DEPARTMENT OF INFORMATION STUDIES

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THE USE OF ICT IN TEACHING AND LEARNING IN SEMINARIES: A CASE STUDY OF TRINITY THEOLOGICAL SEMINARY, ACCRA, GHANA.

BY

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DECLARATION

I hereby declare that, with the exception of citations to other people's work which have been duly acknowledge, this dissertation is the result of my own research work carried out in the Department of Information Studies, University of Ghana, under the supervision of Dr. Ebenezer Ankrah.

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I hereby certify that this dissertation was supervised in accordance with procedures laid down by University of Ghana.

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Dr. Ebenezer Ankrah Date

(Supervisor)

DEDICATION

To God Almighty

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My profound gratitude first goes to Almighty God for the strength, knowledge and guidance during the research.

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ABSTRACT

We are in the technological age and everything including teaching and learning is affected by it. The research was conducted to examine the use of Information and Communication Technology (ICT) in teaching and learning in seminaries through a case study at Trinity Theological Seminary, Accra. The research concentrated on the awareness, the extent to which the available ICT was used, the skills and knowledge, reasons, challenges to and recommendation on the use of ICT among teachers and students. The Diffusion of Innovation Theory was used as the theoretical framework and a Case Study method was adopted whereby residential teachers and students were studied. Interviews and questionnaires were used as instruments for collecting the data. Four (4) respondents were selected from the teaching staff and ninety-eight (98) respondents from the students of the seminary. The findings revealed that both students and teaching staff are aware and use ICT tools in the activities, but the students lack awareness on CD ROM and the e-library which were the main electronic resources subscribed by the school. Other students expressed dissatisfaction with the electronic materials due to lack of subscribed online databases by the school. The study again revealed that, the skills and knowledge in using ICT tools were average, although majority conveyed positive attitude towards ICT use. Low bandwidth, insufficient Internet access, finances and insufficient equipment were some of the challenges that was hindering effective ICT use in teaching and learning at the seminary. Suggestions and recommendations were made to curb the challenges faced at the seminary.

TABLE OF CONTENTS

PAGE

CHAPTER TWO

LITERATURE REVIEW

CHAPTER THREE

METHODOLOGY

CHAPTER FOUR

DATA ANALYSES AND DISCUSION OF FINDINGS

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

LIST OF TABLES

PAGE

LIST OF FIGURES

PAGE

CHAPTER ONE

INTRODUCTION

1.0 Background of the Study

The breath-taking pace that Information and Communication Technology (ICT) has pervaded and captured today's world is tremendous. The world in the last two decades has experienced a significant change in all aspects of life due to use of ICT (Thioune, 2003). From the individual, institutions, organisations through to government, ICT usage has affected the way people communicate, work and enjoy life as individuals, and in organisations. The constant usage in social media platform like WhatsApp, Facebook and Twitter for entertainment or business transactions is trending. People now indulge in such communications than have physical conversation with each other. Electronic mails (e-mails), short message service (SMS), texting and video chats (Skype) have also ensured fast, easy and convenient means of communicating information across.

Recognising the impact of ICT in society have caused educational stakeholders in Africa to restructure programs and classroom facilities to bridge the gap between the advanced and less advanced societies. “With the possibilities and opportunities that it offers, ICT has become a critical part of educational reform efforts and is seen as an integral component of school curriculum” (Tezci, 2011). These restructuring efforts require effective action for using technologies that will offer students understanding in their programs and stimulate meaningful learning (Tomei, 2005 cited by Malcolm and Godwyll, (2008). Likewise, the profession “teaching” has become most challenging because it necessitates new preparation and high-tech adaptation to cope with the current educational systems. Teachers are implementers and therefore

need to learn and apply new technologies into their classroom instructions (Tedla, 2012). A report by the United Nation, Educational, Science and Cultural Organisation (UNESCO, (2015) stated that "Information and communication technologies (ICTs) must be harnessed to strengthen education systems, knowledge dissemination, information access, quality and effective learning, and more effective service provision".

Information and Communication Technology thus "relates to those technologies that are used for accessing, gathering, manipulating and presenting or communicating information. The technologies could include hardware (e.g. computers and other devices), and software applications and connectivity (e.g. access to the Internet, local networking infrastructure, and video conferencing)" (Tommey, 2001). The hardware equipment like mobile phones, computers, laptops, television and projectors are mostly used in educational environment to process, send and retrieve information for academic purposes.

These equipment have aided in changing the traditional practice of teaching and learning into technology inclusive method. The change has affected all stages of education, including theological education. Lecturers (including those in the seminaries) are now placing instructional technology in their classroom work with audio and visual devices used as a medium for communicating with students (Mayo, Kajs and Tanguma, 2005). That is, students are taught with projectors to enable education become more illustrative and better understood. The method of teaching has also been a blend of on-line materials such as stored data files, movie clips, sound files, as well as manual teaching.

The use of educational software like Sakai, Quizfaber and TestCommander have furthermore provided a platform for lecturers to interact with students, give lecture notes, quizzes, test,

assignments and forum discussions. BibleWorks, Logos and Accordance are other software used in seminaries specifically in the field of Old Testament Theology (Delamarter, 2005). There are again distance degree courses online, group research work via the internet and other electronic resources used by seminaries (Killacky, 2011). These new technologies have had great potential for improving the education of pastors which has affected Church growth in this technological era (Ossai Ugbah, 2011).

Additionally, the use of ICT has provided theologians with large volume of resource materials for their studies. Thousands of scholars have therefore had the opportunity to retrieve correct and true information for their school assignments, workloads and individual research. The Online Public Access Catalogue (OPAC) and electronic library too are other channels through which students locate library materials on-line, reserve materials ahead of borrowing and communicate with a librarian on-line.

In Ghana, the incorporation of modern technology in pastoral training has also begun. Recently, a pastoral training institute, Trinity Theological Seminary which is a first ecumenical theological tertiary institution in Ghana launched it ICT project to aid in increasing its internet connection. This now provides students with internet to help in their studies. An ICT laboratory was also constructed to help final year students get access to computers for their thesis and dissertations. Continuous effort by the school on its ICT use will improve their academic programs and bring a great change in theological education.

1.1 Location of the Study

Trinity Theological Seminary is a top theological tertiary institution in Ghana and even in Sub Saharan Africa. It is situated in an area popularly known as Mempeasem which is a suburb of Accra and close to University of Ghana, Legon. The seminary was established in 1942 as an avenue for training ministers for the three original sponsoring churches. These are the Presbyterian Church Ghana, Methodist Church Ghana, and Evangelical Presbyterian Church. Later the African Methodist Episcopal Zion Church and Anglican Diocesan Council of Ghana now Accra Diocese also joined. In their desire to cover the wider population and facility to all, other denominational churches have their ministers trained there and these include Charismatic Churches, African Independent Churches and Pentecostal Churches. They have again created multicultural atmosphere where students and lecturers from other parts of the world take part in their programmes.

The seminary has a library with an attached ICT laboratory which is used by students doing their dissertation and long essays. But students with laptops can get connected to the internet through the assistance of the officer in charge of the ICT.

The teaching staff and students' populations comprise of resident and non- resident members. The teaching staff also have full time faculty and part time faculty members. The area of studies includes Theological Studies, Biblical Studies (Old and New Testament), Language Studies (Greek, Hebrew, Ewe, Ga and Twi), History, Mission and Ecumenics, Philosophy, Systematic Theology and Ethics, and Pastoral and Practical Theology (Evangelism, Counselling and so on). Programmes offered in the school includes Doctor of Philosophy (PhD) in any of the programs offered, Doctor of Ministry (DMin), Master of Theology (MTh), Master of Divinity (M.Div), Master of Arts in Ministry (MAM), Bachelor of Theology (BTh), Diploma in Theology (Dip.Th)

and Certificate in Ministry (CIM). Generally, the school seeks to offer theological training to all irrespective of gender or denomination.

1.2 Statement of Problem

Quality education is a priority in all tertiary institutions in the world and ICT is seen as a contributing factor in achieving this. Africa and Ghanaian schools are now growing and advancing in the use of information and communication technology in their educational systems (Tella and Adeyinka, 2007, as cited by Malcolm and Goodwill (2008) and pastoral training has not been left out. It is however revealed by several studies that most tutors do not incorporate modern technologies in their lessons effectively although attempts have been made to coach them on ICT integration (Tezci, 2011).

The use of ICT by the teachers is seen more of accomplishing other supplementary tasks such as lesson plans, students' records, preparing tests or searching information from the internet instead of instructional purpose or even classroom integration for subject teaching (Williams et al., 2000; BECTA, 2004). Watson (2001) states that revolution or progress can transpire at schools only when initiated by teachers. Just as in teaching, the use of modern technology for learning is not any different. Students access to the internet seems to be used more for leisure activities than for academic work. Face-booking, on-line games, YouTube and Twitter are some internet programs that are affecting and limiting the use of ICT in learning (Mikre, 2011).

Low patronage of academic database by students (Dadzie, 2005) and low awareness of electronic resources (as well as other ICT tools) have also contributed to inadequate use of relevant academic information (Bankole and Oludayo 2012; Fiankor and Akussah, 2012, as cited by Atuase (2016). In addition, several challenges such as poor internet connection, lack of ICT infrastructure in

schools and human resource capacity have all become a major setback for implementing ICT in teaching and learning. Thus, the inability of the schools to fully integrate ICT in teaching and learning are influenced by both human and environmental factors.

Through conversation with some students, it was realised that most classroom activities at Trinity Theological Seminary are manually organised. Likewise, majority of the materials for reading are in print form. The only accessible academic electronic resources provided by the school which relate directly to theological studies are compact disc-read only memories (CD-ROMs) which contain some lectures from foreign schools and access to Princeton Theological Seminary digital library resources. According to some students, these resources are not even being utilised by the students. Perhaps there is low awareness of such materials.

Moreover, high cost of infrastructural development has caused low bandwidth availability thus making it difficult to effectively access the internet. Inadequate ICT training in the school to equip students to use its tools and lack of experience by some lecturers and students with ICT tools have also hinder effective implementation of ICT in teaching and learning.

The use of ICT in teaching and learning is a very common research area for researchers but no research has been done so far in this area which relate to theological education in Ghana. The researcher therefore deems it necessary to conduct a study which looks at ICT use in teaching and learning in seminaries by identifying the awareness, the extent to which ICT tools are used, skills, reasons and challenges in applying ICT in their teaching and learning at Trinity Theological Seminary and consequently suggest the means of curbing the problems.

1.3 Purpose of the Study

The purpose of this study was to examine the level of ICT usage in teaching and learning at Trinity Theological Seminary with the view to identify problems and make recommendations based on the findings of the study.

1.4 Objectives

The objectives of the research were:

1. To investigate the awareness of ICT tools that are available in the seminary.
2. To determine the extent to which the various ICT tools available are being used in teaching and learning.
3. To find out the reasons for using ICT tools in teaching and learning in the seminary.
4. To examine the level of skills and knowledge for using ICT in teaching and learning.
5. To determine the challenges in using ICT in teaching and learning.
6. To recommend proper ICT tools that can be used for teaching and learning.

1.5 Scope and Limitation of the Study

Trinity Theological Seminary runs regular, sandwich, weekends and special students' programs which are taught by both full time teaching staff and part time teaching members. There are also residential facilities for some full time teaching staff and students at the school's premises.

Essentially, the study should have confined itself into seeking answers from all students and lecturers at Trinity Theological Seminary; however, it concentrated on full time teaching staff and regular students who are residents on campus. This is due to the fact that non-residential full time teaching staff and part time teaching staff are located in various parts of Accra and do not spend

much time on campus. Continuous effort to involve all teaching staff would delay the research given the limited time frame.

Again, non-residential regular and weekends students are difficult to get hold of since they leave the premises after classes. Any clarification with them concerning the research questions may be a challenge. Sandwich students were also excluded since the research would have been over before they report for their academic programme.

1.6 Theoretical Framework

Researches are backed by theories and theories should specify the relationship between variables. A theory can therefore be defined as "a set of interrelated constructs (variables), definitions and propositions that presents a systematic view of phenomena by specifying relations among variables, with the purpose of explaining natural phenomena" (Kerlinger's,1979 as cited by Creswell (2009). Theory entails definitions, limitation, relationship and prediction. According to Creswell (2009), a theory can appear in a research study as an argument, a discussion and a rational as well as help explain phenomena of the world.

This research presented the Diffusion of Innovation theory (DIT) as its theoretical framework. The theory was developed by Everett M. Rogers in 2003 as a framework for understanding the individual adoption and experiences with a technology in a social system. According to Sahin (2006) as cited by Medlin (2001) "Rogers' Diffusion of Innovations Theory is the most appropriate for investigating the adoption and use of technology in higher education and educational environment". Innovation here is also referred to as technology (Rogers, 2003).

Diffusion of Innovation Theory endeavours to explain how, why and at what time a group of people adopt a technology, product, idea or object. The acceptance and adoption of a technology in a social system involves a decision making and an action to consider a technology as better than the existing systems. The basis of adoption requires the individual to identify the innovative as new (Rogers, 2003).

The adoption of an innovation in a social system takes a gradual process whereby some individuals are more likely to take advantage of it than others. "Researchers have confirmed that early adopters of an innovation seem to exhibit different traits than people who adopt later. In marketing an innovation to a target group of people, the unique features of the target population need to be examined critically since this could aid or hinder the adoption process" (Atuase, 2016). The theory identifies five adopter categories which influence a decision and promote an innovation. Innovators, early adopters, early majority, late majority, and laggards.

The innovators are group of people who easily take risk and are curious to know about an innovation. They are bold and enthusiastic about new ideas and always the first to use an innovation. They are those who are stirred and willing to adopt an innovation, once they perceive an idea or product to be useful (Atuase, 2016). These individuals can be called the computer experts.

From this study, the innovators can be associated to the respondents who are skilful with ICT equipment. They are more likely to adopt it in their teaching and learning than those who are not. Also, those who are enthusiastic about ICT equipment will easily use it in their teaching and learning. Further, respondents who perceive ICT equipment as useful are likely to adopt it in their teaching and learning than those who do not.

The second category of persons in Diffusion of Innovation Theory are the early adopters. They are people who have heard about the existence and success of an innovation and are willing to adopt it. They therefore need no convincing to adopt that innovation. They are always on the edge in finding the current trend in technology and are eager to purchase and use such innovation. They usually have high adoption rate in a social system. In relation to the study, respondents who are aware of ICT tools are likely to adopt it in their teaching and learning than those who have not.

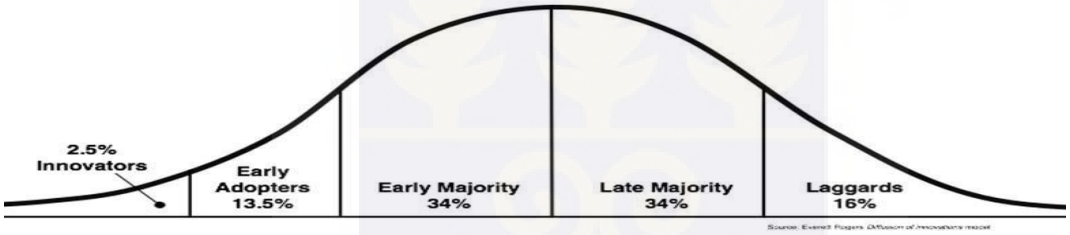
The third group of persons according to the theory are the early majority. These are people who adopt a new idea or innovation better than average person. These people evaluate innovation thoroughly through investigation before decisions of adoption or rejection are made (Atuase, 2016). The early majority are people who prefer a simple and cost-effective innovation with less complexity in usage. Their purpose for using an innovation will be based on how the innovation will aid in their work performance without affecting their limited time.

In the context of the study, this adopter category can aid in finding out the extent to which ICT tools are used by respondents in their activities. It can also aid to knowing the reasons why respondents are adopting technology in their method of learning.

The next category who are the late majority, are people who are sceptic about change, they need evidence or proof before they adopt an innovation. Thus, they will accept an innovation only if it has been tried by many people. These people need enough information to be convinced before the decision of adoption could be made. The only reason for adopting an innovation is the fear of not fitting in (Robinson, 2009). The late majority in this study can be associated in finding out the reasons for using an ICT equipment in one's academic activities.

Laggards are mostly the last group to consider in the adoption process of an innovation. They are entrenched in traditions, very conservative and uncertain of change, they view an innovation to be difficult to use and are the stiffest group to be convinced in the adoption process (Rogers, 2003). They usually see a high risk in using an innovation and find ways of convincing others about it. They can be classified as technophobic due to their resistance in using technology. The laggards in the study can be related to respondents who view ICT usage as challenging and thereby refusing to use it in their teaching or learning process.

FIGURE 1.1: ROGER'S DIFUSSION OF INNOVATION MODEL



Source: http://sphweb.bumc.bu.edu

According to Atuase (2016) cited by Rogers (2003), "adoption of an innovation comprises of five stages, these are; awareness of innovation, choice to adopt or cull the innovation, trial, and continued use of the innovation". The theory is characterised by some attributes which help explain individual adoption of an innovation and which are somehow linked to the adopter categorises (Rogers, 2003). These attributes are the relative advantage, compatibility, complexity, trailability and observability.

Relative advantage is the extent to which a technology is perceived more advantageous than the existing technology. Compatibility measures the consistency of an innovation in terms of its

values, competence, and its ability to meet the needs of the prospective adopters. Complexity is the challenges adopters experience in order to understand or use an innovation. Trialability is the process by which an innovation is tried or experimented for confidence or experience. Observability is the degree at which an innovation has been proven to produce desired results to the end user (Rogers, 2003).

This theory has been used to explain adoption of technology in several fields such as medicine, telecommunication and business (Rogers, 2003). It can also be used to explore the implementation of technology in advanced training and learning environment. Here, the teachers and students of Trinity Theological Seminary are the social system which is represented by the various categorises of adopters and the innovation as access to ICT tools. Some scholarly works have shown that teachers attitude towards ICT adoption is through stages.

"Teachers initially focus on their own interaction with the new medium, and as they gradually become comfortable with the technology they start deliberating upon potential learning benefits that would result from the use of the computer" (Myhre, 1998 cited by Malcolm and Godwyll, 2008). The continuous usage of the computer will stir up teachers' interest in applying it to classroom activities instead of just its operational use. This change can be gradual and not applicable to all (Malcolm and Godwyll, 2008 cited in Myhre, 1998). The same can be said for the students.

1.7 Significance of the Study

Studies on ICT usage in teaching and learning in Ghana have been centred usually around other academia excluding theology. Findings from this study will therefore highlight how much

technology should be inculcated in the training of pastors. Thereby, contributing to knowledge and making available information that will assist the school in employing the best practices for academic activities. Besides, the findings would assist the school to address the challenges of ICT faced by lecturers and students by providing them with adequate ICT tools and high internet connection.

Findings from the research will assist educational planners and policy makers to infuse ICT usage in teaching and learning in all areas of education in Ghana. The findings will again aid in revising its current ICT policy in order to develop the right strategies, strengthen and correct any deficiencies in the quest for academic achievement. Finally, it will add to a scholarly literature in the area of ICT use in education and provide other researchers with new dimension in ICT use in theological education.

1.8 Organisation of Study

The research examines the use of ICT in teaching and learning at Trinity Theological Seminary. The study was structured into five chapters.

Chapter one focused on the introduction which consist of background of the study, location of the study, statement of problem, purpose of the study, objectives, research questions, scope and limitation of the study, theoretical framework, significance of the study and organisation of study.

Chapter two provides a review of related literature of ICT usage in teaching and learning in general. The reviewed literature was taken from the World view, African view and Ghanaian view. Again, literature on specific area on the topic such as perception on ICT use in teaching and learning was also reviewed.

Chapter three presents the methodology that was adopted for the research. The methodology comprises of research design, selection of cases, population, sample size, sampling techniques, instrumentation, pilot testing, mode of data collection, data analysis and ethical considerations that were used for the study.

Chapter four consists of analysis and discussion of findings.

Chapter five presents the summary of findings, conclusion drawn from the study, and recommendations for all stakeholders of the study.

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CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This review of literature involves the selection and organisation of document containing information associated to the study. The review will offer information on various contributions scholars have made on the topic of the study. The reviewed literature includes those from the World, Africa and Ghana. The studies reviewed are in relation to the objective of research, and presented under the following subheadings:

1. Concept of information and communication technology
2. Awareness of modern technologies for classroom activities and studying
3. Use of modern technologies in teaching and learning in seminaries
4. Knowledge and skills in using ICT by tutors and students
5. Reasons for using modern technologies by tutors and students
6. Teachers and students' perception of modern technologies
7. Challenges with modern technologies

2.1 Concept of information and communication technology

ICT can be understood as technological devices or processes which assist our daily activities. It originated from a closely defined word IT (information technology) which is used in administration, professional, manufacturing and in relation to tertiary and other academic courses such as software design, database design and expert systems (Lloyd, 2005).

Currently, it is not only information technology (IT) that is studied as course but ICT itself is seen in two contexts. That is as a range of computing discipline like computer science, information system, information technology and software engineering (Adam, 2003; Barr et al, 2010) and a technological process for communicating information. This is highlighted by Collis and Moonen (2001) as learning about ICT which is treating ICT as a subject and studying with ICT which is the "presentation and distribution of instructional content through web environment (e-teaching) or systems offering an integrated range of tools (stand–alone computer instruction, CD ROM, among others) to support learning and communication."

Blurton (2002) represented Information and Communication Technologies as "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information". Similarly, Information and Communication Technology can be regarded as any equipment or interconnected system that allows instant reception, storage, operation, organisation, programming, controlling, presentation, transferring, exchange, communication or acquiring of data or information (Nigeria IT National Policy, 2001). These technological tools or equipment are digital satellite television (DSTV), compact discs (CDs), computers, laptops, projectors, web-based technologies, digital versatile device (DVD) players, mobile phone, television and radio, video conferencing technologies and electronic learning platforms (Abidoye et al, 2011**;** Sife, Lwoga and Sanga, 2007).

Using these ICT tools in education has aided in exchanging information and gaining knowledge. That is, whether blending the traditional instruction with ICT or solely using computers for practical and instructional delivery purposes has resulted in increasing learning and gaining of basic skills in technology. It has further ensured high students' achievement in some subjects compared to traditional instructional method alone.

2.2 Awareness of Modern Technologies for Classroom Activities and Studying

Awareness in ICT tools for teaching and learning set a pace for its use. Thus, the only way one will inculcate it in its classroom activities is when you know of it. Badu and Markwei (2005) in their study reveal that academic staff are more aware of internet services than students. Additionally, Edumadze et al (2014) and Oladosu (2012) revealed that majority of lecturers are aware of ICT tools in teaching as well as the awareness of surfing the internet as a laudable skill. They are mindful of the concept and need to engage ICT in classroom activities. The lecturers again are aware that engaging ICT in teaching is now the new trend and it is more beneficial and preferable than the traditional method of teaching (Onjeu, 2013).

The awareness however differs from one teacher to the other which is influence by several factors such as geographical location, gender, course taught or even age. Thakur (2014) for example in his research, made a comparism between trained teachers of different geographical areas and gender in relation to their awareness on modern technologies in India. The study shows that there was substantial variance in the level of awareness of ICT tools in teaching in urban and rural areas but none in relation to gender.

On the other hand, Philomina and Amutha (2016) in their study on ICT awareness among teachers in India revealed that female teachers (33.04%) are more conscious of technological tools in teaching than male teachers (32.33%). Likewise, science tutors are more aware of technological tools in classroom activities than art teachers. The study also indicated that, the higher the level of academic attainment the more aware the teachers are with ICT tools in teaching. From the survey, teachers possessing doctorate degrees had the highest awareness of ICT tools in teaching.

Teachers' awareness and ability to use ICT in teaching can be operational when the students also have some knowledge in ICT tools. Some researchers have shown equal awareness of ICT tools between teachers and students. Ali (2005) and Dadzie (2005) for instance in their survey realized that awareness for electronic resources were high among lecturers and students. Adebayo (2015) also in his research on the awareness and use of ICT in teaching and learning, revealed that both professors and students are conscious of ICT tools like laptops, desktops, phones and iPads which can be used to support classroom learning. A large proportion of students (that is 80%) used their internet-ready phones to assess materials for their assignment. Some few lecturers used WhatsApp for group instruction and assignments. The students were also aware of social media like Facebook, WhatsApp, Twitter and so on which were used for academic purposes. A survey by Ray and Day (1998) discovered CD ROMs to be of high awareness and use by students. Majority of the students preferred the CD ROMs to the printed materials.

Some research has shown students satisfaction with the electronic resources provided. Ansari and Zuberi (2010) for example reported students' satisfaction with electronic database provided in their school. Their study showed almost all respondents choosing 'quite satisfied' or 'satisfied' with the accessible electronic resources provided at University of Karachi. Unfortunately, high awareness of electronic resources does not apply to all institutions or individuals. Other studies have specified that "not all educators are fully aware of the numerous benefits of ICT and how to take advantage of them in the classroom" (Mirzajani et al, 2016). Shuling (2006) and Badu and Markwei, (2005) from their research have further shown little awareness of electronic resources which has caused low patronage of electronic technologies among academic staff and students. This lack of awareness of electronic technologies is due to insufficient publicity and training in using the services.

Certain channels such as friends and colleagues, orientation and academic staff can be used as measures in publicising and creating awareness of electronic resources among students (Soyizwapi, 2005). Again, lecturers can acquire skills with the technology, utilize the technology, employ these modern systems in their instructions, transfer it into the reorientation period, rearrange their training and learner studying period with these technologies and finally become modernised in their teaching practices (Keengwe, Kidd and Kyei-Blankson, 2009).

2.3 Use of Modern Technologies in Teaching and Learning in Seminaries

The idea of delivering quality theological education will be to change the approach from purely traditional teaching based to the non-traditional method of using technology as a medium or the hybrid way of adopting both traditional and non-traditional methods. Seminary training will have to be view in the context of prioritising list of courses that will be best delivered with either traditional only, non-traditional only, or a combination of the two (Killacky, 2011).

There have been divergent views from theological educators about the inculcation of modern technologies in teaching. Some argue that the adoption of technological tools in teaching will require more time in both learning the technology to use and using it to teach. That is, besides the normal Microsoft Office, there are additional programmes which are useful for theological education like Bible Works, Logos and Accordance which are used in the field of Old Testament. These programmes will consume a huge time for just learning the software. The use of technology in classroom teaching will again increase the time in teaching drastically causing delay in education (Delamarter, 2005). Thus, although web based teaching and other instructional methods can effectively improve the quality of studies in theology education, it alone will not foster the kind of transformation need in the seminary education (Esselman, 2004).

The other group of theological educators believed that the incorporation of ICT in theological education drives a more illustrative teaching approach. The use of projectors and other image-rich demonstration equipment has recently become very common in seminaries in North America whereby classroom installed with these technologies are referred to as "smart classrooms". "Armed with a presentation computer connected to the Internet, a document camera, VCR and DVD players, theological faculty members now have a host of tools for visually enriching their presentations" (Delamarter, 2005). Regrettably, the situation cannot be said the same in Canada where a study by the Association of Theological Schools (ATS) in 2010 found out that none of the seminary lecturers had a science or technology background nor did they have a proper teachers training to encourage ICT integration in teaching. The root cause for that matter was that seminarians were made up more of art students than science student (Killacky, 2011).

In the case of Africa, Simpson (2014) stated that some theologies have adopted the flipped classroom model where both lecture notes and presentation contents are made available to students online prior to class. These flipped materials are not the one or two hours' lectures taped in earlier offering of a course but it is made in shorter length and designed in a way that it can be accessed on mobile devices with internet. "This brevity is essential so that students can study for class in the smaller chunks of time available to them between other life responsibilities. For example, several three to five minute videos each focused on a significant point from an original hour-long lecture are more easily accessed on a mobile device, and the concepts more readily assimilated by students" (Simpson, 2014).

Additionally, South Africa theological schools have adopted e-learning where research exchange group are set via internet and distance master courses use digital formats and digital libraries. From this method, distance education in theology in the country has grown radically given opportunities to lay preachers in the rural areas to upgrade and increase their clergies. Typical cases are the Anglican churches who attends Extension College of Southern Africa for their theological education (Moodie 2008) and the Methodist churches that have studies at University of South Africa (Werner 2009).

Adeyoyin, Idowu and Sowole (2016) also found out that few seminarians in Nigeria owned or have access to computers, printers, laptops, iPads, iPods, scanners and digital cameras, with majority of the seminarians owning and using mobile phones, e-reader and android. "Among the electronic information system students used to get most of their information are Internet, email, bulletin boards, telephone, telex, CD-ROM databases, electronic journals, and electronic books". The students are of the view that these electronic resources will enable them carry out their assignment, broaden their knowledge on their subjects and enable them share information. The electronic resources also provide easy access to dependable, correct and appropriate information (Adeyoyin, Idowu and Sowole, 2016). Again, students use these electronic resources to transfer information, enhance learning and guarantee sharing of information (Osunrinde, Adekoya, and Adeyemo, 2002). "Availability of electronic resources has changed what users actually read and use. They now tend to use only what is easily available, accessible and searchable" (Adeyoyin, Idowu and Sowole, 2016). Hence, teachers should start given technology-based assignments and examinations so as to encourage learners thinking abilities (Fouts, 2002).

2.4 Knowledge and Skills in Using ICT by Tutors and Students

According to Trimmer (2012) the fundamental basis for integrating and improving modern technology use among students is a notion that instructors themselves are capable and assertive in using the technology in teaching. An increase in acquiring new technology does not automatically mean that ICT will be adopted and effectively use in learning. Thus, although lecturers are tasked to prepare students in the adoption of technology as an educational instrument, lecturers themselves are new to these technologies and lack the experience (Keengwe, Kidd and Kyei Blankson, 2008)

Teachers' knowledge in using ICT to improve teaching can be labelled as individualist, course-based and training competencies. Individual competencies are made up of abilities, facts and understanding of the time to use technology successfully in teaching a specific topic. Course-based competencies are the understanding, procedures and structures of ICT use and training competencies are the ways ICT are used to encourage teaching (Selinger and Austin, 2003).

A report from the Auditor General in Australia in 2001 as cited by Trimmer (2012) showed that the majority of tutors questioned, evaluated themselves as having more than basic skills in ICT. Yet, most of them were not assertive enough to integrate them in teaching to encourage students to do the same.

Trimmer's (2012) survey on teachers' skills in ICT in Australia government schools revealed that most of the teachers had skills in assessing work processing, internet, e-mail and file navigation. About 60% of the teachers also knew how to use spreadsheet and presentation software but only

30% had skills in assessing database. Again, technical support stands, computers for students to use, digital projectors and interactive white board were difficult for teachers to access, although more than half of the teachers admitted to have had some form of training in the use of ICT. The research then concluded that improving the ICT level of teachers will also improve its use in classroom activities.

Supporting this view, Zayapragassarazan and Ramganesh (2011) also suggested that faculty members need training on ICT tools to raise their level of competency. Their suggestion was based mainly on their survey which shown an average score of faculty members knowledge in presentation software, word processing and slide projection with a much lower score for slide design, spreadsheet, statistical analysis, online resources and database software. Results from Rosnaini and Mohd Arif (2010) too showed that large group of teachers had average or very little knowledge in ICT. This development evidently shows that the vital means of ensuring a successful ICT use in schools is to improve teachers' knowledge in ICT use (Moganashwari and Parilah, 2013).

On the contrary, Sharma (2009) and Ansari and Zuberi (2010), indicated that most of the teachers are able to use technological materials effortlessly and independently. These teachers according to Sharma (2009) have had formal training in ways for using the electronic resources. Students also get trained in these electronic resources because of availability of online information (Sharma, 2009).

Adeyoyin, Idowu & Sowole (2016) in their research realized that mobile phones were the most used ICT tool by seminarians in Nigeria, while IPod and iPad were the least use by the students. "This finding could be because of the fact that iPods and iPads are expensive, sophisticated, and more complex to operate by those who are not technology-savvy".

2.5 Reasons for Using ICT in Teaching and Learning

One major reason as stated by Bingimlas (2009) which prevent teachers from using modern technologies effectively in classroom activities is because of limited time periods. Most researches according to him have indicated that teachers' lesson periods are not enough to schedule technology-teaching methods. On the contrary, BECTA (2008) survey indicated that the adoption of technical devices in classroom instruction rather save some small amount of time, especially online resources and interactive whiteboards.

Most of the teachers (92%) in Greece saw ICT usage as very effective in classroom integrated in relation to the responsibility of tutors, the responsibility of the school and the education media. There are three main issues that somehow make teachers sceptic about integrating ICT in education. The need for more convincing reason why ICT need to be integrated in their instructional process of education, the difficulty faced in classroom practice and then believe of ICT restriction on social interactions (Jimoyiannis & Komis, 2007). Faculty decision to adopt or not adopt ICT in their instructional methods further depend on knowledge, access to ICT equipment, technological support, faulty computers, lack of proper equipment and difficulties in using technology as reported by Zayapragassarazan and Ramganesh (2011).

Teachers who see that their own use of computer will benefit the students and those who feel students would benefit from ICT tend to adopt it in their instructional purposes. Additionally, the advantages of ICT in teaching and learning such as increasing the means of acquiring information and enhancing students learning may convince some teachers and students in Sub-Sahara Africa to adopt modern technologies in teaching and learning when they see these advantages (Hennessy, Harrison and Wamakote, 2010). Majority of students also admits that electronic information resources enable them quick access, easy and convenience means of retrieving information. (Adeyoyin, Idowu & Sowole, 2016).

2.6 Techers and Students' Perception of Modern Technologies

The willingness to adopt a technology will depend on how one perceive that technology to be helpful or useful in achieving their goal. The use of ICT in teaching and learning is a critical step in schooling towards moving into the 21st century world. However, it will depend very much on the stakeholders (teachers and students) perception and attitude towards it.

According to Oldfield (2010), there is equal proportion in the numbers of teachers in Europe who believe that ICT can improve classroom learning and those who still find it difficult to understand ICT's specific benefit in teaching and learning. That is, just as there are majority of teachers who see ICT as improving classroom activities, there are about equal majority who do not see any importance in using ICT in teaching. A similar research by European Union (EU) Schoolnet (2010) from a pilot-test teacher study on practice of Acer netbooks regarding 6 countries in Europe confirms that almost half of the tutors who participated in the survey agreed that netbooks would have a positive influence on their classroom activities. The two research also found out that the

acquisition of ICT equipment in an institution does not automatically mean that equipment will be used effectively.

Earlier studies by Balanskat et al (2006); Korte and Husing (2006) and British Educational Communications and Technology Agency (BECTA) (2008) had however indicated that it was only a minor group of teachers that had positive perception of the influence of technology in the classroom. They pointed out that despite the continuous effort to encourage technology in classroom activities, some minor group of tutors in Europe were still not convinced on using ICT equipment because they do not see any change or improvement in their activities. For instance, Korte and Husing (2006) showed in their survey that one-fifth of European tutors felt that using ICT will not have any significant changes or benefit to learning. Unless teachers see the link between technological tools and the course content, they are unlikely to support ICT in teaching.

Teachers' belief in their own efficacy too plays a significant role in how they conceptualise and use ICT in their teaching (Ertmer and Ottenbreit-Leftwich, 2010 as cited by Ang'ondi, 2013). BECTA (2008); Gulbahar and Guven (2008) recognised that teachers in the United Kingdom have high levels of self-rated effectiveness than those from Turkey, which also affect and influence the integration of ICT in classroom activities. Tutors who are assertive in adopting technology approve that technological mechanisms have positive effect on teaching and will like to use them more often in future (Bingimlas, 2009).

The experiences of the teachers in relation to years of teaching or ICT use, the subject matter and even gender are again said to have a strong influence on teachers' views and perception about technology in classroom activities (Jimoyiannis and Komis, 2007). In many cases, how teachers

perceive ICT is often associated to particular program in a school and not how teaching and interaction are carried out between tutors and students (Williams et al, 2000).

In other researches, age is said to influence the perception of educators in their adoption of ICT in teaching. A research by Tedla (2012) on the significance, effect and challenges of ICT use by teachers and students in East Africa nations discovered that age have an effect on the individual perceptions on technological devices in classroom activities. Young tutors are perceived as having much more desire to be trained in modern technology than older tutors because the ICT revolution turned out to be prominent during the nineties. Teachers born after this period have more interest in using ICT than those who were born earlier. Likewise, religion and lack of awareness also affect the incorporation of modern technology in classroom instructions.

In relation to students, Ang'ondi (2013) conducted a study in Kenya to discover students' view on the adoption of technology in education. His finding was that most of the respondents consider these technologies to enrich knowledge, redefined learning and improve attainment. The students perceive ICT as making their learning 'fun-based' therefore motivating them to learning. Also ICT is seen as providing support to attaining knowledge as well as expanding their educational activities of achieving good grades.

In a comparable study in South Africa, Makura (2014) also showed that students and lecturers perceived technology in learning to mean computer and that, it has positive impact on educational accomplishment, educational admission and other curricular matters. The students also perceived ICT as a useful tool in learning. The perceptions of students in second-cycle schools in Ghana was

no different. They rated ICT to have high value on learning and expectancy of success but of high cost in purchasing it. The students perceive ICT usage as having positive influence on their learning as well (Buabeng-Andoh and Issifu, 2015).

2.7 Challenges with Modern Technologies

According to Telda (2012) factors that prevent ICT use in teaching are school base (external), community base (internal) and teacher's personal issue. This is outlined by some researchers as non-controlling, controlling and trainer factors. The non-controlling factors are age, instructor knowledge, technological skill, administrative strategy and the readiness of outside backing. The controlling factors on the other hand are instructor's approach in handling modern technologies, educators' awareness, abilities and institution assurance to implement the technology.

Bingimlas (2009), stated that several research has indicated that low teacher confidence has impeded technological use in teaching. Dawes (2001) sees this as a circumstantial reason which is acting as a challenge. Teachers with inadequate knowledge and skills in ICT lack the confidence to implement it in their classroom activities (Balanskat et al (2006). Thus as BECTA (2004) put it, "many teachers who do not consider themselves to be well skilled in using ICT feel anxious about using it in front of a class of children who perhaps know more than they do". In contrast, tutors who assertively adopt ICT understand and know the benefit of using it. Faculty can only integrate ICT in their teaching and encourage students in using it in their learning when they have acquired the necessary fundamental skills needed to use ICT tools in classroom activities. (Zhao and Cziko, 2001; Hagenson and Castle, 2003; Frank et al, 2004).

The school has also failed to provide the appropriate tools to encourage ICT use in education. Gülbahar, (2008) in a study on the level of usage of pre-service teacher's utilization of ICT discovered that teacher's education programmes in Turkey had flopped in delivering suitable educational technology and computer services in their education which includes activities in the teaching space and outside the lecture hall. The problem existed due to inadequate technology infrastructure, lack of technical know-how by teachers and inculcation of technology based lessons in the academic curriculum.

The conditions in Africa as stated by Hennessy, Harrison and Wamakote (2010) and Hennessy and Onguku (2010) are not conductive enough for tutors to incorporate modern technology in their instructional activities. These conditions are ICT illiteracy, lack of confidence among teachers, inadequate skills as to ways of incorporating modern technology in subject lessons, inadequate power supply and funding for such resources. Obviously, lack of contact with ICT by tutors will affect its use in instructional activities (Hennessy, Harrison and Wamakote, 2010). Thus, to successfully introduce modern equipment in colleges depend widely on ease of use and ease of access to these technological resources.

Information and Communication Technology in African universities have however remained bad with low bandwidth and frequent breakdown (Adam, 2003). The high cost of infrastructural development has made many colleges lack adequate bandwidth creating a much harder condition to effectively include internet information resources in educational activities (Naidoo, 2012). This situation Gakio (2006) described as "too little, too expensive, and poorly managed". The average African universities have a bandwidth "capacity equivalent to a broadband residential connection

available in Europe, [and] pays 50 times more for their bandwidth than their educational counterparts in the rest of the world" (Farrell & Isaacs, 2007).

Africa's low capacity to affordable high-speed internet connectivity and ICT infrastructure in terms of computer stations affect most universities with the exception of those in North Africa and Mauritius (Hennessy, Harrison and Wamakote, 2010). East Africa for example suffers inadequate technological infrastructure like limited internet access, lack of hardware spare parts, poor bandwidth, lack of software materials, erratic electricity, political conflict and absence of practical policy (Tedla, 2012). Similarly, in Nigeria, students from the seminary indicated finance, inadequate power supply and lack of adequate knowledge as challenges that are hindering the effective use of electronic information resources (Adeyoyin, Idowu & Sowole 2016).

In Ghana, development of technological devices is not moulded to meet the current condition in the country. That is, the ICT equipment used are not adjusted to suit the local condition which can hinder the adoption of modern technology. Hence, "ICT success in the universities will depend on the appropriate design of software and hardware relating to the requirements of the universities" (Addy and Ofori-Boateng, 2015).

Acquiring these equipment, situating internet systems and maintaining these infrastructures also involves high cost. Transactional cost alone which include mechanical hardware provisions, customs duties, shipping and courier increase the amount of money spent on modern technological developments, hence hindering its purchase by most colleges in Ghana. Financial challenges faced in the country even makes it more difficulty to purchase these ICT resources. A good number of

the population lives on $10 a day, therefore several probable users cannot afford to use these modern technologies (Lam and Fai, 2010).

Majority of the lecturers and students too do not have sufficient training in, and lack knowledge in the risk and strategies of ergonomics. This is associated to improper use of furniture in the computer laboratories in the universities which "is the main obstacle in promoting healthy ICT use in the universities." (Addy and Ofori-Boateng, 2015).

For the past two decades, furniture in the universities computer laboratories are not in a conductive condition for learners and professors (Zlamanski and Ciccarelli, 2012). The lack of good ergonomics will not encourage teachers and students to use ICT in their own way and so natural champions will not emerge out of them (Ng, 2010).

The student nowadays also depends too much on search engines to find information instead of being creative and doing their own thinking. This has created more harm than good to students thereby posing a challenge to modern technological adoption in education in Ghanaian universities. Innovation in technology is not making student independent thinkers but rather depend on thinking by others (Jayaprakash and Chandar, 2015).

This does not mean that ICT use is not making headway in African schools. Liverpool (2002) has attested that the last few years has seen some transformation. Scholars are very excited in the adoption of modern technology in learning regardless of its inadequacy. Schools are also

progressively being equipped with computers for educational purposes like instructions, studying and management. The progress of modern technology in schooling has even affected all the tertiary educational institutions in Ghana to have their own ICT strategy where students are charged ICT levies to aid in providing projectors and smart board for classrooms as well as computer laboratories for schools (Mangesi, 2007).

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CHAPTER THREE

METHODOLOGY

3.0 Introduction

For any research, the methodology forms the basis for collecting data for analysis. It specifies the procedure by which researches are carried out and the methods used in collecting, analysing and displaying research results. According to Bryman & Sempik (2008) methodology "provides a framework for the collection and analysis of data".

This chapter explains the procedures that were adopted in conducting the research on the use of ICT in teaching and learning at the Trinity Theological Seminary. The chapter is in sections which are research design, selection of case, study population, sample size, sampling technique, research instruments, pilot testing, mode of data collection and data analysis.

3.1 Research Design

The research design are the strategies and actions for research that shows the means of data gathering and scrutiny. The research design is centred on the nature of research problems, the audience that will be used in the research and also the researchers personal experience (Creswell, 2009). No research design can be said to be good or bad as such but the essence should be the type that is appropriate for the circumstance and not how to conduct a type of research (Gorard, 2013).

This research employed both qualitative and quantitative research approach (mixed research approach). The mixed approach was used because the nature of the research obligates some level of detailed knowledge as well as large data sets to ensure credibility. The approach again, ensures

high level of validity and reliability of result because of the complementary qualitative and quantitative methods involved.

Also, the approach was used because the two groups used for the research had a population which allowed for such methods. That is, the teaching staff did not have a large population which allowed for qualitative method while the students had a large population which permitted for quantitative method. As was stated by Creswell & Plano Clark (2007), mixed research approach "involves the use of both approaches in tandem so that the overall strength of a study is greater than either qualitative or quantitative research". Furthermore, the mixed research is the better option for a case study.

3.2 Selection of the Case

The study focused on Trinity Theological Seminary on the basis that it is the oldest and largest seminary in Ghana. Students at Trinity Theological Seminary have access to a greater variety of academic programs than any other seminary in Ghana (www.new.trinity.edu.gh). Trinity Theological Seminary admits students from all denominations, orthodox to charismatic as well as independent churches, thereby facilitating an equal opportunity of access by all churches.

3.3 Population

A population is defined as group of individuals or objects which is under consideration. Thus as suggested by Fraenkel & Wallen, (2006) "a group of persons who possess a certain characteristic (or set of characteristics)". In every research, the population is the representation from which the sample will be drawn.

The targeted population however, were regular students and full-time teaching staff who were resident on campus. Trinity Theological Seminary has a student population of about 735 with 196 regular residential students who are in the four main residential halls (Odjidja, Grant, Galevo and Magil Baeta-Jiagge). The residential students were selected because there was a higher chance of meeting up with them since they live on the premises. Call backs and clarification of responses will be easier and faster than with any other student populations in the school. They were also the population who partake more in class attendance.

The school has twenty- seven (27) teaching staff members who are in charge of the various subjects in the seminary, with fifteen (15) being full time teaching staff and nine (9) living on campus. The nine teaching staff who live on the premises were the targeted population, for the similar reasons as for the targeted residential student population.

The table below represents the population size and residential population of the school

Table 3.1

Categories of persons	**Total population size**	**Residential population**
Teaching staff	27	9
Students	735	196

Source: field data, 2017

3.4 Sample Size

The sample size for the study was drawn from the population of residential regular students and residential teaching staff. Ary, et al, (2002) debated that, the larger the sample size the better

representative of the population. So how big should a sample be? According to Neumann (2007), a sample ratio of 30% can be drawn from a population less than thousand (1000). However, with a population of 196 persons, the researcher felt that 30% sample size from a minor group of the entire school's population will affect the reliability of the result. Because only 59 respondents will be used which will not provide a very strong data for the analyses.

Although Neumann (2007) stated that a large sample may not constitute a representative sample, a sample size which is adequate enough is needed to justify the findings especially in quantitative approach. Also, Fraenkel and Wallen (2006) stated that the sample should be randomly selected and of sufficient size which the researcher thinks is a proper representation of the entire population. They contend that a sample should "be as large as the researcher can obtain with a reasonable expenditure of time and energy". For this research, a sample size of 98 respondents was drawn from the 196 regular residential students. This represented 50% of the total number of students. All nine (9) full time teaching staff were also used which represented 100% of the total population. The number used was deemed appropriate because the sample size chosen reduced bias and provided an adequate representation of the accessible population. Thus, the information sought was not obtained from a few minorities but a reliable number of respondents which ensured a proper affirmation of result. The following formula was used in getting the sample size.

The sample size for the students' accessible population = $50/100 \times 196 = 98$ students.

Thus, sample size = $\frac{\text{Percentage selected from the total population}}{\text{One hundred percent}} \times$ Total residential population

3.5 Sampling Technique

For this study, a simple random sampling technique was used. "A simple random is one in which each member of the population has an equal independent chance of being included in the random sample" (Fraenkel & Wallen, 2006). This reduces biases and the results can be generalized to the define target population **(**Hair, Bush and Ortinau, 2003). For the simple random sampling, a fishbowl random sampling was used to sample the 98 students. A fishbowl random sampling defines the population, lists all members of the population and selects the sample by employing a procedure where sheer chance determines which members on the list are drawn from the sample (Ary, et al, 2002). Numbers were written on pieces of paper and placed in a box. The number selected was seven (7) hence every seventh room was used for the survey. This method was applied to all the four halls used.

3.6 Instrumentation

The instrumentation represents the tools or means by which the data was collected. Interviews and a questionnaire were used as instruments for collecting the data. The interview was used for obtaining data from the teachers and questionnaire was used in collecting data from the students.

Interview method of gathering data according to Kothari (2004) "involves presentation of oral verbal stimuli and reply in terms of oral verbal responses. The method can be used through personal interviews and if possible through telephone interviews". Questionnaires on the other hand, are structured questions usually allowing respondents to write down answers in a space provided, either in a print or electronic format or given an option to tick or shade the answers where applicable. The option to write down answers in a space provided is known as the open-ended question and the choice of ticking and shading is the close ended question.

For this study, the interviews were done through personal conversation by asking questions of the teaching staff in relation to the set objectives of the study. The answers obtained were recorded on a tape recorder and then transcribed. The interview questions were semi-structured. Semi-structured interview questions usually follow an outline of questions. The questions asked are tightly structured but provision is made for elaboration of questions and answers. This strategy was most suited for the study because of the nature of the few leading stiff respondents that were involved.

The questionnaire on the other hand, entailed both open-ended questions and close ended questions. Some open-ended questions were used because the study wanted to provide the respondents an opportunity to express themselves. The close-ended questions also ensured that some answers were restricted to enable easy analysis. The questionnaire ensures reliability of results in terms of replication of research. Because three of the halls were for males, a total of 72 questionnaire copies were issued to them, while 26 were issued in the female hall.

The questionnaire was structured into six sections, with the first section regarding the demographic data of the respondents. The questions were about the gender, the age, area of study, academic qualification, academic year and church denomination. This section is important because it provided basic information on the respondents which helped in understanding other data provided and the findings. The rest of the questions were based on the objective of the study, which are based on awareness, extent of ICT use, knowledge and skills, reasons and challenges in using ICT in learning. All the ninety-eight (98) copies of the questionnaire were completed and retrieved from the respondents. However, only four of the teaching staff availed themselves to be interviewed.

3.7 Pilot Testing

Basically, pilot testing is done to find out how a survey, formant interview guide or observation form will work in the actual research by first trying it on a few people. Feedback from the pilot testing ensures that members selected not only understand the questions but understand them in the same way. Through this, the researcher would be able to identify and eliminate questions that makes respondents feel uncomfortable, avoiding any inconsistency and ensure correction before the real questionnaires are distributed. Pilot testing also aids in knowing the time frame for answering each question. (www.programeval.ucdavis.edu). As was pointed out by Teijlingen and Hundley (2002) pilot testing can in the same way predict the likelihood of a successful research. It can provide valuable information or insight for other researchers.

From the above reasons, a pilot testing was conducted using students from Good News Theological Seminary. The respondents were chosen because they have similar characteristics with those used in the actual study. Through convenience sampling technique, ten students from the school were selected, as well as two teaching staff. A retrospective interview was done during and after answering of the questionnaire. Thus, respondents were asked for their opinion with regards to the questions and asked for clarification when they hesitate to answer a question. The information provided from the pilot testing caused some changes in the final questions. For instance, the inclusion of a question based on students' satisfaction with the school's database was added after the pilot testing.

3.8 Mode of Data Collection

An introductory letter was taken from Department of Information Studies and submitted to the Head of Academics at Trinity Theological Seminary to seek approval before the data was

collected. The Head of Academics verbally gave a go ahead for the data to be collected from the school.

The only data used for the study was primary data. Primary data are information retrieved after a research has been conducted. These are specifically related to a research problem and obtained through interviews, questionnaires and observations. In this study, questionnaire and interview questions, as well as some enquires from the school librarian were used.

The questionnaire was administrated by the researcher with assistance from two seminarians who are executive members of the Student Representative Council (SRC). Two continuous weeks were used in distributing and retrieving the questionnaires (5^{th} to 19^{th} May, 2017). However, a lot of efforts like "call backs" and phone calls were made to retrieve all questionnaires from the respondents. Each questionnaire took about 6 to 10 minutes to fill.

Based on the fishbowl technique, members of the selected rooms were given copies of the questionnaire. Each member in the room was given a questionnaire to fill but confirmations were made to ensure that each respondents are actual roommates. An equal number of questionnaire copies were given to the three male hall (24 questionnaires for each hall) but the female hall was given twenty-six questionnaire copies since they were the minor group.

Nine teaching staff were targeted to be interviewed, but due to their busy schedule and time frame only four teaching staff were available and willing to be interviewed. The interviews took place in their various homes at Trinity Theological Seminary. Each interview took between forty-five

minutes and an hour depending on need for clarification of both questions and answers. The questions were in semi-structured format and two continuous days were used in collecting the information. The interview took place on 9th and 10th of June, 2017. The information retrieved from the interview were recorded and later transcribed for content analysis.

3.9 Data of Analysis

The data collected needs to be analysed to assist in a better understanding of the results. Hancock (2002) pointed out that data analysis is summarising the mass information gathered and displacing the result in a way that highlight the most captious information. The interview data (qualitative data) collected were analysed manually after the recorded information had been transcribed. Statistical Package for Social Sciences (SPSS) software version 22 was however used for the quantitative data. Statistical Package for Social Sciences software was deemed appropriate because it aided in the proper and easy analysis of the data collected.

Each questionnaire was assigned with a specific serial number to aid in easy identification. Codes were also given to each response which was entered into the data sheet of the SPSS software. Graphs, frequency tables, percentages and charts were used in the interpretation the results.

3.10 Ethical Consideration

The ethical issues of research are relevant in providing subjects with the assurance that any information provided will be held in utmost confidentiality (Fraenkel and Wallen, 2000). According to Hesse-Bieber and Leavey (2006), researchers should be able to anticipate the ethical issues that may arise and make adequate preparation towards them. A preparation towards ethical consideration will assist in ensuring trust with the participants, promote the integrity of the

research, guard against misconduct and impropriety that might reflect on the researcher's institution or organisation (Isreal and Hay, 2006 as cited by Creswell, 2009).

Information concerning subjects name, staff or students' official identification number and so on was not required. Just as was highlighted by Fraenkel and Wallen (2006), every research should as much as possible desist from requesting names in a question in order to protect the anonymity of the information collected from even the researcher.

Neumann (2007) stated that "a fundamental ethical principle of social research is: never coerce anyone into participating; participating must be voluntary at all times". Respondents therefore were allowed to answer the research questions under their own free will without any compulsion. This was in compliance with the University of Ghana Code of Ethics which state that research should seek consent, ensures anonymity, confidentiality and respect the privacy of the subject (www.orid.ug.gh). All citations used as references were also duly acknowledge to avoid plagiarism.

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CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF FINDINGS

4.0 Introduction

This chapter presents the analysis and interpretation of data gathered through interviews and questionnaire on the use of ICT in teaching and learning at Trinity Theological Seminary. The analysis was based on the objective of the study which includes the awareness, extent of using ICT, skills, reasons and challenges in using ICT.

4.1 Quantitative Analysis

In an effort to collect data from students at Trinity Theological Seminary, a questionnaire was used as the tool. All the ninety-eight copies of the questionnaire given were retrieved, and found usable for the analysis which are provided below beginning with the demographic data of the respondents.

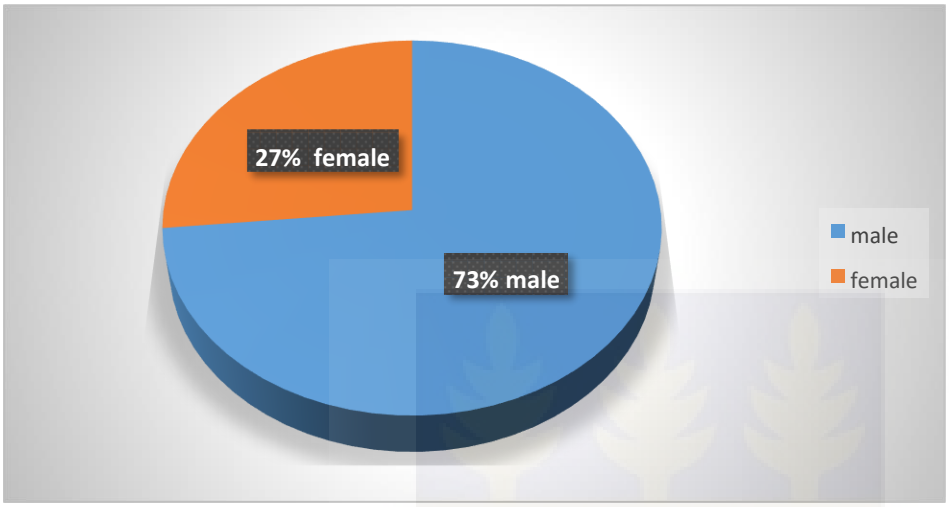
4.2 Demographic Data of Respondents

Demographic data from this study gives a description of the respondents' background and basic characteristics, such as gender, age, area of study, academic level and year as well as church denomination. This aids in determine the group of persons used in the study. Although information from the demographic data did not form part of the objective, it also assisted in the interpretation of the results.

4.2.1 Gender

This relates to the number of males and females used in the study. To aid in better understanding of the category of respondents of the study, the gender was analysed.

Chart 4.1 Gender of Student Respondents



The results concerning the gender revealed that majority of the respondents were males (that is 72 respondents, representing 73%) and only 26 were females representing 27%. This is due to the fact that three out of the four halls are male occupied, which also dominated the sample in the same proportion.

4.2.2 Age

With study relating to technology, age is very relevant since one's age can hinder one from using or understanding a technology. Many researches have revealed that younger people tend to use ICT more than older ones. For instance, Colley and Comber (2003) stated that younger people are optimistic and use computers more than the older persons. Table 4.1 below therefore show the age range of respondents in the study.

Table 4.1 Age of Student Respondents.

Age Range	Frequency	Percentage
20 - 25	2	2
26 - 30	36	36.7
31 - 35	33	33.7
36 – 40	18	18.4
41 - 45	9	9.2
Total	**98**	**100**

Source: field data, 2017

From the above Table 4.1, majority of the respondents had their age ranging between 26 to 35 years. The age range with the largest proportion of respondents was 26 to 30 representing 36.7%. Minority of the age range of respondents were in the age range 41 to 50 years (9.2%), with 20-25 (2%) being the age range with least number of respondents in the study.

4.2.3 Programme of Study

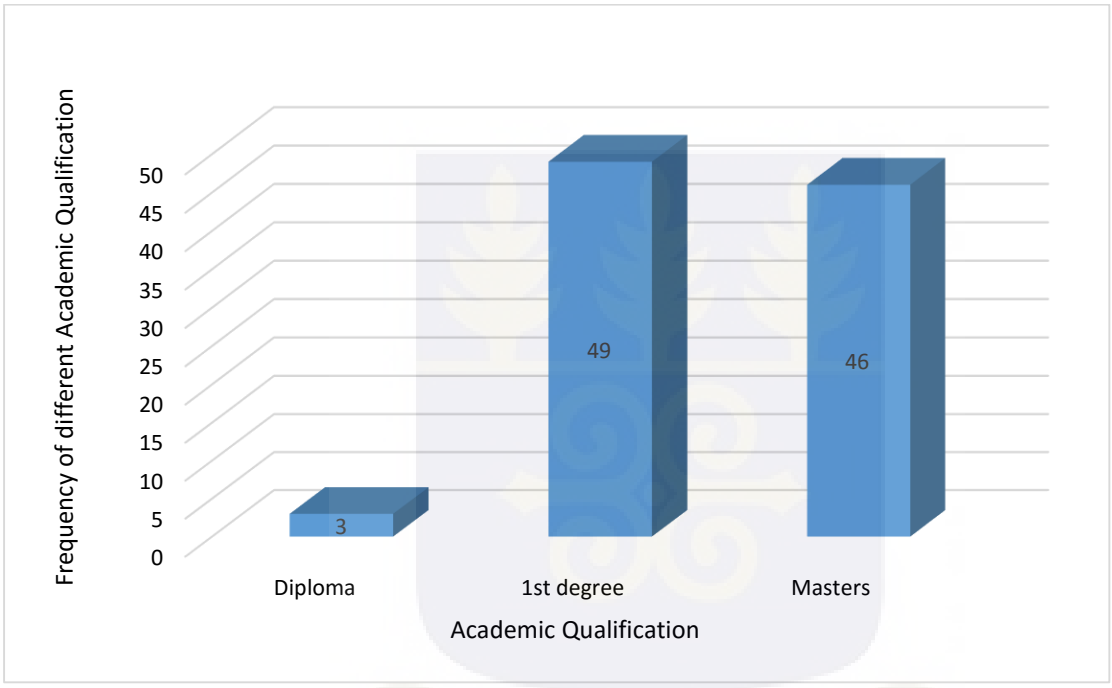
Data from the study showed the various programmes that the respondents are offered. However, only Theological Studies was offered to all students, with the exception of doctorate degree students who are given the option of specialisation.

4.2.4 Academic Qualification

Data on academic qualifications shows the different academic levels of respondents involved in the study. These include diploma, first and second degree, as well as doctorate degree.

Academic qualification provides additional information on the background of the respondents which contribute the overall understanding of the study. This enables the researcher know which level use ICT the most and vice versa. Data for academic qualification is therefore illustrated in the graph below.

Graph 4.2 Academic Qualification of Student Respondents.



Graph 4.2 above shows that out of the 98 respondents, 49 (50%) of them were undertaking their first degree, which represents majority of the respondents in the study, while 46 of the respondents were doing their Master degree, representing 47%. The least academic level were diploma students, with 3 respondents, representing 3%.

4.2.5 Academic Year

Academic year indicate the respondents' year reached in the institution. This is shown in the table below:

Table 4.2 Academic Year of Student Respondents.

Academic Year	Frequency	Percentage
First Year	13	13.3
Second Year	7	7.1
Third Year	25	25.5
Final Year	53	54
Total	**98**	**100**

Source: field data, 2017

From the research data, 13 (13.3%) of the respondents were in their first year, 7 (7.1%) were in their second year, 25 (25.5%) were in their third year and 53 (54%) were in their final year, which also form majority of the respondents.

4.2.6 Church Denomination

Church denomination in the study is the various churches the respondents belong to. In other words, the churches that are sponsoring the respondents. The need to know the church denomination of respondents is important because it forms a major characteristic of them. Data from this study confirms the fact that Trinity Theological Seminary educate people from all churches.

Table 4.3 Church Denomination of Student Respondents

Church Denomination	Frequency	Percentage
Methodist	36	36.7
Presbyterian	37	37.8
Anglican	6	6.1
A.M.E. Zion	3	3.1
E.P. Church	3	3.1
Apostolic	3	3.1
Charismatic	10	10.2
Total	**98**	**100**

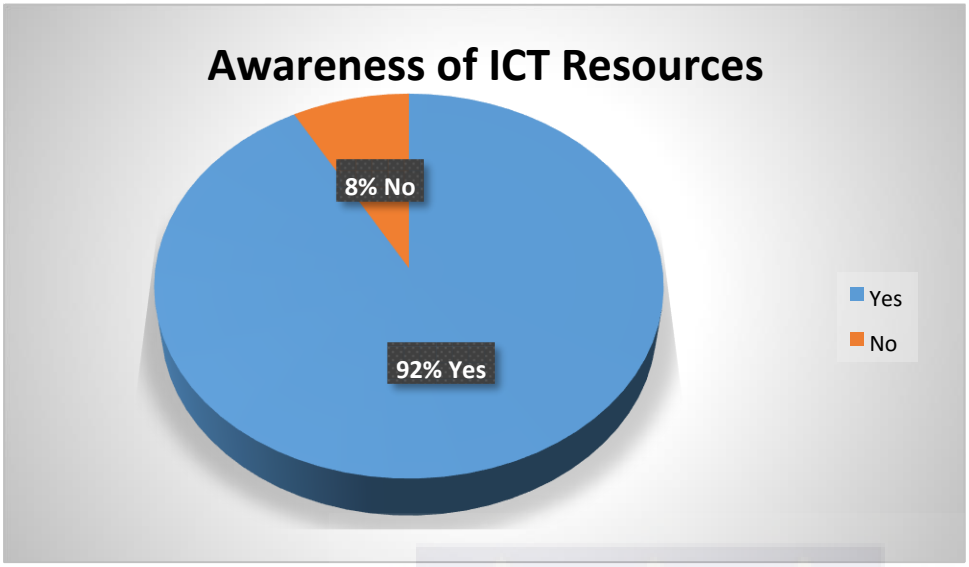
Source: field data, 2017

From the Table 4.3 above, 37 of the respondents were Presbyterians, representing 37.8 %. They were also the majority group. This was followed by Methodist with 36 respondents 36.7%, followed by Charismatic 10 (10.2%), Anglican 6 (6.1 %) respondents. A.M.E Zion, E.P Church and Apostolic had the least numbers of respondents which were 3 (3.1%) each.

4.3 Awareness of ICT Resources in the Institution

Awareness is when the individual is made conscious of something, be it idea or a data. These ideas or data could be on health, education or an innovation. One of the ways of encouraging ICT use in an institution is to make members aware of its existence. The awareness of ICT tools must precede actual use of those technologies. Respondents awareness of ICT tools at Trinity Theological Seminary is shown in the chart below:

Chart 4.3 Awareness of ICT Resources

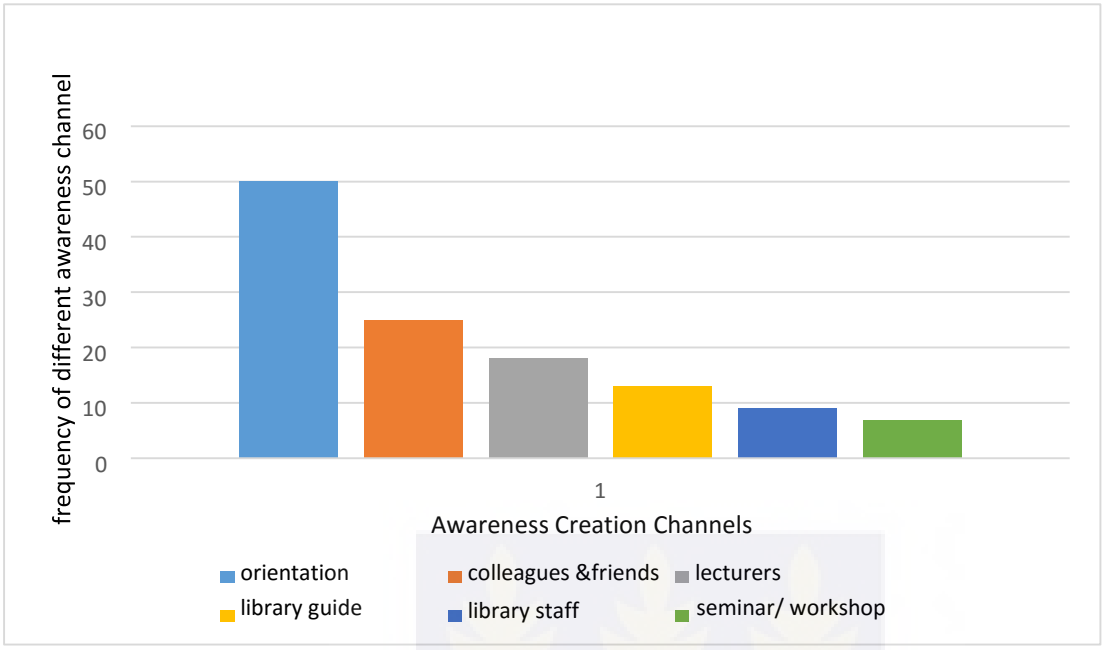


Respondents awareness of ICT resources at Trinity Theological Seminary was of high rate of 92% (90 respondents) answering 'Yes' to the question on their awareness of electronic resources, with only 8% (8 respondents) answering 'No'. This revealed that students are aware of ICT tools available in the school which affirms Adebayo's (2015) findings that students are aware of ICT tools.

4.3.1 Awareness Creation Channels

Informing students on electronic resources in the school should be done through certain channels. Measures taken in informing students of electronic resources in the school promote awareness and use. Orientation was reported as the highest means of educating students on electronic resources, and it is a good way of reaching a large number of the population hence encouraging its use. This is shown in the chart below:

Graph 4.4 Awareness Creation Channel



Awareness of the electronic resources therefore was mostly through Orientation (54) which represent 42.9 %; Colleagues and Friends (25), representing 19.8 %; Lecturers 18 (14.3%), Library Guide 13 (10.3%), Library Staff 9 (7.1%) and Seminar/Workshop 7 (5.6%).

These channels for creating awareness on electronic resources for students confirms Soyizwapi (2005) findings that students (post graduate students) get to know about electronic resources through friends, library orientation programmes and lecturers.

4.3.2 Awareness of Type of Online/ Database Materials

Respondents' awareness of the type of online/ database materials available in the school gives some idea on the variety of the resources that are provided by the school. Students access to wide diversity of online/database resources aids in assessing the amount of effort the school have put in promoting ICT use.

Table 4.4 Types of Database Materials

Database Materials	Frequency	Percentage
Unsubscribed databases	76	54.7
E-journal	29	20.8
CD ROM	26	18.7
E-library	8	5.8

Source: field data,2017

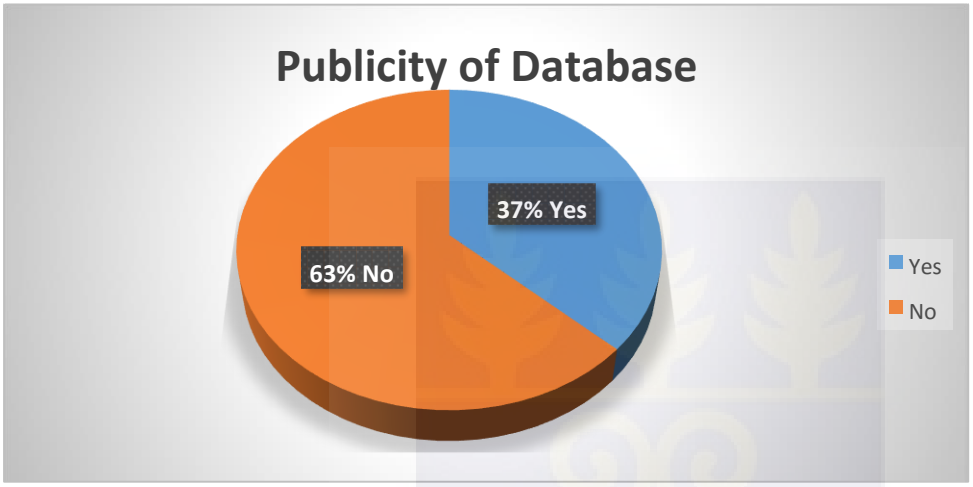
The commonest online materials/database in the school that respondents were aware of was unsubscribed databases (Google search), indicated by 76 respondents which represent 54.7%. This was followed by e-journal with 29 (20.8%) respondents, CD ROM database 26 (18.7%) and e-library having 8 respondents which represent 5.8%. This data shows low awareness of database materials that are subscribed by the school (that is, CD ROM database and e-library).

This finding backed the findings of Badu and Markwei (2005) who indicated that there is low patronage of academic databases due to low publicity of such databases. Similarly, Shuling (2006) highlighted the low awareness of electronic resources by students at Shaanxi University of Science and Technology. This finding opposes Ray and Day (1998) findings that CD ROM database has a high awareness rate and is accepted by majority of students. Students, according to them, regarded CD ROM as having a positive impact on their academic achievements. However, it must be noted that, between mid-1990's and mid-2000's internet access has replaced CD-ROM access to information worldwide.

4.3.3 Publicity of Database

Promotion and marketing of the various electronic database is reliable way of creating awareness. Publicity measures broadcast and ensures a continuous means of advertising the electronic resources.

Chart 4.5 Publicity of Database

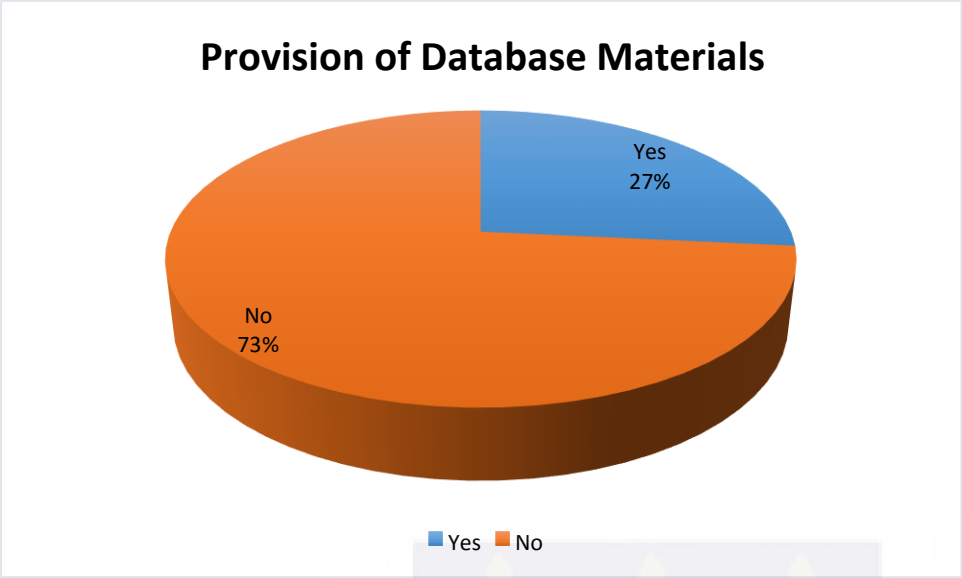


Although students were made aware of online materials or database mostly through orientation, majority of the respondents replied 'No' 62 (63%) to publicised online materials and databases and only 36 (37%) answered 'Yes'. This means that there is lack of publicity of the electronic resources in the school.

4.3.4 Provision of Database Materials

Data concerning adequate provision of database materials were asked to ensure satisfaction of respondents to the current database provided by the school. In view of this, majority of the respondents' stated that the database and online materials are not enough to satisfy students information needs. This data is shown in the chart below.

Chart 4.6 Provision of Database Materials



Thus, 72 (73%) of the respondents answered 'No' to whether the database is enough, and 26 (27%) of the respondents answered 'Yes'.

The students' expression of dissatisfaction with provision of academic databases was in contrast to Ansari and Zuberi (2010) that scholars are satisfied with electronic resources available at the University of Karachi. Their research showed nearly all respondents' satisfied with the provided electronic resources, as against the findings of this study which had majority of students expressing dissatisfaction. The availability of internet does not necessary means that academic databases and materials are provided for the students. The school should therefore take up the mandate of subscribing to academic databases that will be helpful to the students.

4.4 Extent of Using ICT in learning

The extent to which ICT is used in learning is critical. Respondents' attitude towards ICT provides data on how ICT are seen by them. It also contributes to knowing the perception of respondents

when it comes to ICT usage. Overall responses from the students in this study indicate that ICT use in learning is of high rate and acceptances.

Table 4.5 Extent of Using ICT by Respondents

Statements	Strongly agree	Agree	Disagree	Strongly disagree
Learning with ICT requires highly developed study skills and strategies	25 (25.5%)	37 (37.8%)	35 (35.7%)	1 (1%)
I would like to study with a computer even if it is complicated	34 (34.7%)	48 (49%)	12 (12.2%)	4 (4.1%)
I think ICT can improve my learning	72 (73.5%)	24 (24.5%)	2 (2%)	-
I prefer to study with traditional education methods rather than with ICT	2 (2%)	4 (4.1%)	54 (55.1%)	38 (38.8%)
Learning via the internet alone is acceptable to me.	5 (5.1%)	6 (6.1%)	81 (82.7%)	6 (6.1%)
I like to learn with ICT because it brings reality in the classroom	11 (11.2%)	79 (80.6%)	5 (5.1%)	3 (3.1%)
ICT allows for effective sharing of information	77 (78.6%)	13 (13.3%)	6 (6.1%)	2 (2%)
In general, learning with ICT is time consuming	2 (2%)	3 (3.1%)	76 (77.6%)	17 (17.3%)
Information that I find on internet is irrelevant	-	2 (2%)	81 (82.7%)	15 (15.3%)
In general, availability and access to ICT provide more opportunities to enhance my learning	83 (84.7%)	14 (14.3%)	1 (1%)	-
In general, I find learning with ICT interesting	15 (15.3%)	81 (82.7%)	2 (2%)	-

As seen from the table above, although majority of the respondents agree 37 (37.8%) that learning with ICT requires highly developed study skills and strategies, quiet a high number also disagree 35 (35.7%). But, 25 (25.5%) of the respondents strongly agreed and only one (1%) strongly disagreed. Holistically, it can be said that there is a widely held view that ICT does require highly developed study skills and strategies.

On the likelihood of studying with computer no matter its complication, majority of the respondents agreed (49%) or strongly agreed (34.7%), while 12.2% and 4.1% disagreed and strongly disagreed respectively. This implies that greatest number of students are eager to use ICT no matter its difficulty.

Again, majority of the respondents (73.5%) strongly agreed that ICT can improve their learning, while 24.5% agreed, 2% disagreed and none of them strongly disagreed. This show that most of the seminarians believe that ICT have positive influence on learning.

More so, higher number of the respondents preferred learning with ICT than with traditional education methods. Thus, 54 (55.1%) disagreed with studying with traditional method, while 38 (38.8%) strongly disagreed. Only 2 (2%) and 4 (4.1%) respondents strongly agreed and agreed respectively with studying with traditional educational methods. These answers indicate that students would like to shift more into a technological based method of learning than typical traditional or manual methods.

However, majority of respondents also showed that learning via the internet alone is not acceptable to them. This is indicated by 81 (82.7%) disagreeing to learning with internet alone.

The responses therefore showed that a blend of both traditional and electronic information would be preferred for learning.

There was also widespread belief that learning with ICT affect classroom participation and understanding. Majority of the respondents 80.6% agreed that learning with ICT brings reality in to the classroom, with the least respondents going for 'strongly disagree' (3.1 %), 11.2% 'strongly agree' and 5.1% 'disagree'.

Almost all the respondents further agreed that ICT allows for effective sharing of information. Hence, 77 (78.6%) of them strongly agreed, 13 (13.3%) agreed, 6 (6.1%) disagreed and 2 (2%) strongly disagreed. One of the fundamental functions of ICT is sharing of information and in a situation where students see such benefit implies that they are likely to use ICT in their learning.

On whether learning with ICT is time consuming, 76 (77.6%) of the respondents disagreed, and a further 17 (17.3%) strongly disagreed, while only 3 (3.1%) agreed and 2 (2%) strongly agreed. This shows that majority of the respondents believed that ICT saves time and is faster for learning than the manual learning.

Furthermore, 81 (82.7%) of the respondents perceived information found on the internet as relevant, a further 15 (15.3%) strongly disagreed, while only 2 (2%) and none agreed or strongly agreed.

Most respondents also believed that availability and access to ICT provide more opportunities to enhance learning. For this reason, 83 (84.7%) of the respondents strongly agreed, 14 (14.3%) agreed,1 (1%) disagreed and none strongly disagreed. This is an indication that students are excited to use ICT as long as they have access to it.

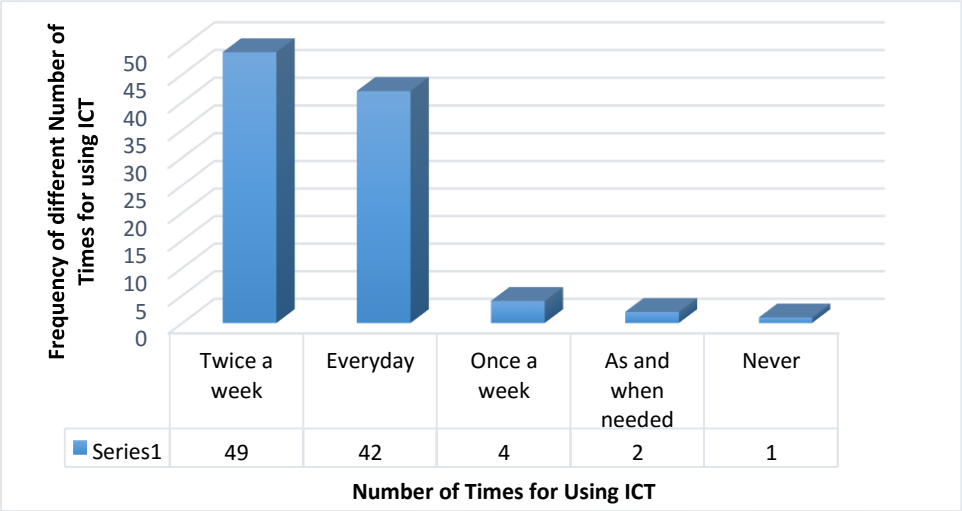
Finally, majority of the respondents perceive ICT in learning as interesting. Thus, 81 (82.7%) of them agreed, 15 (15.3%) strongly agreed, 2 (2%) disagreed and none strongly disagreed.

Data from the study shows positive attitude toward ICT use in learning, that is, agreeing that ICT improves learning, and provides more opportunity for enhancing learning, and for effective sharing of information, and so on. This is in tandem with Adeyoyin, Idowu and Sowole (2016) finding that majority of seminarians agree that electronic information resources aid in carrying out their course assignments, broaden knowledge of course subject and ensure effective sharing of information**.** Osunrinde, Adekoya, and Adeyemo (2002**)** also stated that the use of electronic resources and the internet makes easy transfer of information for students, enhance learning and guarantee sharing of information. Again, students' agreement that learning with ICT is interesting and less time consuming relates to a finding of Adeyoyin, Idowu and Sowole (2016), who indicated that electronic information resources offers access to reliable, accurate and timely information.

4.4.1 Number of Times the Respondents Use ICT in Learning

The constant use of ICT in learning is important for building up their skills and knowledge in how to use and profit from ICT for learning. This is shown in the diagram below.

Graph 4.7 Number of Times for Using ICT



According to the respondents, they used ICT at least twice a week (49 respondents,50%); 42 (42.9%) of them indicated that they used it every day, 4 (4.1%) indicated they used it once a week, 2 (2%) indicated 'as and when needed' and 1(1%) indicated 'never'. This point out that most of the respondents persistently use ICT in learning

4.4.2 Courses that Use ICT in Teaching

Some research has indicated that ICT use in education is most effective when initiated by teachers (Watson, 2001). Using ICT in teaching serve as a pacesetter for the students to do the same. In order to know how ICT is inculcated into classroom activities, the respondents were asked to give the names of courses at the seminary where ICT is used in teaching. This data is shown in the table below.

Table 4.6 Courses that Use ICT in Teaching

Courses	Frequency	Percentage
Church Management	50	21.3
New Testament	30	12.8
History in Christianity in West Africa	30	12.8
Practical Theology	25	10.6
Reformation	16	6.8
Accounting	15	6.4
Gospel	14	5.9
Evangelism	14	5.9
Old Testament Africa Life and Thought	12	5.1
Pastoral Care and Counselling	11	4.7

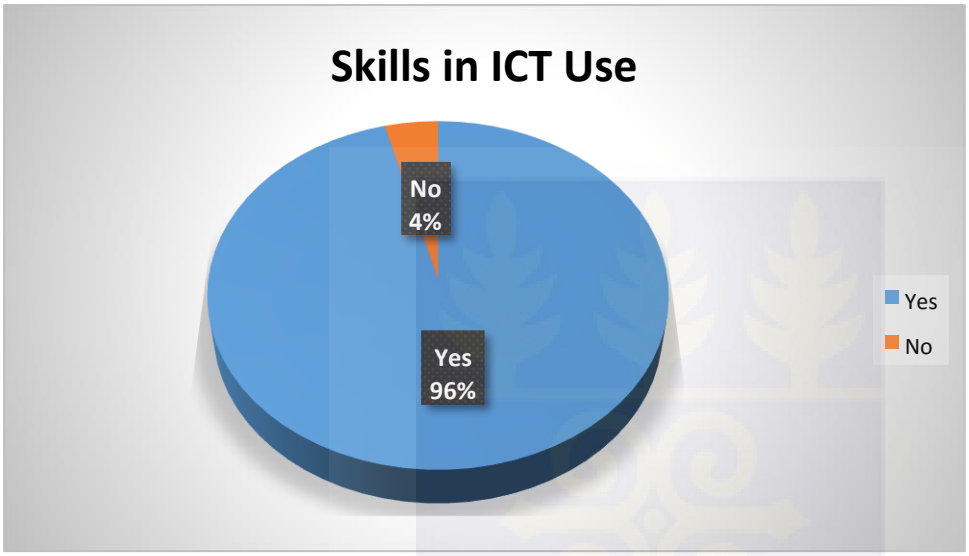
Source: field data, 2017

The data shows that only 21.3% of the respondents stated that ICT is used in teaching Church Management course while only 12.8% indicated that ICT is used in teaching New Testament and History in Christianity in West Africa, 10.6% indicated Practical Theology, 6.8% indicated Reformation, 6.4% indicated Accounting, 5.9% indicated Gospel and Evangelism, 5.1% indicated Old Testament Africa Life and Thought, and 4.7% indicated Pastoral Care and Counselling.

4.5 Knowledge and Skills of Respondents in Using ICT

The use of ICT in learning can be effective when the individual has knowledge and skills on its operations. Knowledge and skills in ICT will enable the individual search for the right information at all times.

Chart 4.8 Knowledge and Skills in Using ICT



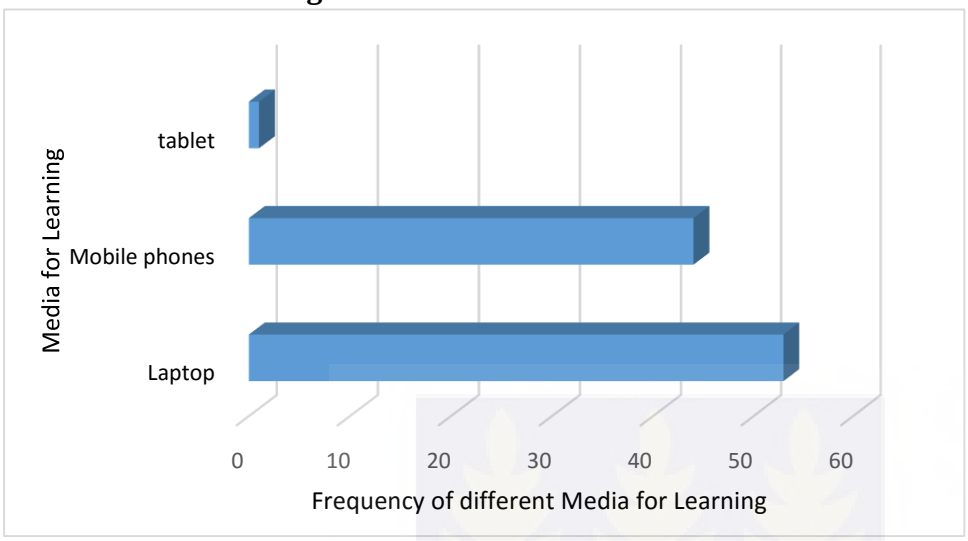
The study showed that with the exception of only 4 (4%) respondents, all the others (96%) expressed their involvement of using ICT in learning. There is therefore a clear indication that majority of the students had some knowledge and skills in ICT.

4.5.1 ICT Media for Learning

There are various ICT tools that assist students in learning. Whether owned by the individual or the school, access to these ICT tools most often have the tendency of encouraging its constant use. Owning these gadgets show how current or abreast the student in the seminary are with technology and their positive attitude towards changing the traditional way of learning. In view of this,

respondents were asked to state the ICT tools they use in learning and the following graph represents the results.

4.9 Media for Learning



Majority of the students indicated that they use laptops 53 (54.1%), followed by mobile phones 44 (44.9%) and then tablets 1 (1%). The finding is contrary to Adeyoyin**,** Idowu & Sowole (2016) who had mobile phones as the highest ICT tool used by the students.

4.5.2 Formal ICT Training by Respondents

ICT use in general requires some formal training in order to search for the right information and also operate on its functions. Acquiring the requisite skills needed in using computer stimulate one's desire and confidence in applying it in learning. Data on computer skills is very relevant for this study because computers are among the ICT that are mostly used by students. Respondents therefore were asked to indicated whether they have had some training in using computer and the data is shown in the chart below.

Chart 4.10 Formal Training in ICT

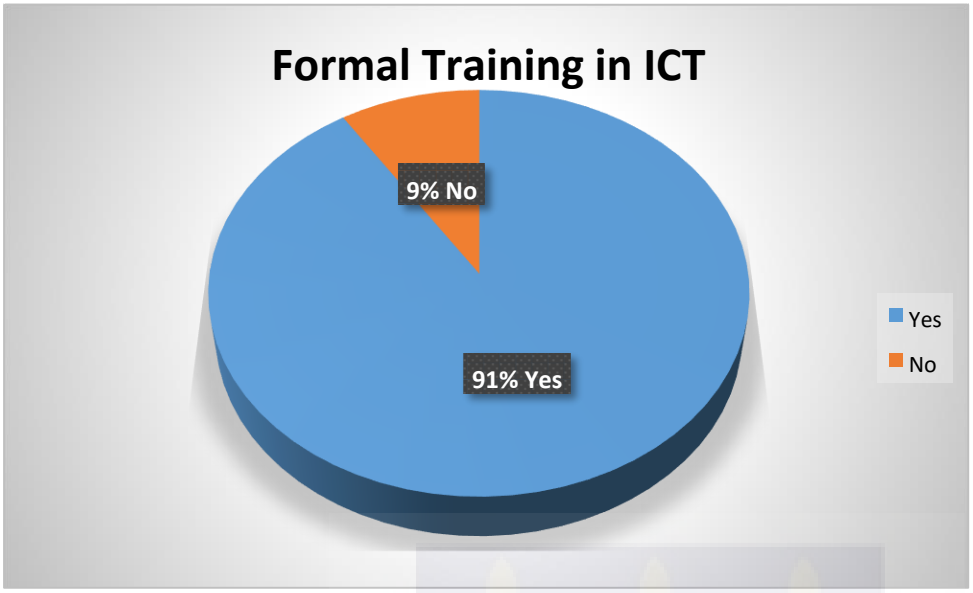
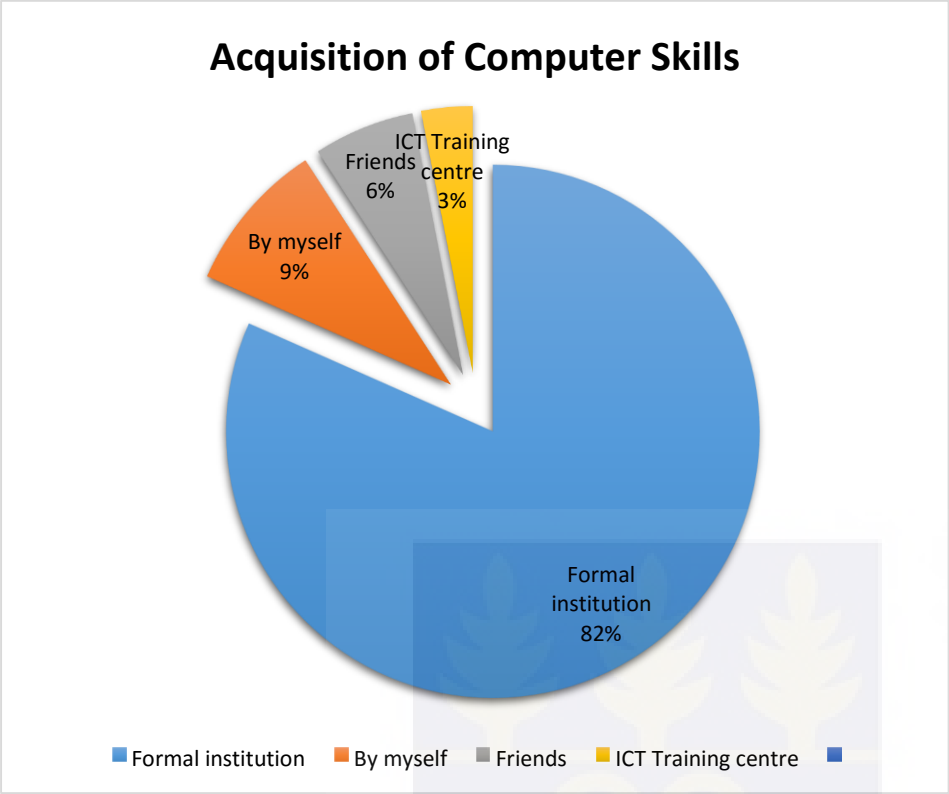


Chart 4.10 above shows that 89 (91%) of the respondents answered 'Yes' to having training or knowledge in computer before coming to the school and 9 (9%) answered 'No'. Thus, majority of the students in the study have had training in ICT use, which is similar to Oslon (1999) prediction on majority of students getting trained in ICT because of availability of online information.

4.5.3 Acquisition the Computer Skills

Data on where respondents acquired their computer skills confirms their formal training in computer and displays the various means by which students get trained. The data on this is shown in the chart below.

Chart 4.11 Acquisition of Computer Skills



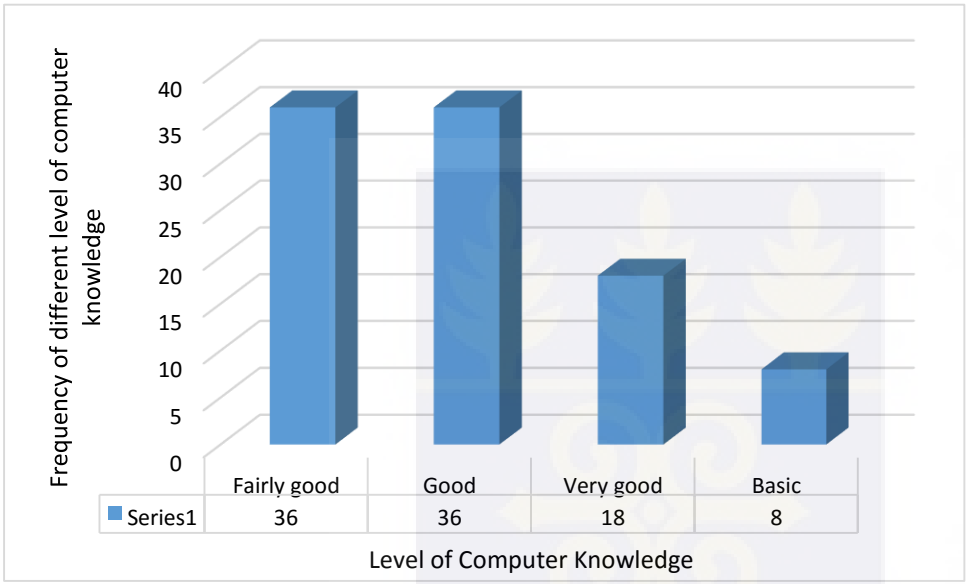
The findings revealed that the training was commonly attained through their formal institutions 80 (82%), by themselves 9 (9%), from friends 6 (6%) or at an ICT training 3 (3%).

Implication of this results is that lower level of education have improved in teaching ICT to students. With Trinity Theological Seminary now shifting more into a post graduate program, a good number of the respondents have already completed tertiary education before entering into pastoral-ship and thereby are likely to have had some prior training in ICT.

4.5.4 Level of Computer Knowledge

Each individual differs in their computer skills and knowledge. The better one gets in using the computer, the greater the chances of using it frequently and adequately This data collected on this is shown in the chart below.

Graph 4.12 Level of Computer Knowledge



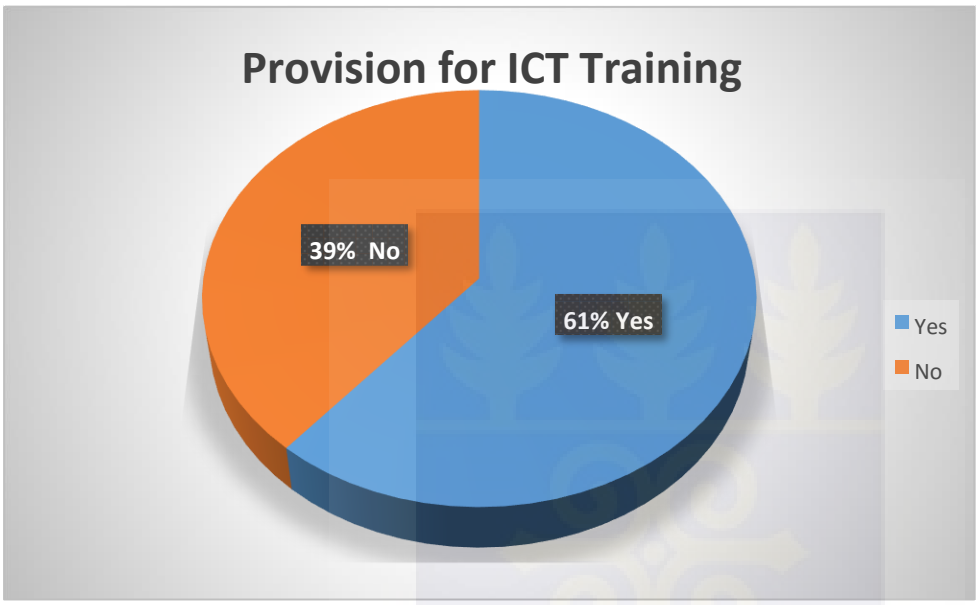
Respondents self-rate in their computer skills showed that majority of the respondents were either 'fairly good' or 'good' with using computer, representing 36.7 % each. The rest of the respondents rated themselves as 'very good' (18) and 'basic' (8), representing 18.4% and 8.2% respectively.

4.5.5 Provision by the School for ICT Training

The schools play a significant role in the adoption of ICT in learning. Through the provision of ICT training, the students are equipped to inculcate them in their studies. The training programs organised by the school is a good way of assessing the school's interest in embracing the technological age. Trinity Theological Seminary does provide opportunity for students to learn

ICT. Teaching of ICT at the seminary was based on the program offered hence those who are offered ICT as part of their courses are given the opportunity to study it. The data below shows the number of students who take part in ICT training at the school and those who don't.

Chart 4.13 Provision by the School for ICT Training

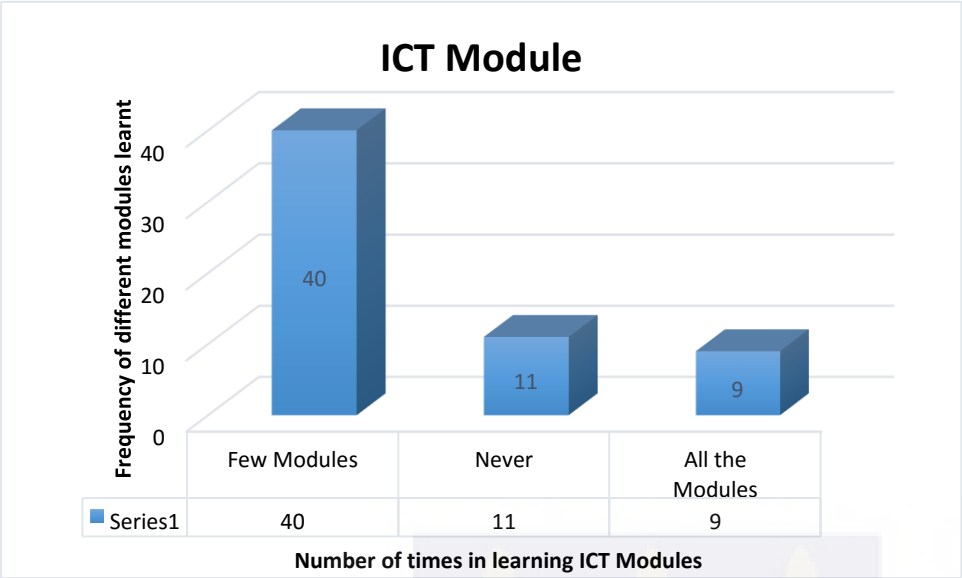


The chart indicates that 60 (61%) of the respondents answered 'Yes' to the question, while 38 (39%) responded 'No'.

4.5.6 ICT Modules Attain by the Respondents

Learning ICT involves several modules that teaches the individual how to effectively use its functions. The number of modules taught depends on the school's curriculum and students' seriousness in learning all the modules. Majority of the respondents admitted to have taken a few modules in ICT training at the seminary. This implies that learning ICT in the seminary might not be very effective or the students might lack interest in it. It could also mean that the students already have knowledge in what is being taught and therefore see no need of learning it again.

Graph 4.14 ICT Modules



Out of the 60 respondents who answered 'Yes' to the question on provision of ICT training in the school, 40 (66.7%) of them indicated that they had taken part in a 'few modules', 11(18.3%) indicated that they had 'never' taken part in any of the modules, and 9 (15%) indicated that they had taken part in 'all the modules'.

4.6 Reasons for Using ICT in Learning by Respondent

Each individual or group of persons have their reasons for using ICT in learning. Data on one's reason for using ICT will provide insight on the bases for using it. In line with this, the research reveals that all the respondents 98 (100%) admitted to having reasons for using ICT whether positively or negatively.

4.6.1 Quantified Reasons for Using ICT

For the researcher to know the reasons for using ICT in learning, respondents were asked to explain why they use or not use ICT in learning and these were the responses in the table shown below:

Table 4.7 Reasons for Using or not Using ICT in Learning

Reasons for Using or not Using ICT	Frequency	Percentage
Enhance Research	34	34.7
Save time and Convenience	29	29.6
Sharing Information	14	14.3
Reliable, Effective and Efficient	17	17.3
Lack of Skills	3	3.1
Lack of trust with Information on the Internet	1	1
Total	**98**	**100**

It was found that 34 (34.7%) indicated that ICT use enables them enhance their research, 29 (29.6%) point out that it saves time and is convenient, 14(14.3%) specified that it's for sharing information and 17 (17.3%) specified that it's reliable, effective and efficient. However, respondents who did not use ICT in learning indicated that they lack skills 3 (3.1%) and lack of trust with information on the internet 1(1%).

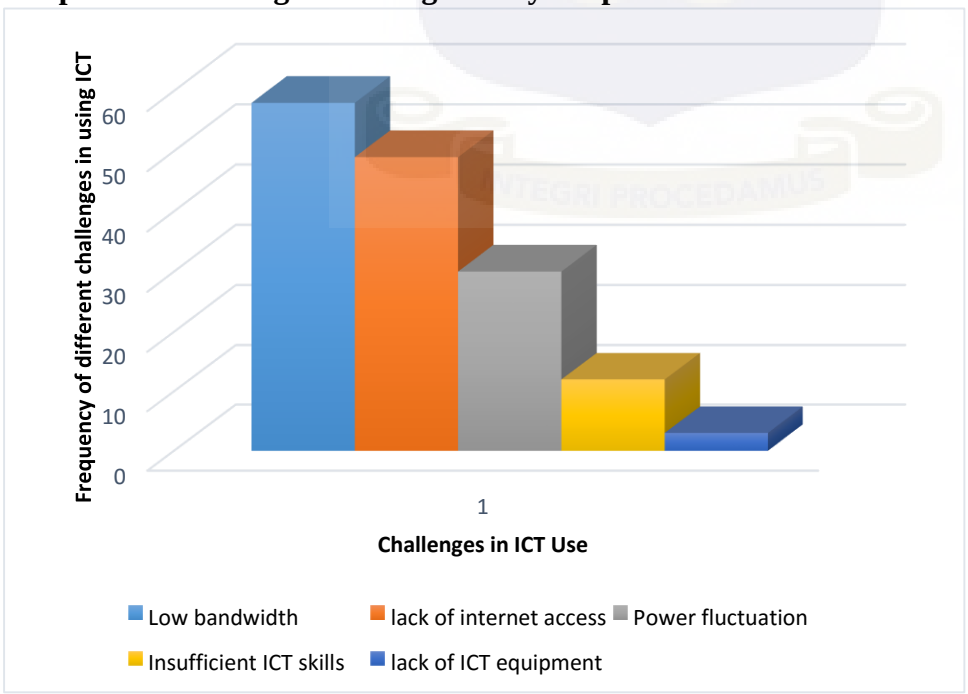
Just as was stated by Hennessy, Harrison and Wamakote (2010), teachers and students' adoption of ICT is based on the advantages of ICT such as to improve access to information and enhance students learning.

Again, the findings in the study was in line with Adeyoyin, Idowu & Sowole' (2016) finding that identified quick access, ease and conveniency in retrieving information as some reasons seminarians use ICT in learning.

4.7 Challenges in Using ICT by Respondents

Using ICT to learn especially in our part of the world is deemed to face some challenges. These challenges could come from individual, the tools and even administration. Information from this section will enlighten the researcher on what prevents effective use of ICT by the students. The respondents identified various challenges faced in using ICT in learning.

Graph 4.15 Challenges in Using ICT by Respondents



From Graph 4.15 above, Low bandwidth 58 (38.1%) was indicated as the major problem faced in using ICT in learning. This was followed by lack of internet access 49 (32.2%), power fluctuation 30 (19.7%), insufficient ICT skills 12 (7.9%) and lack of ICT equipment 3 (2.1%).

The findings supported Hennessy, Harrison and Wamakote (2010) and Hennessy and Onguku (2010) finding that, ICT illiteracy, inadequate power supply, low bandwidth, limited internet access, sporadic electricity and funding for such resources are the challenges faced in applying ICT in learning.

4.7.1 Suggestion to Curb the Challenges

The respondents therefore suggested the following solution for these challenges

4.8 Table Suggestions by Respondents

Suggestions	Frequency	Percentage
High bandwidth by working on the mast	37	35.9
Increase internet access to all places	25	24.3
The need for government intervention	18	17.5
Backup systems like generators	11	10.7
Provision made by the individual to learn ICT	9	8.7
Adequate supply of ICT equipment	*3*	2.9

Source: field data, 2017

From the above Table 4.8, the respondents suggested that, authorities should ensure high bandwidth by working on their mast 37 (35.9%), the need to make internet more accessible especially in the halls and lecture rooms 25 (24.3%), the need for government intervention to improve internet access 18 (17.5%), the need for backup systems like generators 11 (10.7%), provision made by the individual to learn ICT 9 (8.7%) and adequate supply of ICT equipment 3 (2.9%).

4.8 Qualitative Analysis

Interviews were used to gather information from the teaching staff of Trinity Theological Seminary. Four respondents out of the nine residential teaching staff were however interviewed which represent a responses rate of 44.4%. The following therefore constitute their responses;

4.9 Background of the respondents

Background of the respondents provides the research with basic knowledge of the population. Questions were asked to identify them as teaching staff and to enlighten them on the research conducted. In view of this, their gender, the number of years in teaching in the seminary and their training in ICT were asked.

4.9.1 Gender

Gender of the respondents shows the number of males and females in the research. From the findings, all the respondents were males which represent 100%.

4.9.2 Years of Service by the Respondents

The years of service by the teaching staff is an assurance of better experience in teaching and knowledge of the school's progress over the years. It was revealed that all the teaching staff have

spent quite a number of years in the seminary hence ensure the possibility of knowing much about the school. The first lecturer has taught at the school for 8 years, the second has taught there for 5 years, the third lecturer for 9 years and the fourth for 11 years.

4.9.3 Formal Training in ICT

Respondents ability to use ICT in teaching requires some knowledge and skills. These skills are acquired usually through formal training in ICT. Through the interview, it was realised that only one of the respondents have had some formal training in ICT. The training was at an ICT training centre in his former institution. The rest of the three respondents did not have any formal training in ICT but have learnt to use ICT specifically computers through colleagues, friends and family members. They have also indicated that through constant practice, they have gained much knowledge in improving their skills.

The study however repudiates Sharma's (2009) findings that, majority of teachers have acquired training for using electronic resources. Zayapragassarazan and Ramganesh (2011) suggested that faculty members need training with ICT tools to raise their level of competency. Their survey revealed an average score of faculty members' knowledge in presentation software, word processing and slide projection with a much lower score for slide design, spreadsheet, statistical analysis, online resources and database software.

It was discovered from the study also that teaching staff have an average knowledge in ICT use. This finding is in line with Rosnaini and Mohd Arif 's (2010) finding which stated that, majority of the teaching staff have average or minimal knowledge in ICT.

4.10 Awareness of the Use of ICT by Respondents

Data on awareness of ICT tools in teaching, enabled the researcher to assess the teaching staff's knowledge on ICT in education. With the issue of whether the teaching staff are aware of ICT tools in the school, all of them (100%) indicated that they were aware. Just like Adedayo (2015) affirms that lecturers are aware of ICT tools such as laptops, desktops, internet-ready phones and iPads. The findings also agree to Oladosu's (2012) and Onjewu's (2013) findings that, teachers are not only aware of ICT tools but also its various benefits in classroom activities.

4.10.1 Provision for ICT Use

The use of ICT in teaching can be effective only when the school has made provision for it. Providing ICT tools contributes to promoting its use in teaching. The teaching staff at the seminary indicated projectors, CDs, Laptops, white board and renovated lecture halls as provision made for ICT use in teaching.

The research discovered that the classrooms have been modified to allow ICT use in teaching which Delamarter (2005) referred to as "smart classroom" where faculty members are provided with the necessary tools to enrich their presentations.

4.11 Extent of Using ICT in Teaching

As one of the objectives of the study, there was a need to examine the extent to which ICT was used in teaching. The question then was asked as to whether they inculcate these ICT tools in their teaching. Out of the four teaching staff interviewed two claimed to use ICT frequently but not all the time. One admitted in using ICT once in a while and the other admitted not using ICT in teaching.

The findings revealed that some group of teaching staff do not inculcate ICT in their teaching. This is in agreement with Balanskat et al (2006); Korte and Husing (2006) and BECTA (2008) who indicated that some minor group of teachers are not convinced to use ICT in teaching and likewise with Oldfield (2010) that there is equal proportion of teachers who use ICT and those who do not use ICT in teaching.

4.11.1 Strategies used by Respondents to Schedule Students to use Computers

Initiative by the teaching staff to encourage students in using ICT can go a long way of ensuring its frequent use in learning. Findings from this data would further highlight the extent to which ICT is used in teaching. The study therefore revealed that, assignments and individual presentations are some strategies used. Three of the respondents indicated assignments and individual presentations. While one indicated assignment as a strategy for promoting students to use ICT. Thus as Fouts (2002) states, teachers are encouraged to give computer-based assignment and tests in order to increase student's learning experience.

4.12 Reasons for Using ICT in Teaching

Each respondent must have a justification for using or not using ICT in teaching, hence enquiries were made to such effect. The respondents gave the following reasons for using or not using ICT in teaching. Better expression of self, better illustrations of lessons and faster means of delivering lessons were some of the reasons given for using ICT in teaching. As was stated by one teaching staff;

"Using ICT in teaching enables me express myself better. I feel the students are more involved in the classroom activities and they seem to understand the lessons better. It also saves me the energy of elaborating over and over some issues since the students can see it vividly themselves".

On the other hand, time consumption, technical problems and insignificance of ICT in teaching were also some of the reasons for not using ICT in teaching. The finding agrees with Bingimlas (2009) that some teachers think ICT use will not favour their limited time period.

4.12.1 Opinion on ICT use in Teaching

The respondents were sought for their opinion on the use of ICT in teaching. Their perception on the use of ICT in teaching can help in confirming their reasons for using it in their classroom activities. Findings revealed that three of the respondents believe that ICT aids in improving classroom activities and provides a better perspective of education than the typical traditional method. Again, two of the respondents further indicated that teaching with ICT makes them more productive and provides an opportunity to effective classroom activities. However, one of the respondents stated that ICT does not cause much change in teaching.

"I don't think using projectors change much in teaching. If the traditional method can be used to execute the lessons, then it should be used".

4.13 Challenges in Using ICT by the Respondents

The problems encountered by the respondents in using ICT in teaching was assessed. The challenges prevent effective use of ICT in teaching at the school. The study revealed two major types of challenges that is, the personal challenges and the environmental challenges. As Telda (2012) stated, the challenges in using ICT in teaching comes from both internal and external

factors. The personal (internal) challenges are related to the individual problems and the environmental (external) challenges are related to the school or administration. The challenges identified are highlighted as follows;

4.13.1 Lack of Experience in Using ICT in Teaching

It was revealed that, lack of adequate experience hinders the use of ICT in classroom lessons. This can be associated with the personal challenge encountered by the respondents.

4.13.2 Poor Internet Access/ Low Bandwidth

Another challenge is poor internet access/ low bandwidth. All the respondents indicated this as a major problem faced by the school. Lack of internet access or low bandwidth in their offices and homes are preventing them from searching information online which will be used to teach. They rely more on books or manual materials for teaching.

4.13.3 Inadequate ICT Equipment for Teaching

Lack of ICT equipment in the school is also causing some difficulties in using it to teach. From the research, it was revealed that ICT equipment were insufficient to be used by all lecturers at a particular period of time. To avoid the difficulty in getting assess to the equipment some lecturers decide not to use it at all. This was indicated by two of the respondents.

4.13.4 Financial Constraints

The school's inability to purchase adequate ICT equipment is due to financial constraints. Financial constraint is a major problem in the school and has affected ICT in teaching. Out of the four respondents interviewed, three of them indicated this as a major problem hindering ICT in classroom activities.

Gülbahar, (2008) identified challenges faced by teachers as inadequate technology infrastructure, lack of technical know-how and the inculcation of technology based lessons in the academic curriculum.

4.13.5 Appropriate tools for Teaching Respondents' Courses

In the quest to find solutions to the problems associated with ICT in teaching, the respondents were asked to suggest ICT tools that they think is appropriate for teaching their course. The findings revealed that all four respondents suggested projectors, laptops and movie clips.

4.14 Implication of the Study to the Theoretical Framework.

The Diffusion of Innovation Theory by Rogers (2003) was adopted as the theoretical framework for this research. The theory explains how, why and at what time a group of people adopt a technology, product, idea or object through some attributes such as relative advantage, compatibility, complexity, trialability and observability. ICT is adopted by both teaching staff and students at Trinity Theological Seminary. The adoption of the ICT tools was based on awareness of the technology, relative advantage (technology is seen as advantageous than the existing method), compatibility (continues use of technology based on its value), complexity (challenges faced in using the technology), trialability and observability.

These attributes influence five categories of persons who are commonly found in an institution. The various categories of persons are distinguished in relation to how they use technology in preforming their duties. They are made up of innovators, early adopters, early majority, late majority and laggards. Acceptance of a technology by these persons is based on how the new innovation perform better than what is essentially used. Testing the theory to the research, it was

proved that both teaching staff and students at Trinity Theological Seminary were made up of early adopters (being aware of an innovation and willing to adopt), early majority (adopting a technology because it will ensure better performance of work) and laggards (content with the current method or way of doing things).

The findings resulted to the fact that, both teaching staff and students are aware of the ICT tools available in the school and have included it in their activities. It was however revealed that the school lacks adequate subscribed online materials or databases.

Also, the teaching staff and students' ICT skills were on the average which need improvement. The adoption of these ICT tools were grounded on the fact that, it provided an avenue for enhancement in research, save time, more reliable, effective and efficient. Regardless, time consuming, technical problems, insignificance of ICT in teaching, lack of skills and lack of trust with information on the internet were some reasons for not using ICT in teaching and learning.

Moreover, the individual and the school were faced with some challenges which hindered the full adoption of ICT in teaching and learning. Some of the major challenges were low bandwidth, inadequate internet access, power fluctuation, insufficient ICT equipment, financial constraints and insufficient ICT skills.

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CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter consist of the summary of the findings, conclusion drawn from the study, recommendations for all stakeholder of the study, as well as suggestion for further study in the area.

5.1 Summary of Findings

The study seeks to find out about the use of ICT in teaching and learning in seminaries, through a case study at Trinity Theological Seminary, Legon.

5.1.1 Awareness on ICT Tools

The first objective of the study was to investigate the awareness of ICT tools available in the seminary. Findings from the study were that both teaching staff and students are aware of ICT tools in the school. The teaching staff identified the projector as the commonest ICT tool they are most aware of, while the students stated unsubscribed database (Google search) as the one they are most aware of. Disappointedly, the databases such as CD ROM and e-library which are the main electronic resources provided by the school, had low awareness. Although orientation was the highest means of informing the students of the ICT tools, majority of the students however pointed out that, promotion for the databases is low, and that the databases provided for the students were also inadequate.

5.1.2 Extent of ICT Use in Teaching and learning

The second objective was to investigate the extent to which ICT is used in teaching and learning. The study found average use of ICT in teaching by the teaching staff with two out of the four interviewed teachers indicating constant use of ICT in teaching. Nevertheless, there was high enthusiasm from the students for the use for ICT for learning. Majority of the students opted for use of ICT inclusive in their learning activities, as well as agreeing to various advantages of ICT use in learning. Most of the students too used ICT regularly with a good number selecting 'twice a week' or 'everyday' use of ICT for learning. Courses that used ICT in teaching the most were Church Management, New Testament, and History of Christianity in West Africa.

5.1.3 ICT Knowledge and Skills

One other objective was to investigate the knowledge and skills in ICT use in teaching and learning. The findings were that, both teaching staff and students had knowledge and skills in ICT at the seminary. However, their ICT skills were average. Another finding shows that ICT in teaching and learning has begun in the seminary with projectors and laptops as the main ICT tools used. Unfortunately, only few of the teaching staff have had formal training in ICT, which can cause a stagnation in the progress. The students on the other hand have mostly had some formal training in ICT. These ICT skills were acquired in their former institutions before entering the seminary. Another finding is that the seminary does provides an avenue for learning ICT, with most of the respondents taking part in few modules.

5.1.4 Reasons for Using ICT

Another objective of the study was to find out the reasons why both teaching staff and students use ICT in their activities. Results from the study showed that the teaching staff use ICT to

enable them provide a better illustration of lesson and also express themselves well. Waste of time in setting up the devices and disruptions through power outages were the reasons some do not include ICT in their teaching. A greater number of the students on the other hand believed that ICT enhances their search for information and is more convenient because it saves time. Some students however indicated lack of skills and lack of trust with information on the internet as reasons why they do not use ICT in learning.

5.1.5 Challenges Faced with ICT Use

The fifth objective therefore was to investigate the challenges that prevent an effective use of ICT in teaching and learning. A common challenge which was indicated by both teaching staff and students was low bandwidth and poor internet access. Other major challenges were inadequate ICT tools and financial constraints. The students therefore suggested that the school should work on a telecom mast to enable them get opportunity to use the internet at all times and in all places and pleaded for government intervention.

5.2 Conclusion

There is no doubt that Theological Seminary is a good institution for ICT integration in classroom activities because of its structured programs. Also, training people to take up pastoral-ship will need more illustrative and practical methods of the information age.

Trinity Theological Seminary as the largest seminary in Ghana has implemented ICT in their educational system which has affected some aspects of both teaching and learning on campus. A good number of teaching staff and students used in the study have shown much interest for using ICT in performing their activities. Their awareness of and reasons for seems to give a

good indication that they have embraced the technology age. Nevertheless, the seminary is struggling with the same challenges that this new technology brings.

The seminary should however not be perturbed by these challenges but continue to take bold steps in consolidating ICT in its educational activities, which build new prospects for students and tutors to participate in fresh techniques of information acquisition and analysis. This will also improve the value of schooling delivered to theological scholars. Technology is here to stay; it is therefore time for Ghanaian educators to look at ways of adopting and improving use of technology and curbing the associated challenges that prevent fully utilisation.

5.3 Recommendations

With regard to this research, the following recommendations are proposed to the teaching staff, students, administration and stakeholders to stimulate ICT use in teaching and learning at Trinity Theological Seminary.

5.3.1 Awareness for ICT tools

Despite the various channels (such as orientation, colleagues and friends, lecturers, library guide, library staff and seminar/workshop) in creating awareness among students at Trinity Theological Seminary, the findings revealed that the online/ database materials were not well publicised.

The school in collaboration with the library management and the Student Representative Council (SRC) can include their social networking sites like their Facebook page, the various groups' social media sites and the school's website as other means of promoting their databases. This will inform students who for one reason or another may not have physical

knowledge of these databases. These websites should also be constantly updated to provide students with current information.

5.3.1.1 Awareness of Academic Databases.

The study again found out that, there were no academic database that the school subscribed to. Students access to online materials were through Google search which cannot be considered as reliable source of information for academic work. The school's administration should therefore try and allocate some of its budget to subscribe these academically recognised sites. This will provide additional electronic materials for the students and ensure credibility of information sources.

5.3.2 Knowledge and Skills in ICT

It was also realised that, provision made for training ICT to students was very limited. Students get the opportunity to learn about ICT when they are offered a particular program. This does not provide opportunity to other students who may be interested in acquiring ICT skills. The school should therefore endeavour to organise ICT training which will allow all students the opportunity to learn ICT. It can be adopted as a first year course whereby those with no knowledge on ICT use can have the chance of learning it. A similar program can also be organised for teaching staff who want to improve upon their ICT skills and thus encourage its use in teaching. The training package should include education on search engines, power point presentation and database searches. The individual (which consist of teaching staff and students) should further take ICT courses organised outside the school to equip themselves with ICT use.

5.3.3 Major Challenges faced in Using ICT for Teaching and Learning

The findings revealed that low bandwidth and poor internet connection are the major challenges confronted by both teaching staff and students. The internet could be accessed only at particular spots on campus. It is recommended that the school administration should allocate some of its financial resources to increase its internet capacity. Provision should also be made for high speed WIFI which can be accessed anywhere on campus especially the halls of residence and lecture rooms. This will support the constant use of modern technology in the educational activities. Additionally, an appeal can be made to the government and other donor agencies to assist in taking up this project. Through letters and social media pages, requests can be made for assistance in improving the internet connection.

5.4 Future Research

Education in seminary training is now advancing and moving into the technological age. Suggestion is made to all researchers to look at other seminaries and how ICT has influenced their information seeking behaviours as well as measures taken to improve their library services into modern technological services. Again, policies concerning ICT use in Ghanaian seminaries can be considered.

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Appendix 1: Questionnaire used for the Study

UNIVERSITY OF GHANA

DEPARTMENT OF INFORMATION STUDIES

THE USE OF ICT IN TEACHING AND LEARNING IN SEMINARIES: A CASE STUDY OF TRINITY THEOLOGICAL SEMINARY

I am a student of University of Ghana, studying for Master of Arts in information studies. I will like to seek your assistance in my dissertation project with the above topic.

I would be very grateful if you could please spend a little of your time to answer the following questions on the subject. You can be sure that this research will not anticipate any physical or emotional harm and the information provided will be held with an utmost confidentiality.

Yours faithfully,

Esther Bosompemaa Boafo.

Thank you for your participation.

DEMOGRAPHIC DATA

Please tick (√) the appropriate box

1. Gender: Male ( ) Female ( )

2. Age: 20-25 ( ) 26-30 ( ) 31-35 ( ) 36-40 ( ) 41-45 ( ) 46-50 ( )

   others (please specify) ……

3. Area of study: Biblical studies ( ) Language studies ( ) History ( ) Missions and Ecumenics ( ) Philosophy ( ) Systematic Theology / Ethics ( ) Pastoral and Practical Theology ( ) Theological studies ( )

4. Academic qualification: Diploma ( ) 1st degree ( ) Masters ( ) PHD ( )

5. Academic year: First ( ) Second ( ) Third ( ) Final ( )

6. Church denomination: Methodist ( ) Presbyterian ( ) Anglican ( ) AME Zion ( )

   EP church ( ) others (please specify)……..

AWARENESS OF ICT RESOURCES

7. Are you aware of any electronic resources in the school? Yes ( ) No ( )

8. How did you get to know of electronic resources? (please tick as many as applicable)

   Orientation ( ) Seminar/workshop ( ) Library guide ( ) Library website ( ) library staff ( )

   lecturer ( ) Colleagues/friends ( ) others specify……

9. Which of the online materials/ databases in the school are you aware of? (Please you can tick as many as you are aware of) e-journal ( ) Subscribed online database ( ) CD ROM ( )

   Institutional repositories ( ) others specify……

10. Do you think the database have been publicised enough to attract students?

    Yes ( ) No ( )

11. Do you think the databases provided are enough to satisfy students information needs?

    Yes ( ) No ( )

THE LEVEL OF ICT USE IN LEARNING

Choose from 1 to 4, with 4 being strongly agree, 3 agree, 2 disagree,

1 strongly disagree to indicate your level of agreement or disagreement with the following Information Communication Technologies (ICT) statements.

STATEMENTS	**Use numbers 1 - 4**
12. Learning with ICT requires highly developed study skills and strategies.	
13. I would like to study with a computer even if it is complicated.	
14. I think ICT can improve my learning.	
15. I prefer to study with traditional education methods rather than with ICT.	
16. Learning via the internet alone is acceptable to me.	
17. I like to learn with ICT because it brings reality in the classroom.	
18. ICT allows for effective sharing of information.	
19. In general, learning with ICT is time consuming.	
20. Information that I find on internet is irrelevant.	
21. In general, availability and access to ICT provide more opportunities to enhance my learning.	
22. In general I find learning with ICT interesting	

23.How often do you use ICT in learning? Once a week ( ) twice a week ( ) every day ( )

others specify……

24. Which of the courses use ICT in teaching? …….

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…….

ICT KNOWLEDGE AND SKILLS

Please tick (√) the appropriate box or provided answers in the blank spaces

25. Do you use ICT tools as part of your learning? Yes ( ) No ( )
26. If 'Yes' what ICT tools do you used in learning? Laptop ( ) mobile phone ( ) desk top ( ) palm top ( ) other specify ……
27. Do you have any training or knowledge in the use of computer before coming to the seminary? Yes ( ) No ( )
28. If 'Yes' where did you learn it? In my formal institution ( ) At an ICT training institute ( ) From a friend ( ) By myself ( ) others specify ……
29. How would you rate your computer knowledge in ICT? Basic ( ) fairly good ( ) Good ( ) Very good ( )
30. Does the school provide opportunity for learning ICT? Yes ( ) No ( )
31. If yes, have you taken part in any ICT training organised by the ICT Directorate? In all modules ( ) In a few modules ( ) Never ( )

REASONS FOR USING OR NOT USING ICT IN LEARNING

32. Is there any reason why you use ICT? Yes ( ) No ( )
33. What is your reason for using or not using ICT in learning?

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CHALLENGES FOR USING ICT IN LEARNING

34. What are some of the challenges you face in the use of ICT during learning?

Power fluctuation ( ) low bandwidth ( ) lack of internet access ( ) lack of ICT quipment ( ) insufficient ICT skills ( ) others (please specify)……

34. What do you suggest could be the solution to these challenges?

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Thank you for your time and responses.

Appendix 2: Interview Questions for the Study

THE USE OF ICT IN TEACHING AND LEARNING IN SEMINARIES: A CASE STUDY OF TRINITY THEOLOGICAL SEMINARY.

INTERVIEW SCHEDULE FOR STAFF

I am Master of Art student in the Department of Information studies, University of Ghana, Legon. I am conducting a study on the above topic which need your assistance. This interview is to seek your view on the use of information and communication technology (ICT) in teaching in seminaries. Any information provided will be kept confidential.

Your permission is being sought to tape record the interview in order to capture the exact information needed for the study.

Thank you.

Yours faithfully,

Esther Bosompemaa Boafo

Background of the Respondent

1. How long have your being working in the seminary?
2. Have you had any formal training in ICT?
3. If 'yes' where?

Awareness, Perception, Reasons and Challenges for ICT in teaching

4. Are you aware of the use of ICT tools in teaching?
5. Have the school made provision for integrating ICT in teaching?
6. If 'Yes' to what extent are you inculcating it in your teaching method?
7. Are there any teaching/learning strategies that you employ to facilitate students schedule at the computer?
8. What is your reasons using or not using ICT in your teaching?
9. What is your opinion on using ICT in teaching?
10. What are the challenges in using ICT in teaching?
11. What ICT tools do you think is appropriate in teaching your course?

THANK YOU FOR YOUR COOPERATION