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(ELECTRICAL & ELECTRONIC ENGINEERING)

Training Needs of Information and Communication Technology (ICT) for Teachers of Technical Education in Yobe State, Nigeria

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This is to certify that the work presented in this thesis is the outcome of investigation carried out by **Idris Muhammad Saban** under the supervision of prof. Dr. **Che Kum Clement** in the Department of technical and Vocational Education (TVE), Islamic University of Technology (IUT). Gazipur, Bangladesh. I hereby declared that this thesis/report or part of it has not been submitted elsewhere for the award of any degree or diploma except where due acknowledgement is made.

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DEDICATION

The thesis is dedicated to my beloved parents whose enormous support and prayers was the result of my success in this wonderful world. May Almighty Allah (S.W.T) count the support they have been rendering to me upon their heavenly treasures, AMEEN!

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LIST OF ACRONYMS

ABBREVIATION		ACRONYM
CD	-	Compact Disk
CBAM	-	Concern Based Adoption Model
DVD	-	Digital Versatile Disk
ICT	-	Information and Communication Technology
LOU	-	Level of Use
NCET	-	National Council for Educational Technology
OFSTED	-	Office of Standard in Education
SOC	-	Stage of Concern
SPSS	-	Statistical Package for Social Sciences
WA	-	Weighted Average

ABSTRACT

Generally speaking, the need for ICT inclination in all aspect of human endeavor today is not an optional; the fact that ICT plays a vital role in teaching and learning process, its backwardness remains a clear setback to global education. The success of technical education defend largely on how teachers are prepared to heavily infuse technologies in teaching and learning process so as to impart to the learners the required skills and training. This study meant to ascertain the level of training needs of information and communication technology (ICT) for teachers of technical education in Yobe state, Nigeria. Specifically, the study meant to find out the existing level of ICT knowledge and skills acquired by technical education teachers, their deficiencies with respect to ICT and suggest some possible strategies for enhancing their ICT skills training in the study area. The study was a survey research. A sample of 43 randomly selected teachers and administrators were used as respondents for the data collection chosen from three purposively sampled technical colleges based on the zones constituting the study area. The data collected using structured questionnaire designed base on five point scale was analyzed and interpreted using statement-wise, category percentage, weighted average and Chi square test using statistical package for social sciences SPSS version 20 software. The findings of this study revealed that the existing level of ICT knowledge and skills acquired by the technical education teachers in the study area is insufficient, the deficiencies in ICT knowledge and skills is high and the possible strategies for enhancing ICT skills training is achieved through the followings: organization of workshops and conferences, establishment of standard computer laboratories and imposing ICT skills as an entry requirement for teachers.

CHAPTER I

INTRODUCTION

1.1 Background of the study

The needs for Information and Communication Technology (ICT) in all aspect of human endeavor and specifically, by Technical Education Teachers cannot be over emphasized; this is due to the dramatic changes brought about in teaching and learning process particularly in the preparation and the presentation of learning contents to the learners. The rapid growth in the use of ICTs over the years have similarly had an impact on the educational system around the world to such an extent that the use of ICTs have become important tools for teaching in schools (Adebayo 2011) as cited in Hassan & Shu'aibu, (2015). It - therefore, remains a challenge for teachers at all levels of education to be ICT inclined. However, to be ICT literate, there is need for one to acquire certain knowledge and skills required to operate and handle the ICT gadgets required for teaching and learning thereby resulting to an effective instructional delivery. Teachers need to be professionally develop beyond traditional methods and become acquainted with new techniques and methods in order to get a clear understanding of the educational functionality of various ICT facilities in teaching and learning process (Arthur, Adu-Manu, & Yeboah, 2013). According to Daniels (2002), ICTs have become within a very short time, one of the basic building blocks of modern society. The use of computers in our modern society, internet connectivity, interactive white board and other ICT facilities makes it possible for teachers to simplify abstract concept for learners to understand better.

Recent calls for reforms in Technical and Vocational Education (TVE) coupled with the progress in modern methods of instruction have emphasized the importance and needs for teachers to be literate in the use of ICT for effective instructional delivery (International Society for Technology Education, 2000). Although ICT is pervasive in education, it has not

been given adequate concern for proper use in the activities of teaching and learning (Grabe and Grabe 2008) as cited in Keengwe, & Kyei-Blankson, (2009). This has risen a big question on the teacher's competence for effective integration of ICTs in teaching and learning. The integration of ICT as a catalyst for educational development can only be achieved through effective training of teachers on how to use ICTs in teaching and learning. According to the International Society for Technology in Education (2008) failure to incorporate technology adversely impacts academic success as students miss the opportunity to acquire the skills needed to effectively participate in the global marketplace.

ICT is defined as the combination of computer-based resources, networked and stand alone, including both hardware and software applications and media for collection, storage, processing, transmission and presentation of information (voice, data, text, images), as well as related services (Sarkar, 2012). The ICT encompasses any medium to record information (magnetic disk, magnetic tape, optical disks; CD/DVD), flash memory etc. and arguably paper records); technology for broadcasting information-radio, television; and technology for communicating through voice and sound or images-microphone, camera, loudspeaker, telephone to cellular phones. For the purpose of this study, ICT is referring to the computer-based resources, networked, currently available in teaching and learning resources.

The available ICT facilities for use in the teaching and learning process by technical education teachers according to Babajide and Bolaji (2003), Bryers (2004), Bamidele (2006) and Ofodu (2007) as cited in Apagu &Wakili, (2015) include; radio, television, digital multimedia, computers, overhead projectors, film strip projectors, optical fibres, fax machines, CD-Rom, internet, interactive white board, electronic notice board, slides, video/VCD machine and so on. It is clearly known that these facilities need special training for teachers to

effectively utilize them in their teaching and learning process. Likewise it was stated by Ajayi, (2008), the effective utilization of ICT facilities in teaching and learning depends largely on availability of these facilities and teachers competence in using them. Teacher's competence can be improved through training of teachers in the field of modern technology of which ICT is a part.

The Federal Republic of Nigeria (2004) in its National policy on Education recognized the important of changing to more effective modern method of teaching and teacher training in institution of learning to support and make its citizen to become aware of the need. In-line with this, it was observed that technical education teachers in Yobe state lack the necessary skills and competence needed to effectively use modern education techniques and facilities such as ICTs in teaching and learning process. Ugwu & Ohimekpen, (2015) observed that; teachers in Yobe state are still inclined to traditional methods of teaching which do not produce sound students academically. Teachers need to go beyond traditional approaches and become acquainted with new techniques and methods in order to get a clear understanding of the educational functionality of various ICT facilities in their instructional practices (Arthur, Adu-Manu, & Yeboah, 2013). A technologically driven workforce will lead to growth of ICT competent teachers in Yobe State technical colleges, with the potential to improve educational performance, telecommunication, media communication and skilled ICT professionals who will be well-equipped to solve ICT problems in the state and the country at large (Apagu &Wakili, 2015). However, inadequate supply of ICT facilities, lack of ICT competent teachers are the major concerns in technical colleges of Yobe state. Therefore, there is the need to address these problems by providing adequate supply of ICT facilities and effective training

for technical education teachers accompanied by adequate pedagogical and technical support on how to use technology in teaching and learning process.

1.2 Statement of the problem

It is evident that, the world is changing rapidly as a result of technology which modernizes every aspect of human life; be it social, physical and intellectual. These technological changes affect every aspect of human endeavor particularly teaching and learning. ICT have already impacted on the economies of all nations and on the fabric of the society at every level within which teachers and students live and interact (UNESCO, 2005). In the like manner, Adebayo (2011) as cited in Hassan & Shu'aibu, (2015) stated that the rapid growth in the use of ICTs over the years have similarly had an impact on the educational system around the world to such an extent that the use of ICT have become an important tool for teaching in schools. This signifies the needs for teacher's technology related professional development to effectively integrate ICTs in their teaching and learning process. ICT integration as a catalyst for educational development can only be achieved through effective training of teachers on how to use ICTs in teaching and learning. Teachers need training not only in computer literacy but also in the application of various kinds of educational software in teaching and learning (Ololube, 2006). However, without training, teachers will not use technology and the result is that a lot of technology provided to schools will remain in the store gathering dust and becoming obsolete. This is more than a loss of potential learning and skills acquisition; it is also a waste of the resources used to secure technology in the first place (Carlson, & Gadio, 2002).

A technologically driven workforce will lead to growth of ICT competent teachers in Yobe State technical colleges, with the potential to improve educational performance,

collaboration, media communication and skilled ICT professionals who will be well-equipped to solve ICT problems in the state and the country at large (Apagu &Wakili, 2015). In preparing students to face the challenges of the current digital era, teachers are seen as the key players in using ICT in their daily classrooms. The Yobe state government in 2008 has established ICT centers in technical colleges of the state for the purpose of promoting the use of ICT in its Technical colleges. With all this effort, there is no attempt by the stake holders to train teachers on how to use ICTs in teaching and learning. However, provision of ICT facilities alone is insufficient and it must be accompanied by sufficient and efficient technical as well as pedagogical support (Pelgrum & Anderson, 1999) cited in Kaffash, Kargiban, Kargiban, & Ramezani, (2010). It is well known that, the success or failure of any effort to use ICTs in the class room depends largely on the ability of teachers to apply their skills, knowledge, and competence in using them for effective instructional delivery. Moreover, many technological innovations fail because teachers do not have clear understanding of the principles behind the innovations they are expected to carry out, and have not had sufficient training and skills needed to use the technology (Kaffash, Kargiban, Kargiban, & Ramezani, 2010). Training and development is very essential to the success and failure of ICT integration in technical education. Involve all stakeholders, teachers, administration, trainers, information technology personnel, and in some part the students (Keengwe, & Kyei-Blankson, 2009). Failure to incorporate technology adversely impacts academic success as students miss the opportunity to acquire the skills needed to effectively participate in the global marketplace (International Society for Technology in Education 2008). Although ICT integration in Technical Education curriculum is a crucial process in ensuring the quality of teaching, it has still not been given adequate concern by the Yobe state government. Therefore, this study is meant to encapsulate

beyond the needs for other teachers, the problem of ICT training needs of Technical Education Teachers in the State.

1.3. Objectives of the study

The objectives of this study were to find out;

i. The existing level of ICT knowledge and skills acquire by the technical education teachers in Yobe state.

ii. The deficiencies in ICT knowledge and skills of technical education teachers in Yobe state.

iii. The possible strategies for enhancing ICT skills training of the technical education teachers in Yobe state.

1.4. Research questions

The study was guided by the following research questions:

i. What is the existing level of ICT knowledge and skills acquired by the technical education teachers in Yobe state?

ii. What are the deficiencies in ICT knowledge and skills of technical education teachers in Yobe state?

iii. What are the possible strategies for enhancing ICT skills training of technical education teachers in Yobe state?

1.5. Significance of the study

Identifying the current status of ICT knowledge and skills acquired by technical education teachers and suggesting other strategies if needed for its enhancement will help the ministry of education and the entire stakeholders to know the current position of technical teachers with respect to ICT knowledge and skills training needs in the study area. Furthermore, to prefer the next line of action so as to cope with the need for teachers in acquiring and utilizing the

ICT facilities in teaching and learning process as stated by The Federal Republic of Nigeria (2004) in its National Policy on Education recognized the importance of changing to more effective modern methods of teaching and teacher training in institutions of learning to support and make its citizen to become aware of the need.

1.6. Scope of the study

The study focuses on the ICT training needs of technical education teachers in Yobe State of Nigeria. It also meant to determine the existing level of ICT knowledge and skills acquired by the technical education teachers in the study area. Moreover, the study meant to identify the shortcomings of teachers in teaching with ICT gadgets and to suggest some possible strategies for enhancing ICT skills training of the technical education teachers in the study area.

1.7. Delimitation of the study

The study is delimited to only government technical colleges in Yobe state.

1.8. Definition of terms

ICT: This is an acronym for Information and Communication Technology, It refers to technologies including any computer-based resources, networked and stand alone, telecommunication and audio-visual systems that enable the collection, processing, transmission and delivery of information and communication services currently available in teaching and learning resources.

CD: means Compact Disk

DVD: Acronym for Digital Versatile Disk

Training needs: refers to ICT knowledge required by technical education teachers, to enable them operate and integrate ICT in teaching and learning process.

ICT integration: refers to introduction, consolidation and full use of electronic means of capturing, processing, storing and disseminating information.

ICT skills: refers to the ability to comprehend and utilize digital processes and tools.

Technical education: refers to a planned program of courses and learning experiences that begins with exploration of career options, supports basic academic and life skills, and enables achievement of high academic standards, leadership, preparation for industry in a defined work, advanced and continuing education.

Strategy: refers to measures used by schools to improve on ICT integration.

1.9. Organization of the study

This study consist of five chapters where chapter one covers the background of the study, the statement of the problem, objectives, research questions, significance of the study, scope, delimitation of the study and definition of terms. Chapter two reviews the related literature which is focused on ICT skills and training needs in technical education, benefits of ICT to technical education teachers and students, strategies for enhancing ICT skills training needs of technical education teachers, Conceptual framework for the Study and summary of the reviewed literature. Chapter three covers research methodology, design of the study, research instrument and its validity; data collection procedures and data analysis techniques. Chapter four covers the data analysis and description of findings based on questionnaire return rate, demographic characteristic, ICT -infrastructure, challenges facing ICT integration and strategies to promote ICT use. Chapter five provides the summary of findings, discussions, conclusion and recommendations.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

This chapter reviews literature related to the study under the following subheadings

2.1 ICT skills and training needs in technical education.

2.2 Benefits of ICT to technical education teachers and Students.

2.3 Strategies for enhancing ICT skills training needs of technical education teachers.

2.4 Theoretical framework for the study.

2.5 Summary of the reviewed literature.

ICT Skills and training needs in technical education

Computers have become more readily available in classrooms teaching and learning process in many countries particularly Nigeria. However the way teachers use ICT in teaching remains questionable. Likewise, many researchers have observed as cited thus; (Gao, Choy, Wong, & Wu, 2009; Harris, Mishra, & Koehler, 2009; Ottenbreit-Leftwich, Glazewski, Newby, & Ertmer, 2010; Sang, Valcke, van Braak, & Tondeur, 2010). These observations have led to more emphasis on teaching teachers the ways of integrating ICT in teaching (Angeli & Valanides, 2009; Goktas, Yildirim, & Yildirim, 2009; Polly & Brantley-Dias, 2009). Ololube (2006) stated that, many Nigerian teachers have been unable to find effective way to use technology in their classrooms or any other aspect of their teaching and learning life. He further lamented that the possible explanation for this lack of success by teachers is that they are not motivated to use ICTs in the classroom and they lack the necessary skills and competence to use ICTs in teaching as a means for educational sustainability. The fundamental slow access to basic ICT equipped, low internet connectivity and computer

inadequacies in the use of audio-visual materials, and equipment including films, slides, transparency, projectors, globes charts, maps, bulletin board, programmed materials, information retrieval system and instructional television in teacher education program are barriers to the effective and professional development of teachers in Nigeria. Therefore, administrators and trainers need to make ICT as an integral part of teaching and to provide clear demonstration of how the use of ICT tools can address the personal and general concerns of teaching and learning in the country.

According to policy-makers worldwide, ICT in schools should lead to significant educational and pedagogical outcomes, beneficial for both students and teachers, (Office for Standards in Education [Ofsted], 2002; European Commission, 2004; Queensland Government, 2004). Over the past 15 years, research has demonstrated the significant influence of teacher competence on student achievement (Owston, 2006). Where many critical decisions are required each day, teachers must have expertise in a wide-ranging array of competencies to maximize students' learning (Jackson, 1990). Research reveals that of all factors under the control of a school, teachers are the most powerful influence on student success (Babu & Mendro, 2003; Sanders & Rivers, 1996). Effective teachers are separated from ineffective ones on how they build a profile of exemplary classroom instruction derived from research effectiveness (Wenglinsky, 2002; Hattie, 2009). According to (Hattie, 2009), better learning takes place in a dynamic setting in which teachers offer explicit active instruction than in situations in which teachers do not actively guide instruction and instead turn control over content and pace of instruction to students.

Research has shown that when teacher selects learning area to be taught, sets criteria for success, informs students of criteria ahead of the lesson, demonstrates to the students'

successful use of knowledge/skills through modeling, evaluates students acquisition, provides remedial opportunities for acquiring the knowledge/skills, if necessary and provides closure at the end of the lesson are hallmarks of an explicit approach for teachers (Archer & Hughes, 2011; Knight, 2012). Research consistently places classroom management among the top five issues that affect student achievement. School administrators, the public, and teachers consider classroom management as one of the most persistent areas of concern that affect student achievement (Evertson & Weinstein, 2013). In the same vein, (Hattie, 2005) puts forth that, classroom management was associated with an increase of 20% in student achievement when classroom rules and procedures were applied systematically.

It is therefore important for all teachers to have the necessary knowledge and skills to integrate ICT in their daily teaching practice in order to maximize their ability to help improve students' digital competence. The digital competence here involves the confident and critical use of Information and communication technologies for daily activities. It is underpinned by basic skills in ICT, i.e. the use of computers to retrieve, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet (European Commission, 2007). A study conducted by Waite, (2004) indicates that although teachers in schools show great interest and motivation to learn about the potential of ICT, in practice, use of ICT is relatively low and it is focused on a narrow range of applications, with word processing being the predominant use, and video/network conferencing, emailing and the Internet being rarely used. The United Nation Educational, Scientific and Cultural Organization (UNESCO, 2009) observed that the proportion of teaching staff adapting their skills to an ICT enabled instruction model was small in developing countries and the nature and intensity of ICT use in schools was very low. This highlighted the need to address the

level of teacher's competency through professional development so as to use ICTs in education especially during teacher education programme. Teacher education programmes are faced with the challenges of preparing a new generation of teachers, to effectively use the new learning tools in their teaching practice UNESCO (2002). As a result, teacher education programme has been affected by the penetrating influence of ICT. Thus, teacher education and training is a means for professional updating, which deals with all development function; directed at the maintenance of professional competence and literacy. The teacher professional growth supports the idea that ICT in teacher education and training is an important factor in teachers' job effectiveness and development. Technical education teachers should have a clear understanding and practical competence in using ICT facilities for effective instructional delivery. Teachers have been identified as a key players of ICT integration in schools because they decide whether, what and how technology gets used in classrooms, and therefore decide whether or not students can profit from the potential benefits of information technology (Conway & Zhao, 2003).

2.2 Benefits of ICT to technical education teachers and students

Noor-ul-Amin, (2008) Stated that: numerous countries nowadays regard understanding modern instructional techniques and mastering the basic skills and concepts of ICT as part of the core of education, in conjunction with reading, writing and numeracy. A large amount of research has shown that the use of ICT in education can increase students' motivation and deepen understanding, promote active, collaborative and lifelong learning, offer shared working resources and better access to information, and help them to think and communicate creatively (Jonassen, 2000; Webb, 2000). The impact of ICTs on education have undoubtedly affected teaching, learning and research (Yusuf, 2005). ICTs as a change agent

has the potential to innovate, accelerate, enrich, and deepen skills, to motivate and engage students, to help relate school experience to work practices, create economic viability for tomorrow's workers, as well as strengthening teaching and helping schools change (Davis and Tearle, 1999; Lemke and Coughlin, 1998; Yusuf, 2005; Noor-ul-Amin, 2008). ICT may contribute to creating powerful learning environments in numerous ways. It provides opportunities for teachers and students to access abundance information using multiple information resources and viewing information from multiple perspectives, thus promotion the authenticity of learning environments. ICT enhances the productivity of basic instructional tasks, such as preparing instructional plans and class outlines, developing quizzes and examinations, monitoring student progress and providing feedback to the learners (Uluyol, & Şahin, 2016). In a like manner, Shamim, Aktaruzzaman & Clement, (2011) noted that The use of ICT provide multiple learning pathways and widespread access to technical education, breaking down barriers for teaching and learning connected to distance and location so that teachers can easily have opportunities to update and upgrade their knowledge and skills. ICT may also make complex processes easier to understand through simulations that, again, contribute to authentic learning environments. A case study conducted by Harris (2002) in three primary and three secondary schools, which focused on innovative pedagogical practices involving ICT. (Harris, 2002; Noor-ul-Amin, 2008) concludes that the benefits of ICT will be gained when confident teachers are willing to explore new opportunities for changing their class room practices by using ICT. Thus, ICT may function as a facilitator of active learning and higher-order thinking (Alexander, 1999; Jonassen, 1999). The use of ICT may foster co-operative learning and reflection about the content (Susman, 1998). Furthermore, ICT may serve as a tool for curriculum differentiation, providing opportunities

for adapting the learning content and tasks to the needs and capabilities of each individual pupil and by providing tailored feedback (Mooij, 1999; Smeets & Mooij, 2001). Likewise Jones and Preece (2006) reported that, "both students and teachers need to learn to trust the technology for technological performance as well as enhance the uptake and reduce resistance to technology'' (p.3). Recent studies (Hu et al., 2003; Ma et al., 2005; Jimoyiannis & Komis, 2007) have found that teachers' attitudes toward ICT usefulness are significant in determining intentions to use ICT in their instruction. A survey in Greek secondary schools outlined five interrelated factors which influence teachers' perceptions about technology and professional development aimed at integrating ICT in their instruction: a) continuous ICT support and coordination; b) ICT pedagogical development enabling teachers to use technology in everyday classroom practice; c) partnership (collaboration with specialist teachers and colleagues in the school); d) availability of sophisticated educational software in schools; e) ICT infrastructure development in schools (Jimoyiannis & Komis, 2007). This promotes a positive attitude toward understanding of new technologies and teachers believe that it enhances learning, activates learners and provides new stimuli, access to a rich source of instructional content, and provide opportunity for systematic evaluation and feedback (Becta, 2002; Empirica, 2006).

2.3 Strategies for enhancing ICT skills training of technical education Teachers

In recent years, there has been a considerable number of initiatives coming from both the research community and educational policy authorities, which have been directed towards the preparation of teachers in order to enable them to use technology in their everyday educational practice (Jimoyiannis and Komis 2007). Various programs have been established in the European Union (EU) countries (European Commission, 2002, 2004), USA (PT3,

1999), Australia (Queensland Government, 2004), the UK (Ofsted, 2002) and so on, aiming at enhancing teachers' skills in the pedagogical application of ICT in instructional and learning processes. The United Nation Educational, Scientific and Cultural Organization (2009) observes that, vision of school management with regard to pedagogy and ICT concerning the new dimensions of traditional lifelong learning and connectedness should be embraced to make ICT integration a reality in the teaching and learning process. (Dawes, 2001; Lefever, & Matthiasdottir, 2007), identifies the critical importance of the following factors as perceived barriers in teachers' use of ICT: ownership of up-to-date technology; a sense of purpose for ICT use; adequate training; realistic time management; and inclusion in supportive communities of practice. This call for teacher's professional development particularly in the use of modern technology where teachers acquire knowledge and skills for using ICTs in teaching and learning. Furthermore, curriculum designers should consider the inclusion of ICT as transversal themes i.e. in all curriculum sectors, and in the curriculum specification guideline that will be used by teachers. It is not advisable to have ICT as separate, isolated technical subjects or sector in the curriculum e. g (programming, software tools and hardware configurations), because in this atmosphere, teachers will tend to regard ICT as a special subject and may not integrate them in their normal practice. Teachers should have varieties of different technical and communication skills which include using chat rooms, word processing skills, web page authoring and using various kinds of ICT tools such as File Transfer Protocol (FTP), compress and decompress of files, e.g., Win zip and so forth (Barker, 2002).

A technologically driven workforce will lead to growth of ICT competent teachers in Yobe State technical colleges, with the potential to improve educational performance,

telecommunication, media communication and skilled ICT professionals who will be well-equipped to solve ICT problems in the state and the country at large (Apagu &Wakili, 2015). The Federal Ministry of Education has launched an ICT-driven project known as school net www.snng.org (Federal Republic of Nigeria, 2006; Adomi 2005; Okebukola, 2004), which was intended to equip all schools in Nigeria with computers and communication technologies. The Federal Republic of Nigeria (2004) in its National policy on Education recognized the importance of changing to more effective modern method of teaching and teacher training in institution of learning to support and make its citizen to become aware of the need, the government has enumerated some measures, among which are:

(i) Education and training facilities shall continue to be expanded in response to societal needs and made progressively accessible to afford the individual for more diversified and flexible choice.

(ii) Education activities shall be centered on the learner for maximum self-development and self-fulfillment

(iii) Modern education techniques shall be increasingly use and improve upon at all level of the education system.

(iv) The education system shall be structured to develop the practice of self-learning.

The concept of self-efficacy is important when it comes to using ICT at school (Fanni et al., 2013; Klassen & Chiu, 2010; Krumsvik, 2011; Tondeur et al.; 2008, Hatlevik, O. E. 2017). It implies self-confident about using ICT for teaching or didactical purposes. Hammond, Reynolds, and Ingram (2011) conducted a study looking at reasons for why teachers use ICT. They found that teachers with lower levels of self-efficacy in respect of ICT "were among the least frequent users of ICT" (p. 196). Christophersen, Elstad, Turmo, and Solhaug (2016)

consider teachers' efficacy in teaching as very essential for understanding how teachers are capable of obtaining good teaching practice. For ICT to be heavily infused into technical education system, there is need to address teachers' self-efficacy in using them. Krumsvik (2011) stresses the need for addressing teacher self-efficacy when it comes to their teaching practice with ICT. He went further to Draw a clear distinction line between being confident about using ICT on your own, i.e., self-efficacy in basic ICT, and being confident about using ICT for teaching or didactical purposes, i.e., using ICT to enhance students learning. Teacher education programs should be geared toward the preparation of teachers to develop their efficacy about ICTs so as to face the challenges of the 21century. In view of this, Zhao and Cziko (2001, p. 27) identify three conditions that must be fulfilled for teachers to be motivated and use ICT in their practice:

(1) Teachers must believe that by using technology they are more likely to achieve a higher-level goal than through other means used ('effectiveness').

(2)They must believe that if used, technology will not disturb the other high-level goals that they want to achieve ('disturbances').

(3)Finally, teacher must believe that they are in total control, having the ability and resources to use ICT efficiently ('control'). Having fulfil the above conditions, there is need to keep the teachers motivated to use ICTs in their teaching profession. Uluyol, & Şahin, (2016) suggest that for teachers to remain motivated with using ICTs in their job, they should be encouraged to use technology (incentives), they should be supported when using technology (support), and they should observe or feel the benefits of using technology themselves (benefits). Incentives motivate teachers to use ICT, support helps them overcome challenges in ICT use, and benefits help them continue to use ICTs. This will make teachers to feel interested in

using ICTs and device some means of making teaching and learning more interesting to the learners.

2.4 Theoretical framework

The challenges facing teachers in developing countries in the integration of ICT in teaching and learning which automatically necessitated the needs for every teacher to be trained on ICT for effective teaching and learning process in meeting the demand for 21st century education cannot be quantified. A theoretical framework is formed based on an established Concerns Based Adoption Model (CBAM), developed by the Research and Development Center for Teacher Education in Austin, Texas in 1970s (Hall and Hord, 1987), which itself is based upon the foundational research carried out by Fuller, (1969) on stages of concerns experienced by teachers regarding the development of their teaching skills and abilities. Over time, CBAM has been accepted as both valid and reliable when assessing dimensions of change (Adams, 2003). The domains of education and educational psychology has been adopting the CBAM. And it can be applied across other domains of study particularly the technology field for better development. More regarding changes using the concept of CBAM -: Individuals actualize changes and highly determined by personal experience. Feelings and skills through are achieved using the model which can be facilitated by interventions directed toward the individuals, innovations, and contexts involved (Anderson, 1997). The proponent of this model posit that people considering and experiencing change evolve in the kinds of questions they ask and in their use of whatever the change is. The early questions are more self-oriented: What is it? And how will it affect me? When these questions are resolved, questions emerge that are more task-oriented: How do I do it? How can I use these materials efficiently? How can I organize myself? And why is it taking so much time? Finally, when

self- and task concerns are largely resolved, the individual can focus on impact. Educators ask: Is this change working for students? And is there something that will work even better?

CBAM was built upon two major dimensions stages: The first Stages of Concern (SoC) tilted towards the feelings and concerns experienced with regard to an innovation. The second Levels of Use (LoU) involves the stakeholders and individuals' behaviors as they experience the process of change both have major implications for professional development.

Table 2.1 *Stages of Stakeholders' Concern about the Innovation*

Clusters	Stage of Concern	Expression of Concern
Self/Government concern	0 Awareness	No awareness or concern about the innovation.
	1 Informational	General awareness of or interest in innovation, noncommittal or unaware of stakeholder's investment.
	2 Personal	How will using ICT affect me?
Task Concern	3 Management	Attention predominantly paid to daily tasks and best realization of innovation possible. Focus on issues relating to efficiency, organizing, managing, scheduling, changing time demands, and functionality of innovation by Teachers and the State Government.
Other/Impact Concern	4 Consequence	Concerns over impact on students' learning experience and outcomes, and of how to use the innovation to improve outcomes.
	5 Collaboration	Focus on increasing innovation's impact on students through collaboration with others across domains.
	6 Refocusing	One sees alternatives to current use of innovation, mainly to improve impact, and explores possibility of putting such improvements into practice.

From Laura Hosman and Maja Cvetanoska; Adapted from Hall, 1975

The other important aspect of CBAM is the usage level that portrays the changes receives from performance and activities leading to more innovative and skillful in using it (Loucks and Hall, 1979). As in the previous concerns level, the usage can equally be developed. The more assimilation of users is established, knowledge and skills will be formed from the acquired information whereby changing their behaviours to suit the task and the routines

under discussion. Here, the individual kept moving up and down till his concern is realized. Perceived needs of students play a great role in the students' behavioral changes.

Table 2.2 *Level of Use of the Innovation: typical behaviors*

Order	Level of use	Behavioral indication
0	Non Use	The user takes no action due to less or lack of interest.
1	Orientation	The user learns the innovation enthusiastically.
2	Preparation	The user begins to use the innovation with definite plans.
3	Mechanical	The user always applies his acquired skill while innovating.
4 A	Routine	Changes in ongoing use are achieved when innovation is stabilized.
4 B	Refinement	Changes made by the user increases outcome.
5	Integration	User with the support of others pays deliberate effort to coordinate the use of innovation.
6	Renewal	The User evaluates the innovations using an established effective effort so as to explore new goals for self and system.

From Laura Hosman and Maja Cvetanoska; Adapted from Hall, 1975

2.5 Summary of literature review

This chapter reviewed the related literature in the following areas: ICT skills and training needs in technical education, Benefits of ICT to technical education teachers and students, strategies for enhancing ICT skills training needs of technical education teachers and the theoretical framework for the study. The literature revealed that there have been a large number of studies which have been directed towards the preparation of teachers in order to enable them use technology effectively in their everyday educational practice (Jimoyiannis and Komis 2007). Moreover, various models have been developed aiming at teachers' preparation for ICT integration in the classrooms (for example, Rogers, 1995; Russell, 1995; Zhao et al., 2002; Franklin & Sessoms, 2005; Toledo, 2005). Hence the need for technical

education teachers to go beyond traditional approaches and become acquainted with new techniques and methods in order to get clear understanding of the educational functionality of various ICT facilities in their instructional practices (Arthur, Adu-Manu, & Yeboah, 2013). As such -ICT hold out clear prospects for teachers' professional development.

CHAPTER III

RESEARCH METHODOLOGY

3.0 Introduction

This chapter describes the methodology used in carrying out the research. It described the research design, research participant, sample and sampling techniques, research instrument, validity of the instrument, method of data collection and data analysis procedure.

3.1 Research design

This study employed descriptive survey research design which is concerned with conditions of relationships that prevail where researcher does not manipulate the variables but determines and report the way things are (Best & Kahn, 2003; Joseph, 2013). A researcher designed questionnaire was used for data collection. Questionnaire is considered the most appropriate tool as recommended by Johnson in (Johnson & Christensen, 2008). It allows the respondents to easily select the option that reflect their objective opinion.

3.2 Population of the study

The population of this study comprised of 38 teachers and 9 administrators drawn from three government technical colleges in Yobe state, Nigeria. The three technical colleges were selected using purposive sampling from the three education zones in the state. The 47 respondents were selected using stratified random sampling (proportionate) so as to give the respondent an equal chance of being selected and the sample comprised of both male and female teaching staff and administrators.

3.3 Sample and sampling technique

The sample comprised of 47 technical teachers and administrators drawn from three technical colleges in Yobe state. Purposive sampling was used in selecting the three technical colleges

in the study area each representing one educational zone. Ugwu & Ohimekpen, (2015) noted that the three educational zones in Yobe state are namely; Damaturu, Gashua, and Potiskum education zone. Stratified random sampling (proportionate) was used in selecting the respondents from the three technical colleges selected. The three technical colleges selected by the researcher each from one education zone of the state are: Government Science and Technical College Potiskum with the population of 38 technical teachers, Government Girls Science and technical College Dapchi with 10 technical teachers and Government Science and Technical Collage Gashua with 20 technical teachers. Teachers were randomly selected from the above mentioned technical colleges so that each teacher is given an equal chance of being selected for the study while all the administrators in the selected schools were selected for the study. The sample comprised of both male and female teachers and administrators. The administrators considered in this study are mainly the principals, vice principal academic and vice principal administration of the selected schools.

Table 3.1: *Populations and Sample Sizes for both Teachers and Administrators*

Name of Schools	Teachers		Administrators	
	Population	Sample	Population	Sample
Government Science and Technical College Potiskum	38	18	3	3
Government Girls Science and Technical College Dapchi	10	7	3	3
Government Science and Technical college Gashua	20	13	3	3
Total	68	38	9	9

3.4 **Research Instruments**

The instruments used for data collection were questionnaires developed by the researcher. The questionnaires were designed for two groups of respondents (teachers and administrators). The questionnaire items are rated on a five point scale with assigned values to the response categories as 1 for strongly disagreed (SD), 2 for Disagreed (D), 3 for Undecided (UD), 4 for Agree (A) and 5 for Strongly Agree (SA) respectively.

3.5 Validation of research instrument

The validity of the test instrument is the extent to which the instrument measures what is supposed to measure, content validity was used. (Mugenda & Mugenda, 2003; Joseph, 2013) note that, "content validity is a measure of the degree to which the data collected using a particular instrument represents a specific domain of indicators or content of a particular concept" (p.28). The instrument was validated by two experts from the department of technical and vocational education TVE whose input was used in modifying the item statement of the questionnaire.

3.6 **Method of data collection**

Data was collected using questionnaires developed by the researcher. The questionnaires were sent through Email to a professional colleague in Nigeria who has prior research experience and administered directly to the respondents in the selected schools from which the required data was collected. This procedure was appropriate as it ensured that respondents were accessible which in turn resulted into a high response. 47 questionnaires were sent and 43 of them were successfully returned to the researcher which amounted to 91% rate of return.

Table 3.2: *Distribution, Responses and Percentages of Returned Questionnaires*

S/N	Name of Schools	No. Issued	No. Returned	% Returned
1	Government Science and Technical College Potiskum	21	18	38%
2	Government Girls Science and Technical College Dapchi	10	10	21%
3	Government Science and Technical College Gashua	16	15	32%
Total		47	43	91%

3.7 Data analysis

The collected data from the respondents was tabulated in form of frequencies and percentages. Separate tables were drawn for different sections of the questionnaires each table was followed by its interpretation using statement-wise, category percentage, weighted average and chi square test. SPSS version 20 software was used for the quantitative analysis. Weighted Average (W.A) of each test parameter (existing level of ICT knowledge and skills, deficiencies in ICT knowledge and skills and strategies of enhancing ICT skills training) was determined and justified by the chi square test. The summary of interpretation was provided in the table below.

Table 3.3: *Weighted Average and its Interpretation*

Weighted Average	Weighted Average Interpretation
$W.A \geq 4.5$	Strongly Agree (SA)
$4.5 > W.A \geq 3.5$	Agree (A)
$3.5 > W.A \geq 2.5$	Undecided (U)

2.5 > W.A =1.5	Disagree (D)
1.5 < W.A	Strongly Disagree (SD)

The table above shows the interpretation of weighted average where by weight average ≥ 4.5 implies that the respondent strongly agree and their opinions have superior confidence, whereas weight average 4.5 > W.M ≥3.5 indicates that the respondents agree and their opinion have high confidence, lastly weight average below 3.5, indicates that the respondents are either uncertain or disagree and their opinions on the Item in question are low and have no confidence in them.

Chi square is use as a test of significance when we have data that are expressed in frequencies or in terms of percentages or proportions that can be reduced to frequencies. This allows the comparison of frequencies of response based on the response categories and makes justification based on the result obtained from weighted average. Non parametric Chi square test was used to verify the opinions of the respondents yielded by weighted average.

3.8 Ethical consideration

The selection process of the participant and their participation in the study area require formal approval from the heads of each of the selected technical colleges under study. The responses obtained from any participant was confidentially treated and only used for the purpose of this study.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

4.0 Introduction

This chapter presents the analysis and interpretation of data collected using statement- wise, category percentage, weighted average and Chi square test. It include tabulation to explain the opinions of the respondents about: the existing levels of ICT knowledge and skills acquired by technical education teachers in Yobe state, deficiencies observed in ICT knowledge and skills of the technical education teachers in the state and the possible strategies of enhancing ICT skills training of technical education teachers in the state.

4.1 Demographic data

Since data was collected from 47 respondents drawn by stratified sampling from three technical colleges in Yobe state, the sampled teachers and their -administrators were presented in terms of demographics of respondents, highlighting the two different groups for teachers and administrators. The administrators were mainly principals, vice principal administration and vice principal academic of the selected schools. The respondents have, therefore, been categorized according to gender, as the sample consist of both male and female teachers and their administrators.

Table 4.1: *Demographic Data of the Respondents*

Gender	**Teachers**		**Administrators**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Male	27	79%	7	78%
Female	7	21%	2	22%
Total	**34**	**100%**	**9**	**100%**

The Table above shows that out of 27 technical education teachers who responded to the questionnaires 27 (79. %) were males and 7 (21. %) were females. This showed that there are more male technical education teachers than females in the study area. This can be attributed to the fact that most of the female students preferred other subjects than technical education during teacher training programme which could have influenced their number in the study area. Moreover, out of the 9 administrators who responded to the questionnaire, 7 (78. %) were male and 2(22. %) female. This can also be attributed to the fact that there is low female enrollment in technical education program in the study area. The administrators comprised of principals, vice principal administration and vice principal academic of the selected schools who are in charge of both the academic and administrative activities of the schools.

4.2 Analysis and interpretation of data using statement-wise, category percentage, weighted average and Chi square test

4.2.1 Existing level of ICT knowledge and skills acquired by the technical education teachers in Yobe state

The table 4.2 below shows the analysis for the existing levels of ICT knowledge and skills acquired by technical education teachers in Yobe state. The title columns represent the item statement, five point scale and its corresponding values where strongly agree (SA) = 5, Agree (A) = 4, undecided (U) = 3, disagree (D) = 2, strongly disagree (SD) = 1 respectively and weighted average (W.A). The figures in the parenthesis indicate percentages and f represent the frequency while the (s-value) represent the significant value obtained from the Chi square test.

Table 4.2: *Analysis for Existing Levels of ICT Knowledge and Skills Acquired by Technical Education Teachers*

Item Statement		5(SA)	4(A)	3(U)	2(D)	1(SD)	W.A	S-value
Awareness of ICT facilities.	f	9	26	1	5	2	3.81	0.000
	%	(21)	(60)	(2)	(12)	(5)		
Using ICTs in the classroom.	f	5	6	5	13	14	2.42	0.051
	%	(12)	(14)	(12)	(30)	(33)		
Basic knowledge of computer operations.	f	11	21	1	6	4	3.67	0.000
	%	(26)	(49)	(2)	(14)	(9)		
Provision of Personal computer for daily educational activities by government.	f	5	7	5	12	14	2.47	0.090
	%	(12)	(16)	(12)	(28)	(32)		
Training programs for awareness about the value of ICT learning.	f	8	14	5	10	6	3.19	0.203
	%	(19)	(32)	(12)	(23)	(14)		
Using online resources/materials to plan lesson presentation.	f	7	22	5	8	1	3.60	0.000
	%	(16)	(51)	(12)	(19)	(2)		
Using OHTP or film strip projectors in lesson presentation.	f	5	7	5	11	15	2.44	0.068
	%	(12)	(16)	(12)	(25)	(35)		
Using computers to keep records of student progress.	f	5	11	5	16	6	2.84	0.028
	%	(11)	(25)	(11)	(37)	(14)		
Access to internet facilities in school.	f	12	18	3	7	3	3.67	0.001
	%	(28)	(42)	(7)	(16)	(7.0)		
Teachers' competence in using the internet.	f	5	7	5	13	13	2.49	0.099
	%	(12)	(16)	(12)	(30)	(30)		

According to Table 4.2 above, the researcher identified ten (10) item statements in determining the existing levels of ICT knowledge and skills acquired by technical education teachers in the study area of which the results were analyzed and interpreted thus:

Awareness of ICT facilities

Table 4.2 reveals that technical education teachers in Yobe state are aware of ICT facilities. 21% of them strongly agreed, 60% agreed, 2% undecided, 12% disagreed and 5% strongly disagreed with the statement. The weighted average 3.81 which is within the range of 4.5 to 3.5 indicate that the respondents agreed teachers are aware of ICT facilities, their responses are statistically significant and their opinion are of high confidence. The significant value 0.000 level which is less than alpha of 0.05($p<0.05$) means that the responses on this statement

are not statistically significant which means the null hypothesis is rejected. And the opinions of the respondents on this statement were accepted which is statistically significant.

Using ICTs in the classroom

Regarding using ICTs in the classroom, it was revealed that 12% of the respondents strongly agreed, 14% agreed 12% uncertain, 30% disagreed and 33% strongly disagreed with the statement. The weighted average 2.42 is within the range of 2.5 to 1.5 which indicate that the respondents disagreed with the statement that is to say teachers are not using ICTs in the class room and their opinions are of low confidence level. The significant values 0.051 level which is greater than alpha value of 0.05($p>0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is accepted. And that the opinions of the respondents on this statement were rejected which means technical education teachers don't use ICTs in their classrooms. Their responses are not statistically significant.

Basic knowledge of computer operations

From Table 4.2 it was depicted that technical education teachers have the basic knowledge of computer operations, 26% of them strongly agreed, 49% agreed, 2% uncertain, 14% disagree and 9% strongly disagreed. The weighted average 3.67 is within the range of 4.5 to 3.5 which indicate that the respondents agreed teachers have the basic knowledge of computer operations and their responses were statistically significant. The significant value 0.000 level which is less than alpha of 0.05($p<0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is rejected. And the opinions of the respondents on this statement were accepted which is statistically significant.

Provision of personal computer for daily educational activities by government

Regarding the provision of personal computer for daily educational activities by government, the table above reveals that 12% of the respondents strongly disagreed, 16% agreed, 12% uncertain, 28% disagreed and 32% strongly disagreed with the statement. The weighted average 2.47 is within the range of 2.5 to 1.5 which indicate that the respondents disagreed and their responses are statistically insignificant. However, the significant value 0.090 level is greater than alpha value of 0.05($p>0.05$) which means that the responses on this statement are not statistically significant which means the null hypothesis is accepted. And that the opinions of the respondents on this statement were rejected which means technical education teachers are not provided with personal computer for their daily educational activities by the government.

Training programs for increase awareness about the value of ICT learning

Table 4.2 shows that training programs were organized to increase awareness about the value of ICT learning, 19% of the respondents strongly agreed, 32% agreed, 12% undecided, 23% disagreed and 14% strongly disagreed with the statement. The weighted average 3.19 is within the range of 3.5 to 2.5 that is; the opinions were uncertain, however the significant value 0.203 level is greater than alpha value of 0.05($p>0.05$) which means that the responses on this statement are not statistically significant which means the null hypothesis is accepted and that the opinions of the respondents on this statement were rejected which means training programs were not organized for increase awareness about the value of ICT learning for technical education teachers.

Using online resources/materials to plan lesson presentation

For the opinions of the respondents on the statement that technical education teachers are using online resources/materials to plan their lesson presentation, 16% of them strongly agreed, 51% agreed, 12% uncertain, 19% disagreed and 2% strongly disagreed. The weighted average 3.60 is within the range of 4.5 to 3.5 which indicate that the respondents agreed teachers are using online resources/ materials to plan their lesson presentation and their responses were statistically significant. The significant value 0.000 level which is less than alpha of 0.05($p<0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is rejected and the opinions of the respondents on this statement were accepted which is statistically significant.

Using overhead transparency projector or film strip projector in lesson presentation

Regarding the opinions of the respondents on teachers' using overhead transparency projectors or film strip projectors during lesson presentation, 12% of them strongly agreed, 16% agreed, 12%undecided, 25% disagreed and 35% strongly disagreed with the statement. The weighted average 2.44 is within the range of 2.5 to 1.5, indicate that respondents disagreed, that means teachers are not using overhead transparency projector or film strip projector during their lesson presentation. The significant value 0.203 level is greater than alpha value of 0.05($p>0.05$) which means that the responses on this statement are not statistically significant which means the null hypothesis is accepted. And that the opinions of the respondents on this statement were rejected which is statistically insignificant.

Using computers to keep records of student progress

Regarding the teachers' use of computers to keep records of student progress, 11% of them strongly agreed, 25% agreed, 11% undecided, 37% disagreed and 14% strongly disagreed

with the statement. The weighted average 2.84 is within the range of 3.5 to 2.5, which indicate that respondents are uncertain, however the significant value 0.028 level is less than alpha of 0.05($p<0.05$) which means that the responses on this statement are not statistically significant which means the null hypothesis is rejected. And the opinions of the respondents regarding teachers' use of computers to keep records of student progress were accepted which is statistically significant.

Access to internet facilities in school

Table 4.2 depicted that technical education teachers have access to internet facilities in their schools, 28% of the respondents strongly agreed, 42% agreed, 7% uncertain, 16% disagreed and 7% strongly disagreed with the statement. The weighted average 3.67 is within the range of 4.5 to 3.5 which indicate that the respondents agreed teachers are having access to internet facilities in their schools. The significant value 0.001 level is less than alpha of 0.05($p<0.05$) which means the responses on this statement are not statistically significant which means the null hypothesis is rejected. And the opinions of the respondents regarding teachers' access to internet facilities in their schools is accepted which is statistically significant.

Teachers' competence in using the internet

Regarding the last item statement from the table above; Teachers' competence in using the internet, 12% of the respondents strongly agreed, 16% agreed, 12% uncertain, 30% disagreed and 30% strongly disagreed with the statement. The weighted average 2.49 is within the range of 2.5 to 1.5 which indicate that the respondents disagreed that teachers are technically competent in using the internet. The significant value 0.099 level is greater than alpha of 0.05($p<0.05$) which means the responses on this statement are statistically significant which

means the null hypothesis is accepted. And the opinions of the respondents regarding teachers' competence in using the internet is rejected which is statistically insignificant.

4.2.2 Deficiencies observed in ICT knowledge and skills of technical education teachers in Yobe state

The table 4.3 below shows the analysis for deficiencies observed in ICT knowledge and skills of the technical education teachers in Yobe state. The title columns represent the item statement, five point scale and its corresponding values where strongly agree (SA) = 5, Agree (A) = 4, undecided (U) = 3, disagree (D) = 2, strongly disagree (SD) = 1, weighted average (W.A) and the (s-value) represent the Chi square test respectively. The figures in the parenthesis indicate percentages and f represent the frequency.

Table 4.3: *Analysis of Deficiencies observed in ICT knowledge and Skills of Technical Education Teachers*

Item Statement		5(SA)	4(A)	3(U)	2(D)	1(SD)	W.A	S-value
Lack of accessibility to computers for academic activities.	f	10	7	17	9	0	2.42	0.152
	%	(23)	(16)	(40)	(21)	(0)		
Lack of comfortability in using ICT facilities for teaching.	f	5	6	6	14	12	2.49	0.099
	%	(12)	(14)	(14)	(33)	(28)		
Poor background knowledge of ICTs and their uses in teaching and learning.	f	12	16	3	10	2	3.60	0.002
	%	(28)	(37)	(7)	(23)	(5)		
Lack of formal training on how to use modern technologies for teaching.	f	15	12	4	6	6	3.56	0.038
	%	(35)	(28)	(9)	(14)	(14)		
Lack of basic ICT management skills.	f	5	8	6	18	6	2.72	0.009
	%	(12)	(19)	(14)	(42)	(14)		
Need for lab assistant support when using ICTs in lesson presentation.	f	9	19	7	6	2	3.63	0.001
	%	(21)	(44)	(16)	(14)	(5)		
Lack of multimedia presentation skills.	f	0	14	6	15	8	2.60	0.141
	%	(0)	(33)	(14)	(35)	(19)		
Have difficulties in selecting the appropriate ICT facilities for lesson presentation.	f	6	5	5	14	13	2.47	0.051
	%	(14)	(12)	(12)	(33)	(30)		
Prefer traditional method of teaching than using ICTs.	f	11	16	4	10	2	3.56	0.005
	%	(26)	(37)	(9)	(23)	(5)		
ICT knowledge and skills not updated.	f	13	13	3	11	3	3.51	0.014
	%	(30)	(30)	(7)	(26)	(7.0)		

According to the Table 4.3 above, the researcher identified some areas where technical education teachers are deficient with regard to ICT knowledge and skills, the result were analyzed and interpreted.

Lack of accessibility to computers for academic activities

With regard to technical education teachers' lack of accessibility to computers for their academic activities Table 4.3 reveals that 23% of the respondents strongly agreed, 16% agreed, 40% uncertain, 21% disagreed and 0% strongly disagreed with the statement. The weighted average value 2.42 is within the range of 2.5 to 1.5 which means teachers have accessibility to computers for their academic activities. The significant values 0.152 level which is greater than alpha value of 0.05($p>0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is accepted. And that the opinions of the respondents on this statement is rejected which means technical education teachers have access to computers for their academic activities. The responses were not statistically significant.

Teachers' feel uncomfortable when using ICT facilities for teaching

Table 4.3 above reveals that 12% of the respondents strongly agreed, 14% agreed, 14% undecided, 33% disagreed and 28% strongly disagreed with the statement that teachers' feel uncomfortable when using ICT facilities for teaching. The weighted average value 2.49 is within the range of 2.5 to 1.5 which indicate that the respondents disagreed with the statement and their opinions is of low confidence. The significant value 0.099 level which is greater than alpha value of 0.05($p>0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is accepted. And that the opinions of

the respondents on this statement is rejected which means teachers feel comfortable when using ICT facilities for teaching and the responses were not statistically significant.

Poor background knowledge of ICTs and their uses in teaching and learning

Table 4.3 reveals that technical education teachers have poor background knowledge of ICTs and their uses in teaching and learning, 28% of the respondents strongly agreed, 37% agreed, 7% uncertain, 23% disagreed and 5% strongly disagreed with the statement. The weighted average value 3.60 is within the range of 4.5 to 3.5 which indicate that the respondents agreed technical education teachers have poor background knowledge of ICTs and their uses in teaching and learning. The responses are statistically significant and their opinion is of high confidence. The significant value 0.002 level which is less than alpha of 0.05($p<0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is rejected and the opinions of the respondents on this statement were accepted which is statistically significant.

Lack of formal training on how to use modern technologies for teaching

For lack of formal training on how to use modern technologies for teaching, Table 4.3 reveals 35% of the respondents strongly agreed, 28% agreed, 9% undecided, 14% disagreed and 14% strongly disagreed with the statement. The weighted average 3.56 is within the range of 4.5 to 3.5 which indicate that the respondents agreed with the statement. Their opinions is of high confidence and responses on this statement are statistically significant. The significant values 0.038 level which is less than alpha of 0.05($p<0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is rejected. And the opinions of the respondents on this statement were accepted which means teachers received no formal training on how to use modern technologies for teaching.

Lack of basic ICT management skills

For the opinion of respondents on lack of basic ICT management skills, Table 4.3 reveals 12% of the respondents strongly agreed, 19% agreed, 14% undecided, 42% disagreed and 14% strongly disagreed with the statement. The weighted average value 2.72 is within the range of 3.5 to 2.5 which indicate that the opinions were uncertain, however the significant value of 0.009 is less than alpha value of 0.05($p>0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is rejected. And the opinions of the respondents on teachers' lacking basic ICT management skills were accepted which is statistically significant.

Need for lab assistant support when using ICTs

Regarding the need for lab assistant support when using ICTs, it was revealed that 21% of the respondents strongly agreed, 44% agreed, 16% undecided, 14% disagreed and 5% strongly disagreed with the statement. The weighted average 3.63 is within the range of 4.5 to 3.5 which indicate that the respondents agreed teachers need lab assistant support when using ICTs, their responses were statistically significant and their opinion is of high confidence level. The significant values 0.001 level which is less than alpha of 0.05($p<0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is rejected. And the opinions of the respondents on this statement were accepted which is statistically significant.

Lack of multimedia presentation skills

Technical education teachers lack multimedia presentation skills, 33% of the respondents agreed, 14% undecided, 35% disagreed and 19% strongly disagreed with the statement. The weighted average 2.60 is within the range of 3.5 to 2.5 which indicate that the opinions of

respondents were uncertain, however the significant value 0.141 level is greater than the alpha of 0.05($p>0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is accepted. And that the opinions of the respondents on this statement were rejected which means teachers lack multimedia presentation skills. The responses are statistically insignificant and their opinion is of low confidence.

Difficulties in selecting the appropriate ICT facilities for lesson presentation

Table 4.3 reveals that teachers have difficulties in selecting the appropriate ICT facilities for lesson presentation, 14% of the respondents strongly agreed, 12% agreed, 12% undecided, 33% disagreed, and 30% strongly disagreed with the statement. The weighted average 2.47 is within the range of 2.5 to 1.5, indicate that the respondents disagreed with the statement and their opinions were statistically insignificant. The significant value 0.051 level is greater than the alpha of 0.05($p>0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is accepted. And that the opinions of the respondents on this statement were rejected which means teachers don't have difficulties when selecting the appropriate ICT facilities for lesson presentation. The responses are not statistically significant and their opinion is of low confidence.

Teachers prefer traditional method of teaching than using ICTs

It was depicted that teachers prefer traditional method of teaching than using ICTs, 26% of the respondents strongly agreed, 37% agreed, 9% undecided, 23% disagreed, and 5% strongly disagreed with the statement. The weighted average 3.56 is within the range of 4.5 to 3.5 which indicate that the respondents agreed teachers prefer traditional method of teaching than using ICTs. Their responses are statistically significant and their opinion is of high confidence. The significant values 0.005 level which is less than alpha of 0.05($p<0.05$) means

that the responses on this statement are not statistically significant which means the null hypothesis is rejected. And the opinions of the respondents on this statement were accepted which is statistically significant.

Teachers are not updating their ICT knowledge and skills

Regarding the statement; teachers are not updating their ICT knowledge and skills, table 4.3 reveal that 30% of the respondents strongly agreed, 30% agreed, 7% undecided, 26% disagreed and 7% strongly disagreed with the statement. The weighted average 3.51 is within the range of 4.5 to 3.5 which indicate that the respondents agreed teachers are not updating their ICT knowledge and skills, the responses were statistically significant. The significant value 0.014 level which is less than alpha of 0.05($p<0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is rejected and the opinions of the respondents on this statement were accepted which is statistically significant.

4.2.3 Possible strategies for enhancing ICT skills training of technical education teachers in Yobe state

Table 4.4 below shows the analysis for the possible strategies of enhancing ICT skills training of technical education teachers in Yobe state, using statement-wise category percentage, weighted average and Chi square test. The title columns represent the item statement, five point scale and its corresponding values where strongly agree (SA) = 5, Agree (A) = 4, undecided (U) = 3, disagree (D) = 2, strongly disagree (SD) = 1 respectively, weighted average (W.A) and s-value for Chi square test respectively. The figures in the parenthesis indicate percentages and f represent the frequency.

Table 4.4: *Analysis of possible Strategies for Enhancing ICT Skills Training of Technical Education Teachers*

Item Statement		5(SA)	4(A)	3(U)	2(D)	1(SD)	W.A	S-value
Provision of online learning activities.	F	8	17	0	9	9	3.14	0.179
	%	(18)	(40)	(0)	(21)	(21)		
Organization of workshops and conferences on ICTs.	F	10	24	2	4	3	3.79	0.001
	%	(23)	(56)	(5)	(9)	(7)		
Provision of adequate supply of ICT facilities.	F	14	21	2	4	2	3.95	0.000
	%	(32)	(49)	(5)	(9)	(5)		
Integration of ICT training in Teacher education programme.	F	14	23	1	4	1	4.05	0.000
	%	(33)	(54)	(2)	(9)	(2)		
Establishment of well-equipped audio-visual labs and ICT centers.	F	12	18	4	7	2	3.72	0.001
	%	(28)	(42)	(9)	(16)	(2)		
Sending Teachers for in-service training on ICT proficiency courses.	F	15	21	0	4	3	3.95	0.000
	%	(35)	(49)	(0)	(9)	(7.0)		
Yearly evaluation of teacher's performance on ICTs.	F	9	14	6	8	6	3.28	0.285
	%	(21)	(33)	(14)	(19)	(14)		
Creation of teacher's online forum for sharing information on ICTs.	F	0	12	6	15	10	2.47	0.264
	%	(0)	(28)	(14)	(35)	(23)		
Making ICT training free and compulsory.	F	12	15	6	8	2	3.63	0.017
	%	(28)	(35)	(14)	(18)	(5)		
Provision of technical and pedagogical support on modern instructions.	F	11	25	4	3	0	4.02	0.000
	%	(26)	(58)	(9)	(7)	(0)		

According to table 4.4 above, the researcher identified ten (10) item statement as the possible strategies of enhancing ICT skills training for technical education teachers in Yobe state, which is followed by the analyses and interpretation.

Provision of online learning activities

Table 4.4 reveals that provision of online learning activities in technical colleges will enhance ICT skills training of technical education teachers in the study area. 18% of the respondents strongly agreed, 40% agreed, 0% undecided, 21% disagreed and 21% strongly disagreed with the statement. The weighted average value 3.14 is within the range of 3.5 to 2.5 which indicate that the respondents are uncertain on whether the provision of online learning activities will

enhance their ICT skills training or not. Their responses are not statistically significant and their opinion is of low confidence. However, the significant value 0.179 level which is greater than alpha of 0.05($p>0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is accepted. And the opinions of the respondents on provision of online learning activities will enhance teachers' ICT skills training is rejected which is statistically not significant.

Organization of workshops and conferences on ICTs

It was depicted that organization of workshops and conferences on ICTs is another strategy of enhancing ICT skills training of technical education teachers. Table 4.4 above reveals that 23% of the respondents strongly agreed, 56% agreed, 5% undecided, 9% disagreed and 7% strongly disagreed with the statement. The weighted average 3.79 is within the range of 4.5 to 3.5 which indicate that respondents agreed with the statement, their responses are statistically significant and their opinion is of high confidence. The significant value 0.001 level which is less than alpha of 0.05($p<0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is rejected. And the opinions of the respondents the organization of workshops and conferences on ICTs will enhance ICT skills training of technical education teachers is accepted which is statistically significant.

Provision of adequate ICT facilities

Regarding the Provision of adequate ICT facilities, the table above reveals that 32% of the respondents strongly agreed, 49%agreed, 5% undecided, 9% disagreed and 5% strongly disagreed with the statement. The weighted average 3.95 is within the range of 4.5 to 3.5 which indicate that the respondents agreed with the statement, their responses are statistically significant and their opinion is of high confidence. The significant values 0.000 level which is

less than alpha of 0.05($p<0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is rejected and the opinions of the respondents regarding provision of adequate ICT facilities is accepted which is statistically significant.

Integration of ICT training in teacher education programme

With regard to integration of ICT training in teacher education programme, Table 4.4 reveals that 33% of the respondents strongly agreed that teachers integrate ICT training in teachers education programme, 54% agreed, 2% undecided, 9% disagreed and 2% strongly disagreed with the statement. The weighted average 4.05 is with the range of 4.5 to 3.5 which indicate that the respondents agreed that integration of ICT training in Teacher education programme will enhance technical education teacher's ICT training skills. Their responses are statistically significant and their opinion is of high confidence. The significant value 0.000 level which is less than alpha of 0.05($p<0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is rejected. And that the opinions of the respondents regarding integration of ICT training in teacher education programme is accepted which is statistically significant.

Establishment of well-equipped audio-visual labs and ICT centers

Table 4.4 shows that establishment of well-equipped audio-visual labs and ICT centers is one of the possible strategies of enhancing teachers ICT skills. 28% of the respondents strongly agreed, 42% agreed, 9% undecided, 16% disagreed and 2% strongly disagreed with the statement. The weighted average 3.72 is within the range of 4.5 to 3.5 which indicate that the respondents agreed with the statement. Their responses are statistically significant and their opinion is of high confidence. The significant value 0.001 level which is less than alpha of 0.05($p<0.05$) means that the responses on this statement are not statistically significant which

means the null hypothesis is rejected. And that the opinions of the respondents regarding establishment of well-equipped audio-visual labs and ICT centers will enhance teachers' ICT training skills is accepted which is statistically significant.

Sending teachers for in-service training on ICT proficiency courses,

Table 4.4 also shows that sending teachers for in-service training on ICT proficiency courses will enhance their ICT training skills. 35% of the respondents strongly agreed, 49% agreed, 9% disagreed and 7% strongly disagreed with the statement. The weighted average 3.95 is within the range of 4.5 to 3.5 which indicate that the respondents agreed that sending teachers for in-service training on ICT proficiency courses will enhance their ICT training skills. Their responses are statistically significant and their opinion is of high confidence. The significant values 0.000 level which is less than alpha of 0.05($p<0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is rejected. And that the opinions of the respondents on this statement is accepted which is statistically significant.

Yearly evaluation of teacher's performance on ICTs

According to Table 4.4, yearly evaluation of teacher's performance on ICTs will enhance their ICT training skills. 21% strongly of the respondents agreed, 33% agreed, 14% undecided, 19% disagreed and 14% strongly disagreed with the statement. The weighted average value 3.28 is within the range of 3.5 to 2.5 which indicate that the respondents are uncertain with the statement. Their responses are not statistically significant and their opinion is of low confidence. However the significant value 0.285 level which is greater than alpha of 0.05($p>0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is accepted. And that the opinions of the respondents on this statement is rejected which is not statistically significant.

Creation of teacher's online forum for sharing information on ICTs

With regard to the creation of teacher's online forum for sharing information on ICTs as a strategy for enhancing their ICT skills training, 0% of the respondents strongly agreed, 28% agreed, 14% undecided, 35% disagreed and 23% strongly disagreed with the statement. The weighted average value 2.47 is within the range of 2.5 to 1.5 which indicate that respondents disagreed with the statement. Their responses are not statistically insignificant and their opinion is of low confidence. The significant value 0.264 level which is greater than alpha of 0.05($p>0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is accepted. And that the opinions of the respondents on this statement is rejected which is not statistically significant.

Making ICT training free and compulsory

The findings in the Table 4.4 above indicate weighted average of confidence 3.63 that is 28% of the respondents strongly agreed, 35% agreed, 14% undecided, 18% disagreed and 5% strongly disagreed with the fact that making ICT training free and compulsory for teachers will enhance their ICT training skills. The responses are statistically significant and the opinions of the respondents are of high confidence. The significant value 0.017 level which is less than alpha of 0.05($p<0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is rejected. And that the opinions of the respondents on this statement were accepted which is statistically significant.

Provision of technical and pedagogical support on modern instructions

Provision of technical and pedagogical support on modern instructions is one of the possible strategies for enhancing teachers' ICT skills training. 26% of the respondents strongly agreed, 58% agreed, 9% undecided and 7% disagreed with the statement. The weighted average value

4.02 is within the range of 4.5 to 3.5 which indicate that the respondents agreed Provision of technical and pedagogical support on modern instructions will enhance technical education teacher's ICT training skills. Their responses are statistically significant and their opinion is of high confidence. The significant value 0.000 level which is less than alpha of 0.05($p<0.05$) means that the responses on this statement are not statistically significant which means the null hypothesis is rejected and that the opinions of the respondents on this statement is accepted which is statistically significant.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The aim of this study was to determine the ICT training needs of technical education teachers in Yobe State, Nigeria.

The objectives of this study were to find out;

iv. The existing level of ICT knowledge and skills acquire by the technical education teachers in Yobe state.

v. The deficiencies in ICT knowledge and skills of technical education teachers in Yobe state.

vi. The possible strategies for enhancing ICT skills training of the technical education teachers in Yobe state.

Through these objectives the existing level of ICT knowledge and skills acquired by technical education teachers, deficiencies in ICT knowledge and skills were observed and possible strategies of enhancing ICT skills training of technical education teachers were identified. Survey research design was adopted for the study and samples of 38 teachers and 9 administrators were drawn from the three technical colleges under study through the use of stratified sampling. Reviewed literature from different sources revealed that teachers' skills training and belief particularly in the use of modern technologies is very important for effective instructional delivery. Many independent studies shows that both teachers' perceptions about teaching and learning processes and their level of competence with ICT plays a significant role in determining how they implement ICT and how they motivate themselves to use ICT tools in the classroom (Gobbo & Girardi, 2001; Niederhauser &

Stoddart, 2001; Sime & Priestly, 2005). Likewise Higgins and Moseley (2001) argued that the most effective teachers not only had a positive attitude towards ICT but had good ICT skills and used computers as a part of a stimulating environment facilitating students' learning and collaboration. In addition, Ekanayake, S. Y., & Wishart, J. (2015), opine that: to harness the potentials of modern technologies, teachers need to be professionally developed through effective training to enhance their ICT-related knowledge and practice. Questionnaire designed based on five point scale was used in collecting data from the respondent through physical administration. The validity of the questionnaire was confirmed through the opinion of the supervisors and the collected data was analyzed with SPSS version 20. Software using statement-wise, category percentage, weighted average and chi square test for proper interpretation of result. This study found that, teachers' ICT skills level in the study area is still very low and this needs to be upgraded through various strategies identified to enable them manipulate the ICT equipment in teaching and learning process.

5.2 Discussions on findings

The findings of the study will be discussed, the effects it has on the teachers and students will be pinpointed as seen bellow:

5.21 Findings on existing level of ICT knowledge and skills acquired by technical education teachers

The findings of the study reveal that most of the technical education teachers are aware of ICT facilities, have basic knowledge of computer operations, they are using online resources/materials to plan lesson presentation and they have access to internet facilities in schools. However, they are not technically competent in using internet and are not using ICTs in the classroom. It was recorded also that, the teachers have not been receiving

personal computers from their employers which results in their inability to conduct practical classes with students. The study also revealed that teachers were not given training for awareness about the value of ICT learning, they didn't use overhead transparency or film strip projectors in lesson presentation and they didn't use computers to keep records of student progress.

The findings of this study also reveal that teachers are aware of ICT facilities even though they are not competent in using it for effective instructional delivery which necessitated the needs for training. This is in line with the finding of Ugwu & Ohimekpen, (2015) which show that teachers are familiar with ICT facilities such as internet, computer, laptop, and smart phones, overhead projectors. However, their level of awareness of other resources such as e-books, e-journal, and especially digital library, email facilities close circuit television, video conferencing and electronic device for marking multiple choice questions are still very low. Furthermore, according to Ololube, (2007) the existing curriculum designed for the training of pre-service teachers in Nigeria does not include the practical usage of ICT materials such as computers and their software, slides, overhead projectors etc.

It was also found that most teachers have the basic knowledge of computer operation but not skillful enough to manage educational software and other ICT facilities. To successfully achieve this, there is need for ICT skills capacity building which is in line with the view of Ololube, (2007), which read that teachers needed training not only in computer operation but also in the application of various kinds of educational software in teaching and learning. He further pointed out that, they need to learn how to use modern technologies into their classroom activities and school structure. In the same vein, Yusuf (2005) noted that; most of

the teachers in Federal Government Colleges do not have the needed skills and knowledge in the use of common computer software which results in their inability to manage the ICT resources.

The findings reported that most teachers use online resources/materials to prepare their learning contents. Most teachers use their mobile phones or the computers available in the laboratory to obtain online resources/materials so as to prepare the content of their lesson presentation but they are not using ICTs during lesson presentation. Demetriadis, et al. (2003) concluded in their research study: "Training efforts are generally welcomed by teachers but consistent support and extensive training is necessary in order for them to consider themselves able to integrate ICT in their teaching methodologies" (p. 35).

It was also found that teachers have access to internet facilities available in their schools but not much conversant to use the audiovisual materials and other equipment including films, slides, transparencies, projectors, globes, charts maps, bulletin boards, plus programmed materials. Many scholarly papers show that the success of the educational reform efforts depend not only on the ability of the government to supply all schools with ICT facilities, but also on the ability to make teachers possess adequate training skills and positive attitude toward ICT integration in schools (Mustafina, 2016).

Furthermore, the findings reported that majority of the technical education teachers are not technically competent in using the internet, even though they have active internet services unit. This problem is attributed to lack of training on how to effectively surf the net. According to; Ajayi, (2008), the effective utilization of ICT facilities in teaching and learning depends largely on availability of these facilities and teachers competence in using them.

It was also reported that teachers don't use ICTs in classroom due to lack of expertise in ICT which capacity building and skills training empowers. This is in line with the study conducted by Hassan & Shuaibu (2015), which reveals that: technical teachers lack the necessary competence for using technology in classroom instruction. Different reviewed sources stressed the importance of teachers' ICT skills training for effective use technologies in teaching and learning. As noted by Arthur, Adu-Manu, & Yeboah, (2013) Teachers need to go beyond traditional approaches and become acquainted with new techniques and methods in order to get a clear understanding of the educational functionality of various ICT facilities in their instructional practices.

The study found that there are no provisions of personal computers for teachers' daily educational activities by government. Provision of personal computers will motivate teachers to develop more interest in acquiring the necessary ICT training skills needed to use technologies in teaching and learning. (National Council for Educational Technology, 1994), observed that when individual teachers are given portable computers to develop their own personal ICT skills, they start to use them in their teaching as well. Frequent use of computers and developing a variety of computer related skills and techniques increases teachers' knowledge of the computer in general (Teo, 2008).

The study also reported that training programs were not organized for teachers to increase their awareness on the benefit of using ICTs in teaching and learning. This may affect the teachers' interest in developing ICT training skills. Ugwu & Ohimekpen, (2015) observed that; teachers in Yobe state are still inclined to traditional methods of teaching which do not produce sound students academically. Many research studies concluded that: teachers' with

limited ICT knowledge and skills feel anxious about using ICT in the classroom and thus not confident to use it in their teaching (Blamire and Kefala 2006).

It was reported that most of the teachers don't use overhead transparency projectors or film strip projectors in their lesson presentation. This evidently shows that teachers need ICT training skills to enable them use modern technologies in teaching and learning just as stated by Kaffash, Kargiban, Kargiban, & Ramezani, (2010); Many technological innovations fail because teachers do not have clear understanding of educational benefits behind the innovations they are expected to carry out, and have not had sufficient training and skills needed to use the technology.

Finally, the study reveals that teachers are not using computers to keep progress records of student. Even though computers are the easiest and reliable means of students' record keeping but due lack of technical knowhow, they don't use it. This clearly calls for training to get them familiarized and acquainted with the skills. This agreed with the statement thus: "it is more than a loss of potential learning and skills acquisition"; "it is also a waste of the resources used to procure technology in the first place" (Carlson, & Gadio, 2002).

5.22 Findings on deficiencies observed in ICT knowledge and skills of technical education teachers in Yobe state

The findings of this study found that most of the teachers in technical colleges don't use ICT facilities in teaching and learning process due to the fact that they are deficient of ICT skills training which make them incapable. Teachers were reported to have been deficient in the following areas: using ICT facilities for teaching, knowledge of ICTs and their uses in teaching and learning process, formal training on how to use modern technologies for teaching, using ICTs during lesson presentation; modern instructional approach and updated

ICT knowledge and skills. Whereas, it was found there was accessibility to computers for academic activities, and simplicity in selecting ICT facilities for lesson presentation. However, the respondents remain uncertain on basic ICT management skills and multimedia presentation skills.

Most of the technical education teachers have access to computers for their academic activities, even though they have not been given personal computers rather they relied heavily on computers available in the computer labs. As noted from the findings above, most teachers have the basic knowledge of computer operation which is in line with (Waite, 2004) which reported that although teachers in schools show great interest and motivation to learn about the potential of ICT, in practice, use of ICT is relatively low and it is focused on a narrow range of applications, with word processing being the predominant use package. Likewise Demetriadis, et al. (2003) concluded in their research study: Training efforts are generally appreciated by teachers but consistent support and extensive training is needed in order for them to consider themselves able to incorporate ICT in their teaching methodologies" (p. 35). Recent research findings also shows that introduction of ICT in education brought about numerous changes in schools (Howard, 2009).

The study reported that teachers feel uncomfortable when asked to use ICT facilities in teaching due to lack of skills just as mentioned by Yildirim, (2000) cited in Jimoyiannis & Komis, (2007), posited that; Lack of adequate training and experience is considered to be one of the main reason why teachers have negative attitudes toward integrating technologies in teaching and learning process. Blamire and Kefala (2006) many research studies concluded that: teachers' with limited ICT knowledge and skills feel anxious about using ICT in the classroom and thus not confident to use it in their teaching. Teachers must believe

that by using technology they are more likely to achieve a higher-level goal than traditional method used in teaching and learning process (Zhao and Cziko, 2001, p. 27).

The findings of this study reveal that technical education teachers have Poor background knowledge of ICTs and their uses in teaching and learning process. This agreed with the findings of Ugwu & Ohimekpen, (2015) who reported that the level of computer literacy of teachers at the secondary schools is very low in Yobe state. In a like manner, Balanskat, Blamire and Kefala (2006) expressed that poor ICT skills, low motivation and lack of confidence to use new technologies in teaching are the most important barriers to teachers' ICT usage for instructional purposes. This evidently shows the need for teachers to be trained on ICT so as to actively participate in using educational software and other facilities for teaching and learning process.

It was reported that most of the technical education teachers lack the formal training on how to use modern technologies for teaching. This is highly needed for effective ICT integration in our technical colleges just as recommended by Oladunjoye, and Audu, (2014) as cited in Ugwu & Ohimekpen, (2015) stating that government and all stakeholders should be organizing intensive seminars, conferences and workshops to educate and update the teachers' technical and pedagogical skills on ICTs for effective teaching and learning. In a like manner, Ekanayake, S. Y., & Wishart, J. (2015), stated that: to harness the potentials of modern technologies, teachers need to be professionally developed through effective training to enhance their ICT-related knowledge and practice. It would therefore mean that lack of training in digital material, pedagogic and didactic training on how to use technology in the classroom and particularly in technical education was truly an impediment in the integration of ICT in teaching and learning process (Ang'ondi, 2013).

The study also found that the respondents remain uncertain on teachers' basic knowledge of ICT management skills. This equally calls for ICT capacity building on the appropriate packages just as stated by Ololube, (2006), stating that teachers need training not only in computer literacy but also in the application of various kinds of educational software and other application packages design for teaching and learning process.

It was equally reported that most technical education teachers needed Lab assistant supports when using ICT facilities such that without any, they couldn't manage the facilities which indirectly necessitating them to be trained for better which is in line with views of people like; (Nwana, 2012; Christopher, 2011; Leonard, 2013; Ugwu & Ohimekpen, 2015), who suggested that government and the stakeholders concern should provide teachers with adequate computer training or ICT skills training resources for effective ICT integration in schools.

The study also reported that most technical education teachers need multimedia presentation skills to effectively handle the digital content of their lesson presentation. This evidently shows the need for ICT skills training to develop teachers' competence on how to use modern technologies for teaching and learning. Allen, Walker, & Morehead (1999), reported that; many teachers are incompetent in the technological skills needed for successful ICT integration in career and technical education curriculum due to lack of recent training in the professional field.

The study also found that most teachers have the idea of selecting or identifying the right ICT facilities for the right lesson presentation even though they don't have the necessary skills to use it. Existing research shows that effective teacher preparation is an important factor for successful integration and sustainability of ICT in education (Becta, 2004; Davis,

Preston, & Sahin, 2009; Hennessy et al., 2007; Jimoyiannis & Komis, 2007; Zhao & Bryant, 2006; Jimoyiannis, 2010). This stresses the need for teachers' professional development particularly in the use of modern technologies.

The study also reveals that the respondents agreed with high confidence that most of the technical education teachers are inclined to traditional method of teaching than using ICTs just as in line with the views of Ugwu & Ohimekpen, (2015) which observed that; teachers in Yobe state are still inclined to traditional methods of instruction which do not produce sound students academically.

The study also found that most of the technical education teachers are not updating their ICT knowledge and skills to enable them use educational software and other ICT facilities for teaching and learning just as observed by (UNESCO, 2009) that, the proportion of teaching staff adapting their skills to an ICT enabled instruction model was small in developing countries and the nature and intensity of ICT use in schools was very low. Likewise, Allen, Walker, & Morehead (1999), reported that; many teachers are incompetent in the technological skills needed for successful ICT integration in career and technical education curriculum due to the lack of recent training in the professional field.

5.23 Findings on possible strategies for enhancing ICT skills training of technical education teachers

The findings reveal that the respondents identified following as the possible strategies for enhancing technical education teachers' ICT skills training: Organization of workshops and conferences on ICT, provision of adequate ICT facilities in technical colleges, integration of ICT skills training in Teacher education programme, establishment of well-equipped audio-visual labs and ICT centers in technical colleges, sending teachers for in-service training on

ICT proficiency courses, making ICT skills training free and compulsory for technical education teachers, provision of technical and pedagogical support on modern instructions, but they remain uncertain on : Yearly evaluation of teacher's performance on ICTs and creation of teacher's online forum for sharing information on ICTs while they rejected the provision of online learning activities.

Organization of workshops and conferences on ICTs was reported to be one of the possible strategies for enhancing ICT skills training of technical education teachers in Yobe state. Just as recommended by Oladunjoye, and Audu, (2014) as cited in Ugwu & Ohimekpen, (2015), that government and other stakeholders should organize intensive seminars, conferences and workshops to educate and update their teachers' technical skills in the area of ICT so as to enhance their ICT skills. Likewise, Hassan & Shuaibu (2015) concluded in their study that: retraining programmes such as seminars and workshops should be provided to help teachers improve their capability toward the use of technology in teaching and learning process.

Provision of adequate ICT facilities in technical colleges was also reported to be one of the possible strategies for training and enhancing ICT skills of technical education teachers. According to Ajayi (2008), the effective utilization of ICT facilities in teaching and learning depends largely on the availability of these facilities and teachers competence in using them. In this connection, government and other stakeholders should ensure adequate supply of ICT facilities in technical college across the state so as to enhance teachers' ICT training skills.

Integration of ICT skills training in teacher education programme was found to be another strategy for enhancing technical education teachers ICT skills. The need to equip pre-service teachers with expertise for the integration of ICT in teaching and learning is now recognized

by almost all teacher education institutes (Lim, Chai, & Churchill, 2010). Likewise, Ololube, (2007) posited that; teacher's professional development supports the idea that the integration of ICT training in teacher education program is an important factor in teachers' job effectiveness and development. This helps to develop teachers' competence in technology particularly educational software and other ICT facilities for effective teaching and learning. Teo, (2008) suggested that: teacher educators should provide a conducive environment for pre-service teachers to experience success in using the computers, with a view to allowing pre-service teachers to developed their competence and confidence in using computers for teaching and learning.

The findings of the study reported that establishment of well-equipped audio-visual laboratories and ICT centers in technical colleges is one of the major strategy for enhancing technical education teachers ICT skills training. Mumcu & Usluel, (2010) posited that; to promote the use of technology throughout the process of education and instruction, well-equipped laboratories should be established in schools, and in-service trainings should be given to teachers and administrators. The availability and use of audiovisual materials and equipment including films, slides, transparencies, projectors, globes, charts, maps, bulletin boards, plus programmable materials, information retrieval systems, and instructional television in technical colleges will further accelerate teachers' competence in using ICT facilities for teaching and learning process.

Sending teachers for in-service training on ICT proficiency was considered as another strategy for enhancing their ICT training skills. This provide opportunities for teachers to acquire ICT training skills and develop their competence in using educational software and other ICT facilities for teaching and learning while they retain their job. Mumcu, & Usluel,

(2010) noted that; in-service trainings must focus on technology literacy and that the most significant objective of in-service training is to ensure the development of teachers' competence in the use of ICTs for effective integration in teaching and learning processes.

The findings of the study agreed that making ICT training free and compulsory for technical education teachers will enhance their ICT skills training which is in line with the view of Carlson, & Gadio, (2002) who reported that without training, teachers will not use technology and the result is that a lot of technology provided to schools will remain in the store gathering dust and becoming obsolete. This is more than a loss of potential learning and skills acquisition; it is also a waste of the resources used to procure technology in the first place.

The result of this study indicated that provision of technical and pedagogical support on modern instructions will enhance technical education teachers' ICT training skills. The above finding is supported by (Pelgrum, 2001; Sime, & Priestley, 2005), reported an international survey of teachers' perceived obstacles to using ICT, three major factors were identified: lack of ICT resources, lack of knowledge and skills and pedagogical difficulties to integrate technology in teaching and learning process.

However, majority of the respondent disagreed that Provision of online learning activities will enhanced the technical education teachers ICT skills training. At this stage, attention should be given to ICT skills training as well as motivating the teachers to develop more interest in accepting and using technology as a catalyst of modern instruction. Many scholarly papers show that the success of the educational reform efforts depend not only on the ability of the government to supply all schools with ICT, but also on the ability to make

teachers possess adequate training skills and positive attitude toward ICT integration (Mustafina, 2016).

The study found that yearly evaluation of teacher's performance on ICTs was not considered to be a strategy for enhancing their ICT training skills. This can be attributed to the fact that technical education teachers are not competent in using ICT facilities for teaching and learning and their level of ICT skills training is very low. Therefore, evaluation alone will not enhance their ICT training skills.

Creation of teacher's online forum for sharing information on ICTs was also found rejected as strategy for enhancing their ICT training skills. Teachers need to learn how to use the basic educational software and other application packages for effective teaching and learning.

5.3 Conclusion

The integration of information and communication technology (ICT) in technical education programs is a crucial process that requires an active and collaborative effort of all the stakeholders especially, the Yobe State government so as to establish a solid platform upon which the technical education learning process will run smoothly. The findings of this study indicate that the existing level of ICT knowledge and skills acquired by technical education teachers is very low, with word processing being predominantly used. The provision of ICT facilities in technical colleges alone will not quench the thirst of teachers' ICT skills training needs, rather it should be accompanied by strong technical and pedagogical support to enable teachers heavily infused technology in teaching and learning process. The study also found that technical education teachers are deficient with respect to ICT integration in teaching and learning process especially in handling the digital content of

their lesson. Teachers need technology related professional development to actively participate in the educational arena of the 21century. The study also reveals that the possible strategies for enhancing ICT skills training of technical education teachers in the study area is achieved through the followings: organization of workshops and conferences, establishment of standard computer laboratories, imposing ICT skills as an entry requirement for teachers and Provision of technically oriented LAB attendant. Therefore, government and all the stakeholders should ensure adequate supply of ICT facilities and provide extensive training to develop teachers' competence in the use of modern technologies and instructional techniques for effective ICT integration of in teaching and learning process.

5.4 Recommendations

Having identified the level of ICT skills acquired by technical education teachers, their deficiencies with respect to ICT knowledge and skills and the possible strategies for enhancing their ICT skills training, the following recommendations were made.

Government needs to pay more attention on efficient and intensive training for both teachers and school administrators to ensure the development of teachers' competence for effective utilization of ICT facilities in teaching and learning process. As part of the training, the ICT facilities in store such as laptops should be given to each and every teacher to facilitate skills acquisition and improvement in practice.

Government should provide adequate ICT facilities in technical colleges and ICT skills training should be made a continuous process as a means for constant update on teachers' ICT knowledge and skills so as to enable the presentation of digital content to the learners. However, training programs should develop the right attitudes and positive perceptions for teachers in using the ICTs meaningfully.

Workshops, seminars and conferences should be organized to facilitate the process of teachers' professional development. Making ICT skills training free and compulsory for technical education teachers should be considered as well as sending teachers for in-service training on ICT proficiency courses. Moreover, government should ensure the quality control of the process for effective ICT integration in teaching and learning

This study focused only on ICT skills training needs for teachers of technical education in government technical colleges of Yobe state. However, many studies reveals that ICT integration in teaching and learning process does not defend only on teachers' training skills. It defend on other factors such as availability of these facilities and teachers attitude toward using them. Therefore, these factors should be studied further. Further studies should also be carried out to ascertain the ICT skills training needs of all secondary school teachers in Yobe state so as to ensure the effective ICT integration in all secondary schools across the state.

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APPENDICES

Appendix A

UNIVERSITY ISLAMIQUE DE TECHNOLOGIE
ISLAMIC UNIVERSITY OF TECHNOLOGY
DHAKA, BANGLADESH
ORGANISATION OF ISLAMIC COOPORATION

To 05 June 2017
Government Science and Technical Colleges
Yobe state, Nigeria.

Sub : Supply of necessary information for M.Sc. in Technical Education student of Islamic University of Technology (IUT) for conducting research work.

Dear Sir,

Idris Muhammad Saban, Student of Master of Science in Technical Education (M.Sc.T.E) with specialization in electrical and electronic engineering of the Islamic University of Technology (IUT), Organization of Islamic Cooperation (OIC) is conducting research work as partial fulfillment of the requirements of his degree. He is conducting research on **"Training needs of information and communication technology for teachers of technical education in Yobe state, Nigeria."** For this research work, he needs data.

It will be highly appreciated if you could kindly extend your sincere co-operation by providing necessary data (information, documents, publications, bulletins or brochures) available in your organization to Idris Muhammad Saban. Let us assure you that the information provided would not be used for any other purpose except the research work and confidentiality of the documents will be maintained.

Thanking you in anticipation of your cooperation.

Yours sincerely,

Prof. Dr. Che Kum Clement
Head, TVE Department

Appendix B: Questionnaire

Meaning of ICT Facilities (in this research)

ICT facilities include radio, television, computers, overhead projectors, film strip projectors, optical fibres, fax machines, CD-Rom, internet, interactive white board, electronic notice board, slides, digital multimedia, video/VCD machine and so on.

Direction: Kindly complete this questionnaire by selecting your gender and ticking the appropriate alternative that reflects your opinion using the following scale:

[5] Strongly agree [4] Agree [3] Undecided [2] Disagree [1] Strongly disagree

Gender: Male [ ] Female [ ]

Section A

Research Question 1: What is the existing level of ICT knowledge and Skills acquire by the technical education teachers in Yobe state?

S/N	ITEM STATEMENT	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1	I am aware of ICT facilities in schools.					
2	I can teach using ICT facilities in the classroom.					
3	I have the basic knowledge of computer operations.					
4	Government has provided me with personal computer for my daily educational activities.					
5	Training programs are provided for teachers to increase their awareness about the value of ICT learning.					
6	I use online resources/materials to plan my lesson presentation.					
7	I am using Over Head Transparency Projector or film strip projector during my lesson presentation.					
8	I use computers to keep records of student progress.					

9	I have access to internet facilities in my school.					
10	I am technically competent in using the internet.					

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Section B.

Research Question 2: What are the deficiencies in ICT knowledge and skills of the Technical Education Teachers in Yobe state?

S/N	ITEM STATEMENT	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
11	I don't have access to computers for my academic activities					
12	=- don't feel comfortable when using ICT facilities for teaching in the classroom.					
13	I have poor background knowledge about ICTs and their uses in teaching and learning.					
14	I don't have formal training on how to use modern technologies for teaching.					
15	I don't have basic ICT management skills.					
16	I need lab assistant support when using ICTs in lesson presentation.					
17	I don't have multimedia presentation skills.					
18	I have difficulties in selecting the appropriate ICT facilities for my lesson presentation.					
19	I prefer traditional method of teaching than using ICTs for teaching and learning.					
20	I have not updated my ICT knowledge and skills.					

Section C.

Research Question 3: What are the possible strategies of enhancing ICT Skills Training of technical education Teachers in Yobe state?

S/N	ITEM STATEMENT	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
21	Provision of online learning activities in technical colleges.					
22	Organization of workshops and conferences on usefulness of ICT facilities for teaching and learning.					
23	Provision of adequate ICT facilities in technical colleges.					
24	Integration of ICT training in Teacher education programme.					
25	Establishment of well-equipped audio-visual labs and ICT centers in technical colleges.					
26	Sending Teachers for in-service training on ICT proficiency courses.					
27	Yearly evaluation of teacher's performance on the use of ICT facilities.					
28	Creation of teacher's online forum for sharing information on ICTs.					
29	Making ICT training free and compulsory for technical education Teachers.					
30	Provision of technical support on modern instruction.					