results were presented in the form of percentages. However, to estimate the relationship between the independent and dependent variables, the researcher employed partial least square structural equation modeling. The partial least square structural equation modeling was employed to assess and quantify complex relationships among latent variables in the study, providing a robust statistical framework to analyze and validate the intricate interconnections within the observed data.

Ethical Consideration

To engender trust in both the research processes and participants, the Institutional Review Board of the University of Cape Coast (UCC-IRB) granted ethical clearance for the study. The researcher believes that participants' awareness of the institutional support for the research enhances their confidence in the research. The researcher adhered to the four key ethical principles proposed by Clark, Foster, Bryman and Sloan (2021): no harm to participants, informed consent, protection of privacy, and no deception, throughout the data collection, management, and analysis process. To eliminate any possibility of deceit, all participants were fully informed about the nature and objective of the research. An informed consent form was provided during the introductory session of the research instrument to enable

participants to comprehend the research and make an informed decision about their participation.

Chapter Summary

This chapter of the study focused on the processes and methods used by the researcher to conduct the study. It covered various aspects such as the research design, study population, study area, sampling method, sampling technique, data collection methods, mode of data analysis, and a summary of the chapter.

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CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

The chapter focused on the results and discussion of the empirical findings of the study. Specifically, the chapter focused on three main perspectives of the results or findings of the study. These included the demographic characteristics of respondents used for this study, measurement model assessment or preliminary analysis to test the conceptual model, and the results from the structural model analysis for testing the main hypotheses guiding the study. The discussion aspect of the findings of the study also explained the results further and linked them to previous findings reported in chapter two of this study.

Demographic Characteristics

The results for the demographic characteristics of respondents for this study are reported in Table 1.

Table 1: Demographic Characteristics of Respondents

Demographic Variable	Frequency	Percentage
Gender		
Male	66	36.9
Female	113	63.1
Total	179	100.0
Age		
18-25	57	31.8
26-35	61	34.1
36-45	36	20.1
46-55	17	9.5
56 and Above	8	4.5
Total	179	100.0

Table 1 Continued

Courses Taught		
General Science	44	24.6
General Arts	40	22.3
Business	30	16.8
Visual Arts	23	12.8
Home Economics	30	16.8
Agriculture	12	6.7
Total	179	100.0
Working Experience		
Below 1 year	35	19.6
2-5 years	71	39.7
6-9 years	47	26.3
10 years and above	26	14.5
Total	179	100.0

Source: Field data (2023)

The results in Table revealed that the majority of the respondents were female teachers (63.1%). This means more females were in the teaching service than their male counterparts in the study area.

The second demographic characteristic in Table 1 is the age of the respondents, and it can be seen that most respondents were 26-35 years (34.1%) followed by those who were 18-25 years (31.8%). This means that most of the respondents for this study could be categorised as youth since the majority were below 35 years.

The third demographic characteristic in Table 1 worth mentioning is the Major Subject taught by the teachers considered in this study. The results revealed that most of the teachers were teaching General Science (24.6%) followed by General Arts (22.3%). This could mean that more students in the schools where these teachers taught were pursuing these two programmes for which most of these teachers were teaching. Alternatively, the schools of the

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respondents could also be schools that are noted for these two programmes for which they had more students that warranted more teachers.

Results for the working experience or the number of years of teaching by the teachers considered in this study are also presented in Table 1. The results revealed that most of the respondents had taught for 2-5 years (39.7%) followed by 6-9 years (26.3%). The majority of the teachers who participated in this study had taught for less than ten years. This could explain and confirm the earlier results, for which the majority of the respondents were young.

Main Data Analysis

The main data were analysed using Partial Least Squares Structural Modelling technique. The two-step approach of measurement model and structural model analyses were followed as recommended by Hair, Hollingsworth, Randolph and Chong (2017).

Measurement Model Analysis

The preliminary measurement model analysis centred on confirmatory factor analysis, construct validity, discriminant validity, and multicollinearity assessment. The results of the algorithm for the confirmatory factor analysis and internal consistency of the proposed model used are presented in Figure 1.
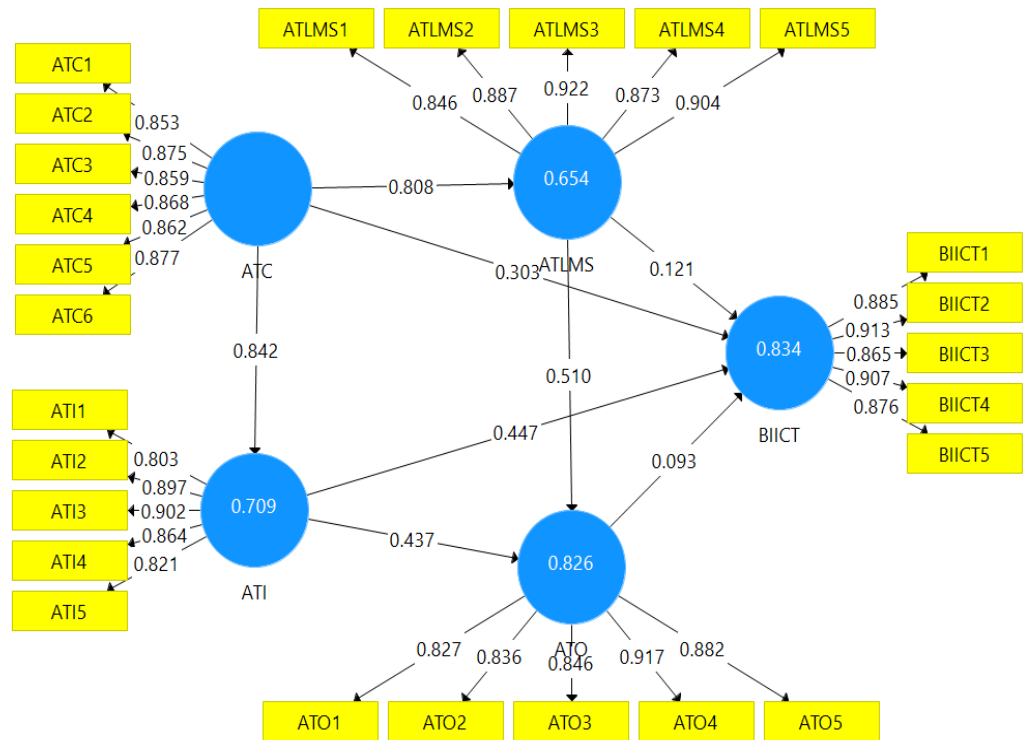
Figure 2: Algorithm of CFA analysis
Source: Field data (2023)

The results revealed that all the items used to measure the five variables of the study loaded sufficiently and hence were maintained. That is, all six items (ATC1-ATC6) were able to measure the attitude towards computers (ATC) variable with a loading range of 0.853-0.877. Additionally, the five items each used to measure attitude towards learning management systems (LMS) (ATLMS1- ATLMS5) loaded between 0.846-0.922. Attitude towards internet (ATI) variable (ATI1-ATI5), loaded between 0.803-0.902. Furthermore, attitude towards online learning (ATO) variable (ATO1-ATO5) loaded with a range of 0.827-0.917. Finally, behavioural intention towards integration of ICT in education (BIICT) variable (BIICT1-BIICT5) variable were accepted with a loading range of 0.885-0.913. The acceptance of these items for measuring the five variables of the study was based on the

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recommendation by Hair et al. (2017) of a minimum threshold of 0.5 for adequate item loading on a construct within a specified model. Thus, since all the items for each of the variables in Figure 2 were above the minimum threshold, they were deemed to have passed the loading acceptance test.

Construct Reliability and Validity

The second analysis conducted to further test the internal consistency of the hypothesised model of the study was the Construct Reliability and Validity. Four main indicators were used to determine or measure the Construct Reliability and Validity of the model within the study. These indicators were Average Variance Extracted (AVE), rho-A, Cronbach's Alpha, and Composite Reliability. A criterion suggested by Hair et al. (2017) of a minimum threshold of 0.7 was used for the last three indices (that is rho-A, Cronbach's Alpha, and Composite Reliability). The criterion used for the first indicator (Average Variance Extracted) is a minimum threshold of 0.50 (Hair et al., 2017). Results for the construct reliability and validity can be seen in Table 2.

Table 2: Construct Reliability and Validity

Variables	Cronbach's Alpha	RhoA	Composite Reliability	Average Variance Extracted (AVE)
ATC	0.933	0.934	0.947	0.749
ATI	0.910	0.912	0.933	0.737
ATLMS	0.932	0.933	0.948	0.786
ATO	0.913	0.917	0.935	0.744
BIICT	0.934	0.934	0.950	0.791

Source: Field data (2023)

Results for Construct Reliability and Validity reported in Table 2 revealed that Average Variance Extracted (AVE) values obtained were between 0.737 and 0.791. It is evident that all these values for the AVE for all the five variables of the study were above the minimum 0.50 threshold established by Hair et al. (2017), suggesting that the model attained internal consistency in terms of the AVE. Additionally, values obtained for Cronbach's Alpha ranged from 0.910 to 0.934, that of rho_A were from 0.912 to 0.934, and finally, Composite Reliability values had a range from 0.933 to 0.950. A close observation of the values clearly confirms that all the values were above the recommended 0.70 minimum threshold recommended for these indices by Hair et al. (2017). This means that the specified model used for the analysis achieved internal consistency in terms of construct reliability and validity.

Discriminant Validity

Discriminant validity was also checked to determine the distinctiveness of each of the five variables in the study. The Heterotrait-Monotrait (HTMT) Ratio criterion was used to check the discriminant validity of the study (Henseler, Ringle & Sarstedt, 2015). Henseler et al. (2015) suggested the criterion of a maximum threshold of approximately 0.90 (0.85 in the strict sense) is acceptable for analysis. The results for the discriminant validity using the HTMT criterion can be seen in Table 3.

Table 3: Heterotrait-Monotrait (HTMT) Ratio Criterion

Variables	ATC	ATI	ATLMS	ATO	BIICT
ATC	0.866				
ATI	0.842	0.858			
ATLMS	0.808	0.839	0.887		
ATO	0.875	0.866	0.877	0.862	
BIICT	0.858	0.884	0.823	0.851	0.889

Source: Field data (2023)

The results revealed that all values presented in Table 3 were below the maximum threshold of 0.90, suggesting that the variables in the study were very distinct from each other and the measurement model used for the study achieved discriminant validity.

Multicollinearity Analysis

Kock (2016) were of the view that path relations between variables of the study can be very uncertain or erroneous with the presence of multicollinearity. This can result in both Type 1 and Type 2 errors. The study, therefore, went further to check for the presence of multicollinearity using the inner values of the Variance Inflation Factors (VIF), as reported in Table 4. The basic criteria used to determine the presence of multicollinearity were based on suggestions by Hair et al (2017) of a maximum threshold of 3.30.

Table 4: Multicollinearity Statistics Based on Inner VIF

Variables	ATC	ATI	ATLMS	ATO	BIICT
ATC		1.000	1.000		2.865
ATI				3.284	2.970
ATLMS				3.284	2.905
ATO					2.176
BIICT					

Source: Field data (2023)

A careful view of the results in Table 4 suggests that all values across the endogenous variables were between 1.000 to 2.970, far below the suggested threshold of 3.30. The results mean that there was no presence of multicollinearity among the variables of the study. That means that type 1 and type 2 errors were avoided and the possibility of the measurement model establishing an uncertain relationship between the variables of the study was avoided.

Structural Model Analysis

The final step of the analysis is the structural model assessment. This is needed to ascertain the significance or non-significance of the hypothesised paths in the model. This was done through the bootstrapping sequence of 5000 samples in PLS-SEM and the output is displayed by Figure 2.
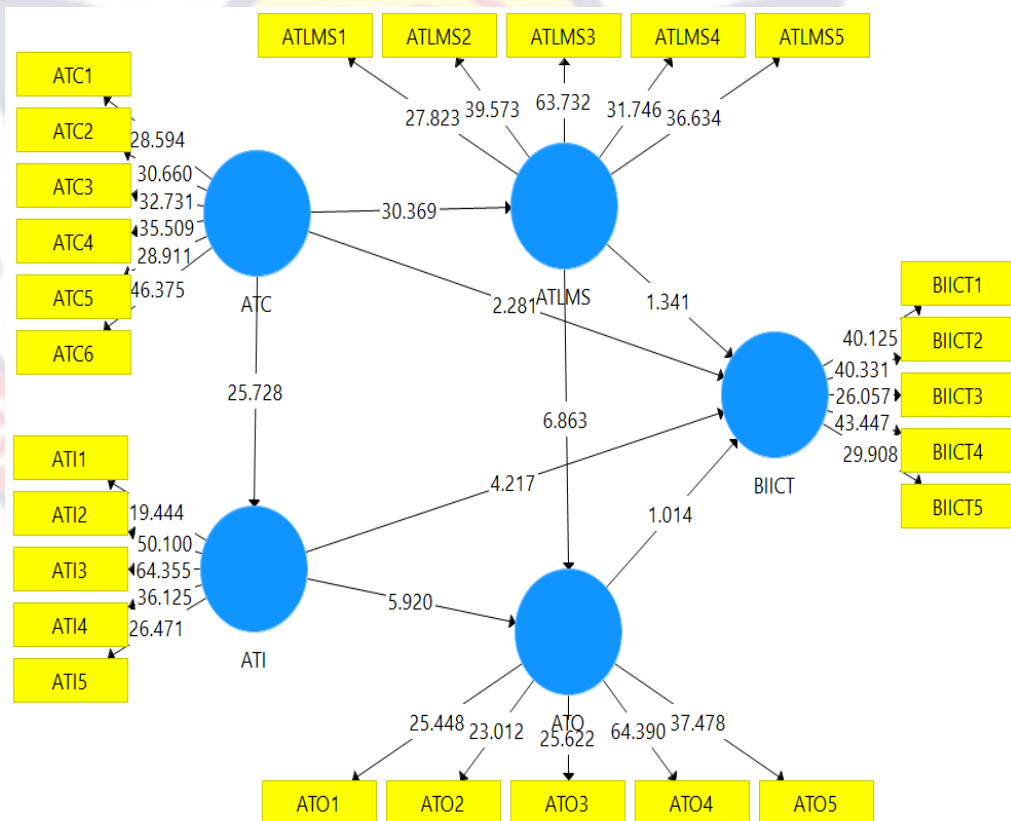

Figure 3: PLS-SEM Bootstrap Image

The actual results for testing the eight hypotheses guiding the study are presented in Table 5. The test of the hypotheses was to determine or establish the relationship that exists between the variables of the study. That is, whether the relationship between these variables was statistically significant or not. The indicators used included the beta values, t-statistics and alpha values (p-values), f-squared values and confidence intervals.

Table 5: Path Coefficients

	Hypotheses	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values	Confidence Intervals		f^2
							2.5%	97.5%	
1	ATC -> ATI	0.842	0.844	0.031	27.251	0.000	0.782	0.899	2.431
2	ATC -> ATLMS	0.808	0.808	0.028	29.146	0.000	0.747	0.859	1.887
3	ATI -> ATO	0.437	0.444	0.072	6.040	0.000	0.306	0.591	0.113
4	ATLMS -> ATO	0.510	0.503	0.074	6.885	0.000	0.361	0.641	0.443
5	ATLMS -> BIICT	0.121	0.125	0.081	1.499	0.134	-0.036	0.267	0.018
6	ATC -> BIICT	0.303	0.301	0.137	2.216	0.027	0.036	0.579	0.325
7	ATI -> BIICT	0.447	0.447	0.109	4.089	0.000	0.226	0.662	0.242
8	ATO -> BIICT	0.093	0.092	0.094	0.987	0.324	-0.095	0.257	0.007

Source: Field data (2023)

Hypothesis 1: *There is a statistically significant relationship between the attitude of teachers towards computers and the attitude of teachers towards the internet.*

The results for the first hypothesis, which sought to establish a relationship between teachers' attitudes towards computers (ATC) and teachers' attitudes towards internet (ATI) are presented first in Table 5. The results show that teachers' attitudes towards computers (ATC) significantly

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influenced teachers' attitudes towards the internet (ATI) at (β=0.842, t=27.251, p= 0.000) for the first hypothesis.

Hypothesis 2: *There is a statistically significant relationship between the attitude of teachers towards computers and the attitude of teachers towards learning management systems*

In similar vein, the results in Table 5 show that there was a significant relationship between teachers' attitudes towards computers (ATC) and teachers' attitudes towards learning management systems (ATLMS) at (ATI) at (β=0.808, t=29.146, p= 0.000) for the second hypothesis of the study.

Hypothesis 3: *There is a statistically significant relationship between the attitude of teachers towards the internet and the attitude of teachers towards online learning.*

Furthermore, the results in Table 5 show results for hypothesis three of the study, which sought to establish whether there was a significant relationship between teachers' attitudes towards the internet (ATI) and teachers' attitude towards online learning (ATO). The results show that teachers' attitude towards online learning (ATO) was significantly influenced by teachers' attitude towards the internet (ATI) at (β=0.437, t=6.040, p= 0.000) for the fourth hypothesis.

Hypothesis 4: *There is a statistically significant relationship between the attitude of teachers towards learning management systems and the attitude of teachers towards online learning*

The fourth hypothesis of the study sought to establish a relationship between teachers' attitudes towards learning management systems (ATLMS) and teachers' attitudes towards online learning (ATO). The results in Table 5

revealed that teachers' attitude towards online learning was significantly influenced by teachers' attitude towards the learning management system (ATLMS) for the fourth hypothesis at (β=0.510, t=6.885, p= 0.000).

Hypothesis 5: *There is a statistically significant relationship between the attitude of teachers towards learning management systems and teachers' behavioral intention towards integrating ICT in education.*

It is also evident from Table 5 that there was a non-significant relationship between the two variables of the study. The fifth revealed that there was a non-significant relationship between teachers' attitudes towards learning management systems (ATLMS) and teachers' behavioral intention to integrate ICT into educational use (BIICT) at (β=0.121, t=1.499, p= 0.134).

Hypothesis 6: *There is a statistically significant relationship between the attitude of teachers towards computers and teachers' behavioral intention towards integrating ICT in education.*

Teachers' behavioral intention to integrate ICT in education (BIICT) was found to have been significantly influenced by teachers' attitude towards computers (ATC) for the sixth hypothesis at (β=0.303, t=2.216, p= 0.027).

Hypothesis 7: *There is a statistically significant relationship between the attitude of teachers towards internet and teachers' behavioral intention towards integrating ICT in education.*

The seventh hypothesis sought to establish a relationship between attitude towards internet (ATI) and behavioral intention to integrate ICT (BIICT) for educational purposes. The results (β=0.447, t=4.089, p=0.000) showed a significance relationship between attitude towards the internet and intention formations to utilize ICT for pedagogical purposes.

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Hypothesis 8: *There is a statistically significant relationship between the attitude of teachers towards online learning and teachers' behavioral intention towards integrating ICT in education.*

Hypothesis eight also attained a non-significant relationship between teachers' behaviour towards online learning (ATO) and teachers' behavioral intention to integrate ICT into educational use (BIICT) at (*β*=0.093, t=0.987, p= 0.324). The last hypothesis was therefore rejected due to the non-significant relationship.

Total Variance Explained by Model

Apart from the disaggregated contribution of the individual exogenous variables of the study, composite or aggregated results in terms of the collective contribution of all the exogenous variables to explain the variances in the endogenous variables of the study were also checked. The results of this effect are therefore reported in Table 6.

Table 6: Total Variance Explained by Model

Variables	R Square	R Square Adjusted
ATI	0.709	0.707
ATLMS	0.654	0.652
ATO	0.826	0.824
BIICT	0.834	0.830

Source: Field data (2023)

The results in Table 6 revealed that all four exogenous variables of the study: ATO, ATI, ATC and ATLMS collectively explained approximately about 83 percent of the variance in the endogenous variable of the study, which was teachers' behavioral intention to integrate ICT into educational use (BIICT). Additionally, the model, through the collective contribution of ATI

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and ATLMS, explained approximately 83 percent of the variance in the endogenous variable ATO (teachers' attitude towards online learning). Furthermore, exogenous variables ATC contributed approximately 71 percent and 65 percent respectively, explaining the variance in ATI (teachers' attitude towards the internet) and ATLMS (teachers' attitude towards learning management systems).

The results of the aggregated contributions of the exogenous variables to explain the variances in the endogenous variables of the study reported in Table 6 suggest that the remaining variances could be explained by other variables not considered in this study. That is, about 17 percent of teachers' behavioral intention to integrate ICT into educational use (BIICT) could be explained by other factors or variables not considered in the model. Additionally, about 18 percent variance in teachers' attitudes towards online learning (ATO) could also be explained by other variables not considered in the model. Using the criteria of Hair (2017) and Kline (2016) of variance above fifty percent (50%) as high, it can be concluded that the total variance explained by the model of the study was very significant and high.

Discussion of Results

Further explanations are provided for the significant and non-significant path relationships established between the variables of this study that served as the bases for testing the hypotheses of the study. The findings for hypothesis one that there was a significant relationship between teachers' attitudes towards computers and teachers' attitudes towards the internet have implications. The results mean that any percentage increase in making teachers think or feel positive about computers (ATC) will lead to the same

percentage increase in teachers' attitudes towards the internet. This means that the usage of the internet among teachers could be highly dependent on a positive attitude towards computers. These computers could be teachers' own personal computers or what was procured by their schools to be used by teachers for their academic work. This study's finding agrees with the earlier findings of Trossel and Mitchell (2018) who concluded that teachers' positive attitude towards computer usage significantly impacts their patronage of the internet and its usage for teaching and learning in schools.

Until teachers develop a positive attitude towards using computers, they will hardly gravitate towards using the internet for academic purposes for the benefit of their learners. The results further suggest that they will not be comfortable using the internet for educational purposes until they personally develop competencies or skills for using computers to teach and feel positive about their ability to assess software for teaching and learning. Additionally, teachers' positive attitude towards computers is also seen when these teachers are willing to effectively monitor students' computer usage in the classroom as part of their lessons. Thus, the findings of Khalif (2018) that the negative attitude of teachers towards computer usage for academic purposes negatively influences the deployment of internet for teaching and learning in schools is upheld by the findings of this study.

Further explanations can be provided for the findings for the second hypothesis of the study that teachers' attitude to learning management systems was significantly influenced by teachers' attitude towards computers. This finding suggests that the role of computers was not just limited to the influence on internet usage for academic purposes, as found for hypothesis

one. Rather, a positive attitude towards computer usage has been found to further influence teachers' ability to use learning management systems for academic purposes. This could mean that computers play a key role in teaching and learning using learning management systems. The meaning of this finding is that any percentage increase in the effort to increase positive attitudes among teachers towards computer usage will inure to the patronage and integration of learning management systems for educational use among teachers. This finding is in tandem with earlier findings of Fathema et al. (2015) that a positive attitude towards computers leads to a positive attitude towards learning management systems among teachers. It is also important to note that teachers can also develop a negative attitude towards computer usage for academic work. Teachers' negative attitude towards computers could result from teachers' lack of the necessary basic competencies or skills and accessibility challenges among others. Thus, the negative attitude among teachers towards computer usage has the propensity to influence the use of learning management systems for teaching and learning in Ghanaian secondary schools. The results corroborate with earlier findings of Fathema et al. (2015) that a negative attitude towards computers leads to a negative attitude towards the integration of learning management systems for teaching and learning.

The study's third hypothesis also established that there was a significant relationship between teacher's attitudes towards the internet and teachers' attitude towards online learning. These results mean that an improvement in a teacher's attitude towards the use of internet for academic purposes will significantly lead to an improvement in teachers' attitude

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towards the use of online learning to facilitate teaching and learning. That is, if a teacher feels positive about the use of the internet to search for relevant resources for teaching, then that teacher will possibly gravitate towards the use of online learning. Also, a teacher will feel that it is not an additional workload to facilitate learning in an online environment if the said teacher correctly integrates the internet in his/her teaching. The results agree with the earlier findings of Jogezai et al. (2021) that, teachers' attitudes towards the internet greatly influenced teachers' attitudes towards online usage for delivering academic content. The results for hypothesis third also mean that a negative attitude among teachers towards internet usage such as inability to use the internet due to lack of basic required skills will lead to the same negative attitude towards online learning among teachers in Ghanaian schools. Meanwhile, negative attitude is not only influenced by skills for navigating through the internet platforms but could also be adduced to lack of regular power, availability of strong internet connectivity, and high cost of data among others. Frustration with these challenges will increase the negative attitude among teachers toward the internet which subsequently leads to a negative attitude towards online learning for delivering academic content at the secondary school level. These findings support that of Hussein (2021) that negative attitude among teachers towards the internet leads to a negative attitude towards online learning among teachers.

The fourth hypothesis with a significant relationship, established that teachers' attitudes towards learning management systems significantly influenced teacher's attitudes towards online learning. This implies that teachers integrate online learning for teaching and learning if these teachers

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see it as fun and enjoyable, leading students to use LMS for instructional purposes. It also means that teachers with a positive attitude towards learning management systems will not see integrating LMS into their instruction as a burden. Therefore, any percentage increase in teachers' attitudes towards using learning management systems for teaching and learning will also influence a positive attitude towards online usage among teachers. The results, therefore, agree with the findings of Brush (2016) that the usage of learning management systems significantly adduces positive attitudes towards the use of online learning among teachers. Alternatively, a negative attitude among teachers towards the use of learning management systems will also lead to a negative attitude toward online learning for educational usage. Teachers who see designing an online course using LMS as a burden might have developed a negative attitude towards online learning teaching and learning.

The sixth hypothesis for the study that teachers' attitude towards computers has a significant relationship with teacher's behavioral intentions towards ICT integration in education shows the relevance of a positive attitude towards computers among teachers for academic activities. That is a positive attitude towards computers not only lead to a positive attitude towards learning management systems and internet usage but also influences teacher's behavioral intentions towards ICT integration in education. That is, teachers will be ready to implement ICT in their classrooms and use it to improve the quality of teaching if only they have developed a positive attitude towards computers. Computers thus serve as a conduit through which other ICT tools could be activated for use among teachers for teaching and learning in Ghanaian secondary schools. The findings of the study, therefore, agrees with

the findings of Blessinger and Wankel (2013) that a positive attitude towards computers influences ICT integration in education. Findings for hypothesis six also mean that a negative attitude towards the integration of ICT into teaching and learning could be explained by a negative attitude towards computers among teachers in Ghanaian secondary schools. That is teachers' failure or inability to use ICT in the classroom to improve the quality of teaching could be explained by a negative attitude of teachers towards computers.

Hypothesis seven of the study was also established or accepted. That is, teacher's attitudes towards the internet greatly influenced teachers' behavioral intentions towards ICT integration in education. That means that teachers' attitude towards internet was not limited to the usage of online learning as established for hypothesis three. Rather, it also influenced teachers to adopt ICT for educational purposes. That is, if a teacher's ability to find the use of ICT in teaching flexible and will continue to use it, will be greatly influenced by the teacher's positive attitude towards the internet. Also, teachers who deploy ICT to enable students to be more active and engaging during lessons were teachers who have developed positive attitudes towards the internet. Therefore, the findings of Hussein (2021) that an appositive attitude towards the use of the internet significantly influences ICT usage for academic purposes among teachers in Ghanaian secondary schools resonate with that of this study. Another meaning of the findings for hypothesis seven is that, teachers who do not like to give assignments to be done by students using the internet might have developed a negative attitude towards ICT integration into teaching and learning. These results further support the findings of Al-mamary and Yaser (2022) that negative attitude towards

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internet usage among teachers leads to failure to integrate ICT into teaching and learning.

Several explanations can also be provided for the non-significant relationship established for the last two hypotheses of the study. That is teacher's behavioral intentions towards ICT integration in education was not significantly influenced by teachers' attitude towards learning management systems (hypothesis five) and attitude towards online learning (hypothesis eight). The results mean that as much as teachers' attitudes towards computers and the internet influenced ICT integration into educational purposes, the same cannot be said for the teachers' attitudes towards learning management systems and online learning platforms.

This could be due to the fact that these latter two variables (ATLMS and ATO) do not directly predict the integration of ICT into teaching and learning (BIICT) in Ghanaian secondary schools. The results, however, disagree with the findings of Blessinger and Wankel (2013) who found a significant relationship between teachers' attitudes towards online learning and behavioral intention to integrate ICT into teaching and learning. The results further disagree with the findings of Kouhan, Janatolmakan, Rezaei and Khatony, (2021) who found that a significant relationship between teachers' attitudes towards learning management systems and their behavioral intention to integrate ICT into teaching and learning. These results could mean that ATO and ATLMS indirectly predict the behavioral intention to integrate ICT into teaching and learning. Thus, these two variables could share their predictive power with another variable of the study or variables not considered in this study. Alternatively, there could also be the lack of exposure of these

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teachers to learning management systems and actual use of online learning and hence their inability to transfer positive attitudes of the aforementioned towards their intention formations towards ICT integration in their classrooms.

Chapter Summary

The results and analysis chapter of this study presented empirical findings for the study in relation to the hypotheses guiding the study. The findings reported were further discussed and linked to previous studies in chapter two of the study. Six out of the eight hypotheses of the study were supported by the findings of this study and two hypotheses were rejected.

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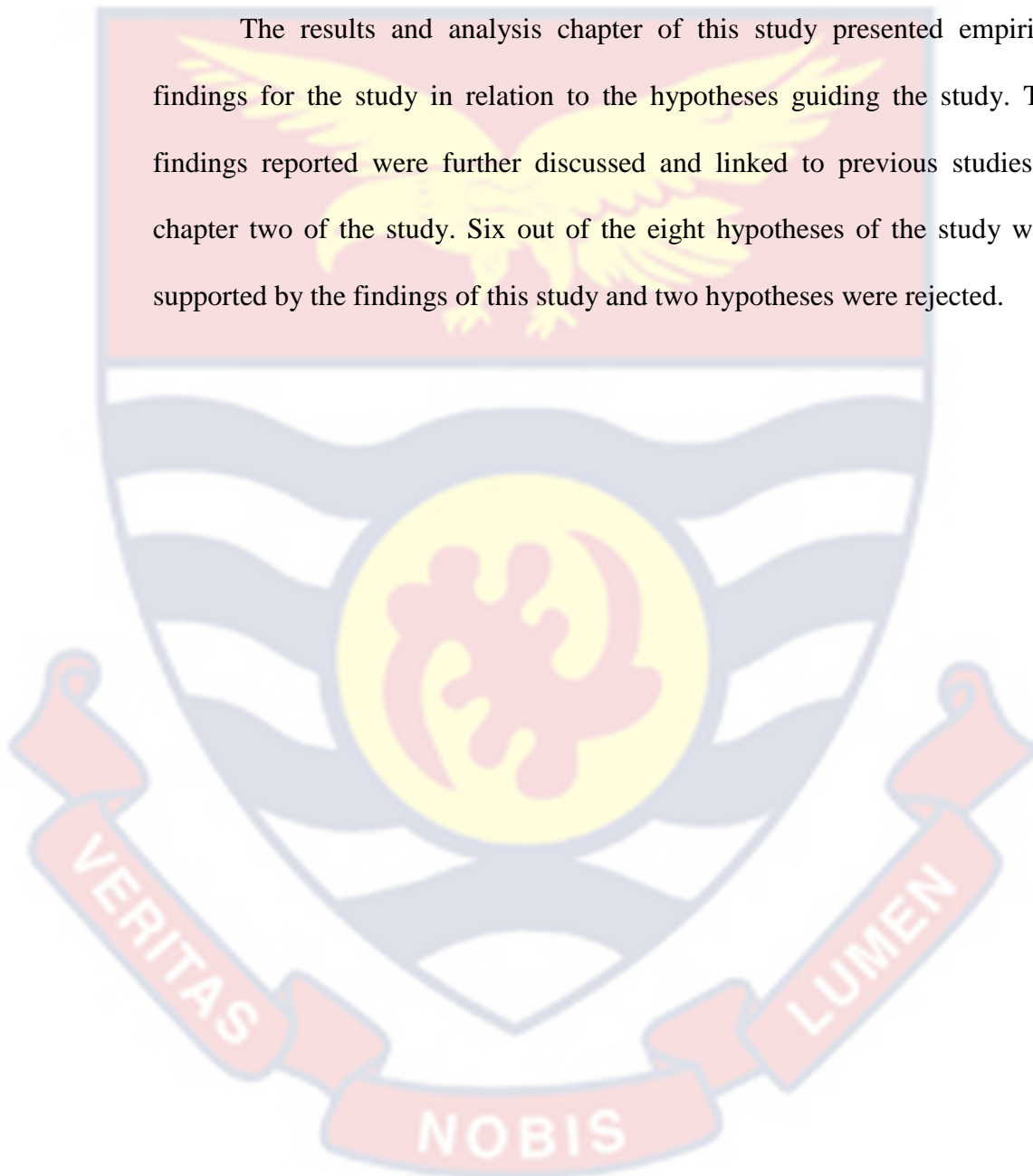
CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

Chapter five of the study is the last chapter dedicated to four main issues: overview of the study, summary of key findings, conclusions and recommendations. Specifically, the chapter will start with a brief overview of the study, which will include the purpose and hypotheses guiding the study as well as key issues on the methodology of the study. This will be followed with a summary of the study's key findings based on specific hypotheses guiding the study. Based on the specific findings for each hypothesis, a conclusion was drawn, and specific recommendations were proffered to particular stakeholders in relation to the conclusions drawn.

Overview of the Study

The main purpose of the study was to examine attitude of teachers in integrating technology in teaching in SHS at the Sagnarigu municipality. Specifically, the study sought to test eight hypotheses. The positivist philosophical position and quantitative approach were adopted for the study. Specifically, the correlational survey research design was used for the study. In order to gather data for the study, the researcher utilized a census survey approach to collect information from a sample of 179 teachers. The teachers were selected from the four Government Senior High Schools located in the Sagnarigu District, which was the designated study area. The main instrument for data collection was a structured questionnaire measured on a five-point Likert scale. The instrument was divided into 7 sections such that demographic characteristics of respondents was the first section and the rest of

the sections were questions on the hypotheses guiding the study. Data collected were screened, coded and analyzed with the Partial Least Square - Structural Equation Model (PLS-SEM).

Summary of Key Findings

Key findings reported in this section are based on the eight hypotheses guiding the study. Each key finding reported in this subsection represents a key finding for a particular hypothesis guiding the study. Thus, the study found that:

1. There was a statistically significant relationship between the attitude of teachers towards computers and the attitude of teachers towards the internet for hypothesis one.

2. There was a statistically significant relationship between the attitude of teachers towards computers and the attitude of teachers towards learning management systems for hypothesis two.

3. There was a statistically significant relationship between the attitude of teachers towards the internet and the attitude of teachers towards online learning for the third hypothesis.

4. Attitude of teachers towards learning management systems significantly influenced the attitude of teachers towards online learning for the fourth hypothesis.

5. There was a non-statistically significant relationship between the attitude of teachers towards learning management systems and teachers' behavioral intention towards integrating ICT in education for hypothesis five.

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6. Teachers' behavioral intention towards integrating ICT into education was significantly influenced by attitude of teachers towards computers for hypothesis six.

7. There was a statistically significant relationship between the attitude of teachers towards internet and teachers' behavioral intention towards integrating ICT in education for hypothesis seven.

8. There was a statistically significant relationship between the attitude of teachers towards online learning and teachers' behavioral intention towards integrating ICT into education for the eighth hypothesis.

Conclusions

Based on the key findings reported for the study, it can be concluded that teachers' attitudes towards computers significantly influenced teachers' attitudes towards the internet, learning management systems and teachers' behavioral intention towards integrating ICT into education. It can also be concluded that the attitude of teachers towards the internet is significantly related to the attitude of teachers towards online learning and teachers' behavioral intention towards integrating ICT into education. Furthermore, it can be concluded that there was a statistically significant relationship between the attitude of teachers towards learning management systems and the attitude of teachers towards online learning. Teachers' attitude towards online learning was also found to be significantly related to teachers' behavioral intention towards integrating ICT into education.

Out of the eight hypotheses of the study, six were significant and validated and one was non-significant and was therefore rejected. All four independent variables of the study (ATLMS, ATC, ATI and ATO) contributed

to explain approximately 83 percent variance in teachers' behavioral intention towards integrating ICT into education, which was the study's dependent variable.

Recommendations

Based on the above conclusions and the key findings reported earlier, specific actions will be required by authorities of our Government Senior High Schools in the Sagnarigu District to be able to influence teachers' behavioral intention towards integrating ICT into education which was the dependent variable of the study in the district. It is therefore recommended that:

Management of the four Government Senior High Schools in the Sagnarigu District should also pay attention to the attitude of teachers towards the internet since it has the propensity to influence teachers' behavioral intention towards integrating ICT into education. This can be done by providing strong internet connectivity to encourage teachers to use the internet for academic purposes.

Lastly, management of the four Government Senior High Schools in the Sagnarigu District should influence teachers' attitude towards their behavioral intention towards integrating ICT into education by paying attention to teachers' attitudes towards online learning. This can be done by providing online tools as well as training on how to use these online tools to deliver academic content.

Limitations and Suggestions for Further Studies

The total contribution of the four independent variables of the study to the explanation of the variance in the dependent variable (teachers' behavioural intention towards integrating ICT into education) was

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approximately 83 percent. This means that there is about 17 percent variance explained by other variables not included in this study. Thus, further studies should consider other variables in their studies that could explain the remaining variance in teachers' behavioral intention towards integrating ICT into education.

Additionally, this study was limited to the four Government Senior High Schools in the Sagnarigu District. Further studies could also compare teachers' behavioral intention towards integrating ICT into education based on a regional grouping or based on private and public status. Further studies could also consider teachers' behavioral intention towards integrating ICT into education at different levels, such as pre-tertiary and among university teachers, especially after the COVID-19 pandemic has made online education a very important component in education in Ghana.

Finally, since the study concentrated on teachers' attitude, another study can look into self-efficacy or experiences of teachers in a definite model and verify for statistical significance and predictive variance explanation.

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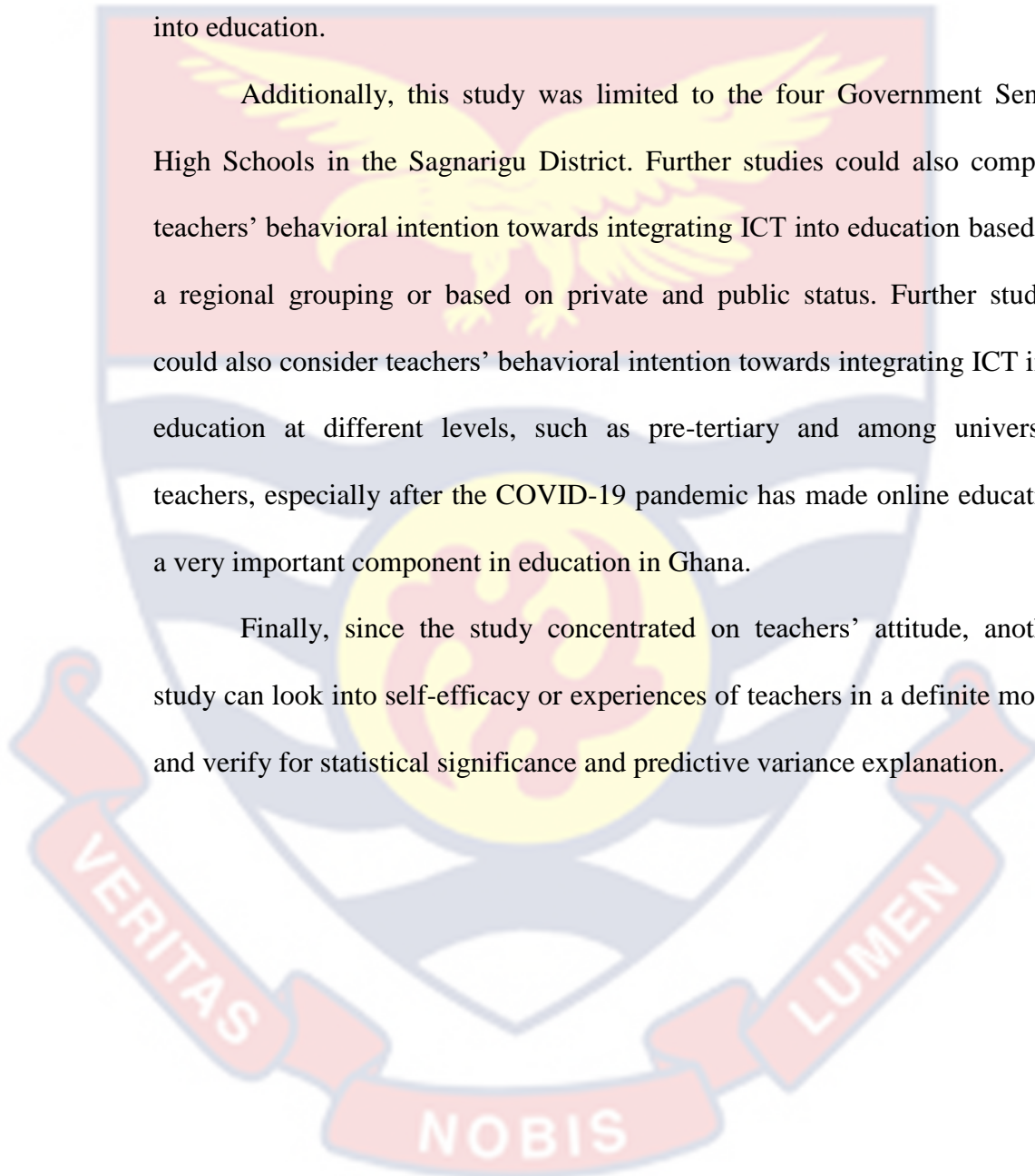
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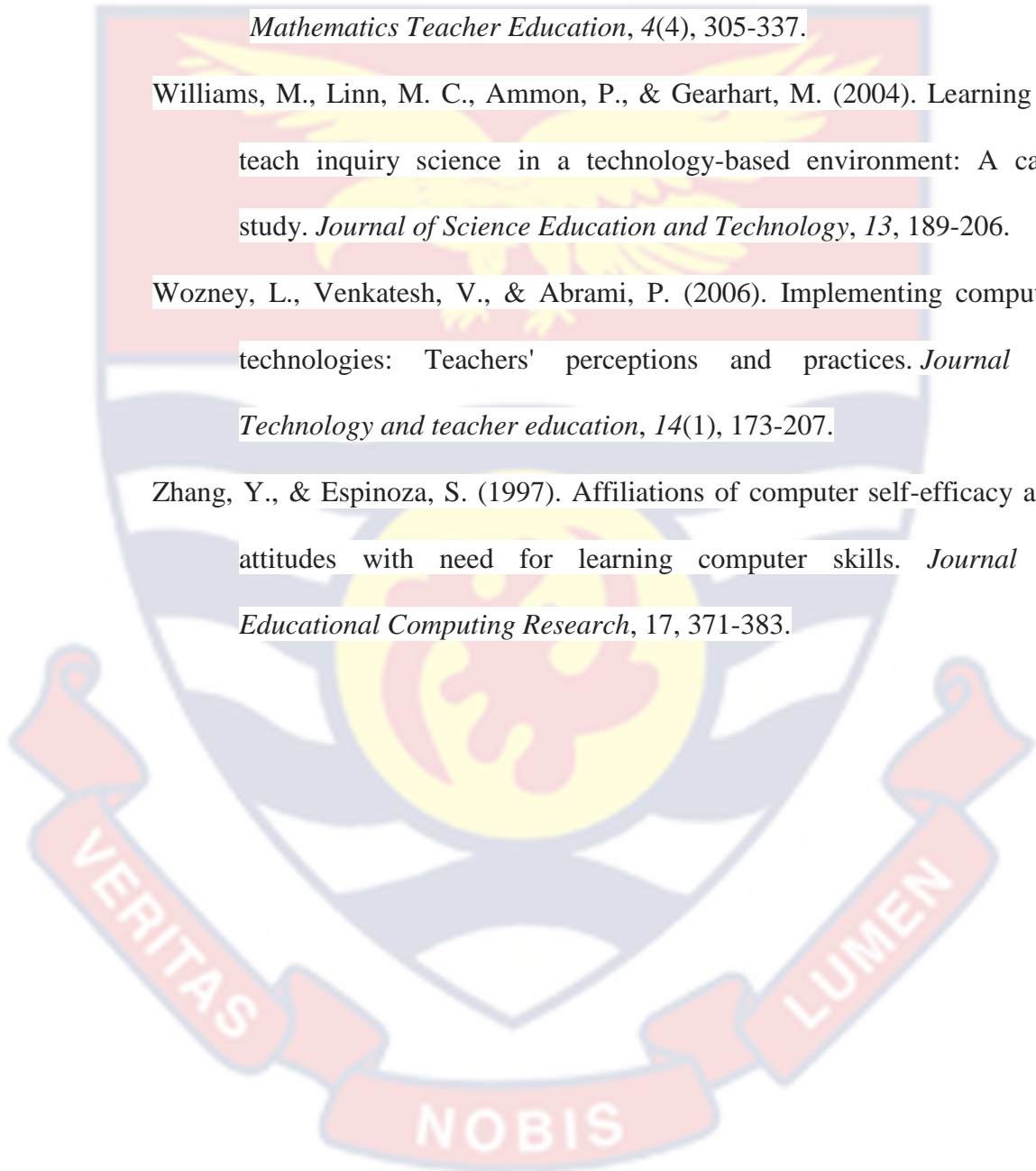
APPENDIX A

QUESTIONNAIRE FOR SHS TEACHERS IN THE SAGNARIGU

MUNICIPALITY

I am a student at the University of Cape Coast, from the Department of Mathematics and Science. I am conducting research on the topic *"Attitude of Teachers in Integrating Technology in Teaching in SHS at the Sagnarigu Municipality"*

The aim of this research is to assess the attitude of teachers in integrating technology in teaching in SHS at the Sagnarigu Municipality

Please answer each question to the best of your knowledge. Your thoughtfulness and responses will be greatly appreciated.

Your responses will be kept completely confidential and will be strictly used for academic purposes.

Thank you.

PART A: Demographics of Respondent

1. Gender

a) Male [   ]   b) Female [   ]

2. Age

a) 18-25 [   ]   b) 26-35[   ] c) 36-45 [   ]   d) 46-55 [   ] e) 56 and Above[   ]

3. Major Subject taught?

a) General Science [   ]   b) General Arts   [   ]

  c) Business   [   ]

d) Visual Arts   [   ]   e) Home Economics [   ]

  f) Agriculture   [   ]

4. Years of Service

a) Below 1 year [   ]   b) 2-5 years [   ]   c) 6-9 years [   ]   d) 10

years and above [   ]

PART B

Section A: Teachers' Attitude Towards Computers

Please indicate to what extent you agree or disagree with the following

statement on teachers' attitude towards computers

SD -Strongly Disagree, D- **Disagree**, U- **Undecided**, A- **Agree,** SA-

Strongly Agree

	Statement	SD	D	U	A	SA
1.	I think I understand computer skills well enough to use them in my classroom.					
2.	I think I have the abilities necessary to use computers for instruction.					
3.	I think I can successfully teach relevant subject content with the appropriate use of computer					
4.	I feel positive about my ability to assess software for teaching and learning.					
5.	I feel positive I can help students when they have difficulty with computer					
6.	I think I am confident that I can effectively monitor students' computer use of project development in my classroom.					

Section B: Teachers' Attitude Towards the Internet

Please indicate to what extent you agree or disagree with the following statement on teacher's attitude towards the internet.

SD -Strongly Disagree, D- **Disagree**, U- **Undecided**, A- **Agree,** SA- **Strongly Agree**

	Statement	SD	D	U	A	SA
1.	I feel positive about the use of the internet to search for relevant resources for teaching					
2.	I think I am capable of correctly integrating the internet in my teaching					
3.	I think effectively supporting students to use the internet for classwork is a good idea					
4.	I think I am confident that I have the skills necessary to use the internet for class activities.					
5.	I like to give assignments to be done using the internet					

Section C - Teacher's Attitude Towards LMS

Please indicate to what extent you agree or disagree with the following statement on teacher's self-efficacy towards LMS

SD -Strongly Disagree, D- **Disagree**, U- **Undecided**, A- **Agree,** SA- **Strongly Agree**

	Statement	SD	D	U	A	SA
1.	It is full of fun in leading my students to use virtual library					
2.	It is full of fun in using Online Conferencing Tools for class discussion					
3.	I think integrating LMS into my instruction is not a burden					

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4.	It is not a burden to design an online course					
5.	I think I can share and work together online with students in the classroom					

Section D- Teacher's Attitude Towards Online Learning

Please indicate to what extent you agree or disagree with the following statement on teacher's attitudes toward online learning

SD -Strongly Disagree, D- **Disagree**, U- **Undecided**, A- **Agree,** SA- **Strongly Agree**

	Statement	SD	D	U	A	SA
1.	I think it is not an additional work load to facilitate learning in an online environment					
2.	I feel positive that I have the right abilities to use online learning					
3.	I think I am confident that my ability to teach improves when I teach using an online the e environment					
4.	I think I feel nervous about using online an e environment for teaching					
5.	I feel positive that I can share and work together online with students in the classroom					

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Section E- Teacher's Behavioral Intentions Towards ICT Integration in Education

Please indicate to what extent you agree or disagree with the following statement on teacher's behavioral intentions towards ICT integration in education

SD -Strongly Disagree, D- **Disagree**, U- **Undecided**, A- **Agree,** SA- **Strongly Agree**

	Statement	SD	D	U	A	SA
1.	I am ready to implement ICT in my class					
2.	I believe the use of ICT improves the quality of teaching and so I will use it					
3.	I would recommend other teachers use ICT for teaching					
4.	I think the use of ICT in teaching is a not waste of time for me					
5.	I find the use of ICT in teaching flexible and I will continue with it.					
6.	I will use the practice of ICT to enables students to be more active and engaging in the lesson					
7.	I will use ICT to prepare teaching materials					

Thank you very much for your cooperation!