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Teacher's Opinion on Availability of E-learning Opportunities for TVET Program in Yobe State Tertiary Institution in Nigeria.

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The thesis titled "**Teacher's Opinion on availability of E-learning Opportunities in Yobe State Tertiary Institutions for TVET Programme**" submitted by**Abubakar Saleh,** Student No. **171031205** of Academic Year **2017-2019** has been found satisfactory and accepted as partial fulfillment of the requirement for the degree of Master of Science in Technical Education (MSc TE) with specialization in electrical and electronics engineering on November, 2019.

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This thesis is my original work and has not been presented for any award in any other University.

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DEDICATION

I dedicate this thesis to my beloved parent for their moral and financial support during my study period. May Almighty Allah (S.W.T) reward them abundantly Amen.

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List of Abbreviation of Technical Symbols and Terms

CAN	Campus Area Network.
CCTV	Close Circuit Television.
CD	Compact Disc
DVD	Video DigitalDisc OR Digital Versatile Disc
FCT (Tech)	Federal College of Education Technical.
IUT	Islamic University of Technology.
LMS	Learning Management System.
LAN	Local Area Network.
NEPAD	New partnership for African's Development.
NITP	National Information Technology Policy.
NPE	Nation Policy on Education.
OIC	Organization of Islamic Cooperation.
PAN	Personal Area Network.
PCs	Personal computer
PDAs	Digital Assistance.
SPSS	Special Package for Social Science.
S-VALUE	Significant Value.
TVE	Technical and Vocational Education.
TVET	Technical and Vocational Education and Training.
TETFund	Tertiary Education Trust Fund.
TV	Television.
ROMs	Read-Only Memory.

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ABSTRACT

Education systems in world today are undergoing shift in their delivery system to be able to accommodate shift demand in the life of people.ICT has greatly influenced the way institutions operate in researching and providing services to their audience. Although, the government is committed to implementing ICT in education, the process seems to be limited by a number of barriers. E-learning has been seen as an effective means of improving the quality of teaching and learning in TVET schools due toits various forms. This study aims at examine the opinion of teachers on the availability of e-learning opportunities for TVET program in Yobe state tertiary institutions. The study employs descriptive survey research design,the target population was all TVET teachers in Yobestate, and the sample size was 120 which were purposively selected from two TVET tertiary institutions. Three research questions guided the study. Data was collected using questionnaire, descriptive statistical analysis of mean, percentage, and standard deviation was used in analyzing the data. Finding revealed that basic computer literacy and competency among the teachers were available.However,finding shows that e-learning resources such hardware and software were not adequately available.Base on the finding of study, recommendations were made that, government should provide available resource to ensure effective implementation of e-learning in TVET institutions and also should release the necessary fund to enable TVET institutions to put in place necessary ICT infrastructures that will facilitate teaching and learning.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Over the past few decades, educational researchers have revealed that, the implementation of E-learning systems in educational system has brought a positive change in teaching and learning practice(Atsumbe, Raymond, & Duhu, 2012). The success of any new technological development (e-learning) implementation across an organization depend on numerous factors, including, the availability of technology resources and how teachers are eager or willing to incorporate technology within the student learning experience, especially in TVET program(ADELABU, ADU, & Adjogri, 2014).

E-learning is also becoming increasingly famous in tertiary education and this is evidenced by the use of computer and computer accessories by individual as indispensable means for skill and knowledge development (ADELABU et al., 2014). The advance of effective teaching methods to facilitate TVET in the use of technology resources are of great worry in Nigeria, nevertheless employment of modern opportunity such as e-learning is a relief. This demand for adopting technologies-base education is increasing exponentially especially Yobe State.

Though a great number of instructors are still using traditional method of teaching in developing countries, developed countries can be seen to have already adopted new technologies especially e-learning in their institution (Ifeakor & Okoli, 2010).With integration of technology in teaching, learners become more independent for solving their academic problem.

E-learning educational systems is receiving more emphases by present National Policy on Education (NPE) which understood that e-learning is a tool for achieving lifelong education, which should be the basic of nation’s education policy.

Thisenvisaged the development of e-teaching and e-learning educational programs in the country(Torruam, 2012).

Pirani (2004) stated that "for an institution to be able to adopt e-learning it must provide adequate and reliable technical infrastructure to support e-learning tools, instructors and students must possess the technical skills to use e-learning. Instructors must effectively incorporate e-learning in their course design. This has to be supported by relevant policy and legislature from government in order to merit wide acceptability. In Nigeria, this was achieved by the approval of the National Information Technology Policy (NITP) in March2001.

The collaboration between New partnership for African's Development (NEPAD) and Tertiary Education Trust Fund(TETFUND) has played a significant role in promoting E-learning in Nigeria by investing a huge amount money in establishment of E-learning equipment like e-libraries and micro-teaching laboratories in schools across the country (Adetokunbo, 2013).

Undoubting, information and communication technologies are the main factors influencing the global economy and producing rapid positive changes in the society. Which has led to the change in the way people interact, learn, teaches, communicate and do business. This development has given to rise to new educational needs and as well as teaching methods which teachers in Nigeria must not say no to be part of. This is possible when teachers have right awareness, attitude and accept the integration of modern technologies in to the teaching process.

Lawal (2006) said that "the contemporary traditional teachers tend to be negative in their perception and attitude toward the changes". This negative perception can be attributed much to lack of awareness about the ICT (E-learning) as a tool for teaching and learning. The awareness about the policies forms the central back bone of the utilization and productivity of a program. When an individual is aware of the guiding principles, he then cultivates the right attitude which will result in improving productivity.

According to Lawan (2006) also state that Teachers demand special attention because they have special needs and interest that must be addressed in order to make

them embrace the new technologies placed in the classroom. This is important because for effective use of ICT requires peculiar demands which they must be aware of and perceived well for efficient use. Among these demands are: the need has personal computer, access to internet services, how to integrate ICTs into the instructional process, and how to use technology to evaluate learning performances.

The Nigeria National policy on information Technology (2001) created some awareness through the various areas outline for competency in computer for educators at all levels of education. In recent years, there has been an attempt to equip schools with computer hardware and software. Lack of meaningful integration may be the result of absence of awareness or lack of confidence on the part of the teachers.

Though the NPE claim to having integrated technology in educational systems, there has been no research carried out to investigate this fact from the teachers' perspective.

Aligned with this background, the researcher was motivated to examine the teacher's opinion on the availability of e-learning opportunity for TVET program in Yobe State tertiary institutions of Nigeria.

1.2 Statement of the problem:

The TVET education system in Nigeria is well known to provide technical and vocational education to develop technological manpower of the nation's economy. This system needs to be modernized and simplified through integration of modern teaching and learning approaches(e-learning).Studyindicate that E-learning opportunities are consider to help teachers and students upon enhancing their effectiveness of teaching and learning process especially onto perform new attitude, skills,knowledge and value. Multimedia technology if fully available and to utilized in TVET education process will bring a positive impact to the growth and development of TVET system which in turn result in human development in a society and the world in general(Effiong, 2005).

E-learning opportunity enhances higher education in a numerous ways ranging from efficient storing/sorting of information, easy and speedy ways of communication, offering better access to relevant articles, feeding teachers and students with first-hand

teaching and learning materials, decrease of information quantity towards a higher quality and superior arrangement (ADELABU et al., 2014).With the above advantages that come with using E-learning opportunity in teaching and learning, availability of e-learning materials could pose a major risk without any constraint and reduction of quality of the course content. E-learning opportunity and utilization are useful to the teaching profession. This is mainly true for teachers in technological education where they are anticipated to employ various instructional and learning resources to enhance the effectiveness of their teaching and to promote student's learning outcomes and hands-on skills.

E-learning materials are key aspects of instructional and learning process in e-class. In spite of this, it is not certain if these materials are available for use in Nigerian tertiary institutions especially Yobe State. It is in view of these, this study aims to find out the teacher's perceptions on the availability of E-learning opportunity for effective teaching in technical and vocational education and training (TVET) program in Yobe state tertiary institution.

1.3 General objectives:

The objective of the study was aimed at examining the extent at which TVET teachers at Yobe state perceived and recognized the availability of E-learning opportunities for TVET program in Nigeria.

1.4 Specific objectives:

The study specifically aimed to identify:

I. Teacher's opinion on availability of e-learning hardware for TVET programme in tertiary institutions in Yobe State of Nigeria.
II. Teacher's opinion on availability and use of e-learning software for TVET programme in tertiary institutions in Yobe State of Nigeria.
III. Teacher's computer literacy and competency.

1.5 Research questions:

1. What is the opinion of teachers on the availability of e-learning hardware for TVETprogramme in tertiary institutions in Yobe State of Nigeria?
2. What is the opinion of teachers on the availability of software for TVET programme in tertiary institutions in Yobe State of Nigeria?
3. What is the level of teacher's computer literacy competency?

1.7 Significance of the Study:

Examine the teacher's opinion on e-learning opportunity in Yobe state tertiary institution, will bring awareness to government and stakeholder about current situation of technological advancement within institutions in respect of e-learning and suggest others strategies if needed for its enhancement. It will also feed others organisation like tertiary education trust fund (TETFUND) and new partnership for African development (NEPAD) with information about gravity of the role they played toward promoting of e-learning in Nigerian tertiary institutions. It is also expected that the result of this study will enable the government appraise itself on the success or failure of money,time,and effort which invested in TVET tertiary institutions for the use ICT in educational system of the state. Nevertheless, schools and teachers will belightened about necessary e-learning tools, resources, basic skills and competence. Furthermore, it will provide a significant contribution to the literature of e-learning especially in Nigerian context.

1.8 Scope of the study:

The study focuses on the teacher's opinion on availability of e-learning hardware and software inYobe state tertiary institutions. It also meant to determine the existing level of teacher's computer literacy and competency in the study area.

1.9Organization of the study

This study consists 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 context of e-learning, context of technical and vocational education and training (TVET), and e-learning in context of technical and vocational education and training (TVET), e-learning technological tools, teacher use of technological tools andteacher's basic computer Literacy and competency.Chapter three covers research methodology. Chapter four covers the data analysis and description of findings based on questionnaire return rate.Demographiccharacteristic. Chapter five provides the summary of findings, discussions, conclusion, implication of the study and recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

Globally, the world is paying more attention on E-learning technology due to its possibility to transform superior learning opportunities to a large audience, preparing a new generation of teachers and learners, promoting the existing teaching force to use 21st century pedagogies for teaching and learning as well as supporting the economic and educational growth (Oye, Salleh, & Iahad, 2011). Therefore, Nigerian TVET educational institutions and educators should adopt E-learning as pedagogical tools and attempt to widen the burning desire to catch up with the rest of the world to convey instructions in this area in order to become successful in economic growth and better learning society.

The NPE defined e-teaching and e-learning educational system as a form of teaching and learning in which learners can access first-hand information through web enabled technology to increase their skills of inquiry irrespectively of time and distance between the teachers and students. It involves the learners using internet or electronics media to provide/improve access to good education wherever they may be (Torruam, 2012). Therefore, deployment of Information and Communication Technologies (ICTs) in teaching and learning (e-learning) of TVET courses is paramount and should be given priority (Bappa-Aliyu, 2012).

E-learning is divided into two categories with regard to the type of electronic media used: online and offline, or web-based and computer-based. The first case involves learning on devices that have connection to the Internet while second case refers to media that can be played back on devices without an Internet connection(Ademuyiwa& Longe, 2017).

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

- Context of E-learning.
- Context of Vocational and Technical Education and Training (TVET).
- E-learning in context of TVET.
- Teacher's Computer Basic Literacy and Competency.
- Teachers Use of Technological tool in Teaching.
- E-learning Technological tool.

2.1 Context of E-learning:

E-Learning however, is the use of electronics technology such as mobile phone, computer, radios, television and others to improve learning and teaching activities in educational institutions. E-learning is a unifying term used to describe the fields of online learning, web-based training, and technology delivered instructions. In e-Learning environment, learners can interact with learning materials, their instructors and other learners from various locations and often at various times using network technologies. Its nature offers significant flexibility as to when and how learning occurs and can include independent, facilitated, or collaborative approaches to learning(Ademuyiwa& Longe, 2017).

E-learning also hold up pedagogical practice that provide learning environments that are more learners–centered, knowledge–centered, assessment–centered and community-centered which is different from the traditional learning that has been known to be teacher-centered. With well prepared and appropriate implementation of e-learning, could led to enhancing of students' skills necessary for communication, problem solving and long learning (ADELABU et al., 2014).

2.2 Contexts of technical and vocational education and training (TVET):

Technical and Vocational Education and Training is crucial aspect of the Nigerian educational system. It is different from the other form of education, based on the fact thatTVETis aimed at providing and acquiring of practical and applied skills as well as

basic scientific knowledge for the growth and development of country and the world in large. Its major aims is to become an instrument of self-employment to individual who havebeen empowered not only by subject matter inhibition but through experimental learning professed as real life solution to the problems, such as elevating socio-economic status by alleviating the level of poverty, self-dependent, reduction of unemployment and skill acquisition among others. And make his initiative in labour market (Klein-Collin, 2012).

Thus, TVET can be seen not just as a knowledge or fact but also involves the practice and comprehensive command of peculiar ability/capability after training in solving human problems. Nevertheless, Technical and Vocational Education and Training (TVET) was introduced in Nigeria with the aims of giving technical knowledge,attitude, and skills for economic, agriculture, industrial and commercial development of the nation (Okoye & Michael, 2015).

2.3 E-learning in the context of TVET:

ICT is gaining the popularity among educational organizations and their stakeholders due its flexibility, simplicity, and affordability in all area of human endeavor.TVE in this context is not an exception too; the use of ICTs to promote employability skills is highly recommended (Saud, et-al, 2011). However, the use of Information and Communication Technologies (ICTs) toward the preparation of TVE graduates; and in their mode of training should also incorporate the use of e-learning in teaching learning process. The interaction of trainees, students and teachers/instructors virtually without physical contact can be made easily by e-learning (ICT based learning environment). E-learning or web-based instruction as the name implies refers to the use of electronic technology and media to deliver, support and enhance teaching, learning and assessment. It includes elements of communication within and between communities of learners and teachers, as well as provision of online content, which may be locally generated or developed elsewhere.

Due to the flexibility and easy accessing of first-hand information of e-learning educational systems, lecturer/teachers can easily develop and design the course

content which allows both the students and lecturer to download and upload the course materials(interaction) and of course the materials dealing practical (hands-on) activities; such as machining, measurement and so on. E-learning has found application in hands-on activities delivery in engineering education (Gupta, 2002).

The use of interactive electronic media has found rewarding in the recent studies on vocational and technical education students and even seen as a solution to shortage of staff and materials in the field (Karahocaa, et-al, 2010). E-learning integration in engineering and technical education to help problem based, will give learners some kind of support and encouragement at ease to take part into learning activities, to work independently and develop new ideas on how to solve problem at hands effectively (Bappa-Aliyu, 2012).

It was further identified that some strategies for the effective integration of e-learning in problem based learning (PBL) for engineering and technical education are as follows: -

(1) The use of online assignment tool;
(2) The use of both synchronous communication tools (such as chatting) and asynchronous communications tools (such as forum and journal);
(3) lecturer-initiated communication for the PBL case on the e-learning platform,
(4) Frequent availability of lecturers online for facilitation, and
(5) The use of online journal for reflection and assessment.

2.4 E-learning technological tools:

Technology tools including computer network, software and hardware are required for internet connection. According to Ifueko (2011) stated that "E-learning is the new practice of teaching and learning which involve the use of computer via internet". It involves delivery of structured instructional material from a repository to students. It is often used in a personal computer and it can be delivered by other communications technologies. Communication technologies include all media used in transmitting audio, video, data or multimedia such as cable satellite ,fiber optic, wireless(radio, infra-red Bluetooth, wifi).Network technologies which include Personal

Area Network (PAN) Campus Area Network (CAN), intranets, extranets, Local Area Networks (LANs), Wide Area Networks (WANs) and the internet. Computer technologies include all removable media such as optical discs, disks, flash memories, video books, multimedia projectors, interactive electronic boards, and personal computers (PCs). Mobile technologies such as mobile phones, Personal Digital Assistants (PDAs), palmtops, etc. which have information as their material object are also used in e-learning(ADELABU et al., 2014).

2.5 Teacher's computer basic literacy and competency:

Information and communication technology (ICT) competency is defined by marcial (2014), as teachers' knowledge, skills and ability to use ICT tools (e.g. computer) effectively and efficiently in teaching and learning. In promoting the use of ICT (e-learning) in education, teachers' computer competency should be considered as one of the foundations of achieving the desired goal of using ICT in teaching and learning.

Research studies have included computer competency as one the factors that influences the implementation and use of ICT (E-learning) in education. A person who is computer competent is assumed to have high knowledge on how to operate any ICT material very well. As a result of the origination of information and communication technologies (ICT), the need for computer competency has emerged as a priority for individuals who wish to use information and communication technology (ICT), to perform various tasks.

According to moila&makgato (2014), the use of ICT (E-learning) in education is simply the use of ICT tools, which includes browsing of internet in search of information for lesson preparation, emailing to communicate with students and fellow teachers, downloading and storing of data for educational purposes, using PowerPoint to prepare presentation, using interactive whiteboards and many more activities. Without adequate skills, knowledge and mastery of how to perform the above mentioned tasks, using computer will difficult(Bamigboye, Bankole, Ajiboye, & George, 2013). Therefore, for a successful integration of ICT (E-learning) into

education, in Yobe State tertiary institutions of Nigeria, to be achieved, the need for teachers' computer competency should be emphasized.

2.6 Teacher's use of technological tools in teaching:

The use of ICT in education means performing of academic and non-academic activities using ICT, (okolije, 2016). The use of ICT in teaching in this study involves the use of interactive white boards, computers, internet, and all ICT materials that can be used in teaching and learning. In education, the use of ICT is becoming popular and many teachers now use multimedia projectors, computers, PowerPoint and CD-ROM, and to enhance teaching and learning. The use of ICT in teaching is something that should be considered as a paramount because of its great benefits(Al-Zaidiyeen, Mei, & Fook, 2010).

Studies done on the use of ICT in education have shown that ICT usage help to facilitate teaching and enable students to learn better. Teachers' major benefits of the use of ICT in teaching include better management, storage, and maintenance of work. There have been proofs from previous research studies that the use of ICT in education helps students learn and teachers to teach more effectively. Studies have also shown that the use of ICT in teaching is related to teachers' attitudes' towards ICT, teachers' ICT competency and teachers' accessibility of ICT.

According to yunus, salehi and chenzi (2012), the use of ICT in teaching, supplies teaching and learning aid to teachers and learners. Another study by yunus et al (2013) also stated that the use of e-learning encourages cooperative learning, enhances teaching and learning process, and encourages communication though websites, blogs and social networks. There is a need for the use of ICT in teaching in Nigerian schools, for effective instructional delivery. According to abdul-reheem (2011) unavailability and insufficiency of instructional materials are the main causes of the non-productive nature of Nigerian school system and poor academic performances of students in Nigerian schools. The use of ICT as an instructional delivery in Nigerian schools has the potentials to enhance teaching and learning.

The researcher went further to say that instructional materials are important and notable implements needed for teaching and learning to promote the competency of teachers and enhance students' performance.

Researchers such as yunus, et al (2013), have claimed that using ICT (e-learning) in education improves teachers' instructional process and facilitates students' learning process.

According to (onwuagboke, et al 2015), there is a vast belief that information and communication technology (ICT) has the ability to changes teaching and learning processes from greatly teacher-piloted to student-centered. According to asubiojo&ajayi (2017) the implementation and use of e-learning in education will also improve Nigeria's education system, by enhancing teachers' instructional effectiveness.

CHAPTER THREE

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

The design of this study is survey research design, which involves the assessment of public opinion using questionnaire and sampling method(Alio, 2008; Okoye & Okwelle, 2013).Since the study is survey, the questionnaire was used to collect data from respondents. The questionnaire used was design in such a way that the respondents will be able to indicate or choose their perception base on the Likert type response set. Questionnaires to be the main instrument in this study because these instruments are easily administered and researchers save time during data collection.

3.2 Area of the study

Yobe state has three (3) zones: zone A, B and C. Zone A with two (2) tertiary institutions one (1) being Federal and other being State owned. Zone B has only one tertiary institution under federal government while Zone C does not have any tertiary institution. Therefore, in order to enrich the researcher's data, two (2) institutions were selected one (1) from state institution from zone A and federal institutions from zone B.

3.3 Populations

A population consisted of TVET teachers who are currently teaching in the selected Yobe State tertiary institutions. Population of 120 lecturers who served as the sample for the study was selected from the two (2) selected tertiary institutions.

3.4 Sampling and sampling technique

As the intent of the researcher is in finding TVET teacher's perception of availability of E-learning opportunities, a purposive sampling technique was deployed for the selection of TVET institutions. This was highly recommended methodology for selecting a subjective sampling. For selecting the participants, stratified sampling technique was used since the respondents of the study are of two (2) differences level of teaching experience (more and less experience). Sixty (60) respondents were selected from each sampled institution (60*2 =120), as shown in the table 3.1.

Table 3. 1: the sample distribution among the selected institutions

numbers	Institution	Teachers (respondents)
1	College of Education(TECH)	Sixty (60)
2	Polytechnic	Sixty(60)

3.5 Instruments for data collection

The instrument used for data collection was questionnaire. Questionnaire is one of the primary instruments for data collection in quantitative research (Asembo, 2003). The questionnaire developed was divided into two (2) sections, namely Section A, and Section B. In Section A, a questionnaire containing demographic information of the respondents as Name of the institution, Department, Years of service, Present designation gender, and age. While section B contains the items related to the teacher's opinion on the availability of e-learning opportunities.

This questionnaire was constructed using a Likert scale typeof 1 to 5. Likert scale type was chosen to reduce measurement error. In the questionnaire also, it contains five levels, representing Highly Not Available, Not Available, Neutral, Available and Highly Available and also Strongly disagree, Disagree, Neutral, Agree and Strongly agree were used.

Examples Likert scale used is shown in Table 3.2and 3.3.

Table 3. 2: The level of Agreements and its scale

Numbers	Level of Agreements	scale
1	Strongly disagree,	1
2	, Disagree	2
3	Neutral,	3
4	Agree	4
5	Strongly agree	5

Table 3. 3: The level of Availability and its scale.

Numbers	Level of Availability	Scale
1	Highly Not Available	1
2	Not Available	2
3	Neutral	3
4	Available	4
5	Highly Available	5

3.6 Method of data collection

Data was collected using questionnaires. The questionnaire used was adapted from a survey conducted from several researches such as (ADELABU, ADU, &Adjogri, 2014; Okwudili,O.P. 2013). Some modifications were made to meet the objectives of this study. The questionnaire comprisedof 32 items and is divided into 2 sections, section,A (demographic) and, section B (research questions about the e-learning opportunities). Data was collected through structured questionnaire with

closed-ended questions. The distribution and collection of the instrument was done by two (2) professional research assistant in Nigeria who hadprior research experience under the directive of the researcher. Among the 120 copies of the questionnaire distributed, 100 were duly returned (83%) and therefore qualified for data analysis.

3.7 Validation of the instrument

The questionnaire for this study was first validated by researcher colleagues and then later sent for further scrutiny and validation to two (2) lecturers from the department of technical and vocational education in Islamic university of technology (IUT). Their comments and suggestions were used in modifying and improving the questionnaire.

3.8 Reliability of the instrument

A pilot test was conducted by administering the questionnaire to five (5) teachers in Federal College of Education (Tech) PotiskumYobe state Nigeria in order to establish the reliability (the measure of stability) of the instrument items. The reliability of the instrument was established using cronbach Alpha statistics method for determine the coefficient index value which yielded 0.896. Data were analyzed using the Statistical Package for Social Science (SPSS) version 12.0. Descriptive statistics were used as percentage, mean, standarddeviation and frequency.

3.9 Data Analysis:

Based on the nature of this study, the researcher used descriptive statistics to describe the identified characteristics. During data analysis, the researcher adopted the use of percentages, modes, medians, means, frequencies and standard deviations to clarify the relationship of different variables. Separate tables were drawn for different sections of the questionnaires and followed with statement-wiseinterpretation. In order to ensure accuracy of data analysis, SPSS version 20 software was used. Mean of each test parameter (Availability of e-learning hardware, Availability and the use of e-learning software, and Teacher’s computer literacy and competency) was

determined and justified.As five Likert scale type was used in the questionnaire, the researcher adopted Davis's (1971) weighted scale to interpret the level of agreement as shown in table 3.4.

Table 3. 4: Mean and its Interpretations for the level of Agreement

Mean	Mean Interpretation
Mean of 4.20-5.0	Highly Available
Mean of 3.40-4.19	Available
Mean of 2.60-3.39	Moderately Available
Mean of 1.80-2.59	Not available

The tables 3.4 above shows the interpretation of mean valuewhereby mean of4.20-5.0 and 3.40-4.19 implies that the respondents agreed that the items areavailable and their opinions have superior confidence, whereas mean of 2.60-3.39 indicates that the respondents agreed that the items are moderately available and their opinion haveless confidence. Lastly a mean below 2.60, indicates that the respondents were agreed that the items are not available.

The researcher also calculated relational statistics to determine the relationship among the characteristics and teacher opinion.

The Pearson correlation coefficients, a measure of relationship among rank orders, was used to measure the teacher's software use and demographic; and also, with availability of e- learning opportunities.The magnitude of relationship between characteristics was defined according to Davis (1971)the scale was defined in the table 3.6(Saud, 2004).

Table 3. 5: Magnitude of relationship

Coefficient	Description of Relationship
1.0	Perfect
0.70 Or greater	Very strong association
0.50 to 0.69	Substantial associations
0.30 to 0.49	Moderate association
0.10 to 0.29	Low association
0.01 to 0.09	Negligible association

3.10 Ethical consideration

The method of selecting the participants in the area of the study got a formal approval from each head of the tertiary institutions concerned. The personal information and responses from respondents were treated confidentially and used only for this study.

3.11 Definition of term:

E-learning: E-learning can be defined as using network technologies to create, foster, deliver and facilitate learning, anytime and anywhere.

EXTRANET: An extranet is a private network that uses Internet technology and the public telecommunication system to securely share part of a business's information or operations with suppliers, vendors, partners, customers, or other businesses.

ICTs: This is an acronym for Information and Communication Technology. It refers to technologies including any computer-based resources, networked and stands 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.

INTRANET: An intranet is a private network accessible only to an organization's staff. Often, a wide range of information and services are available on an organization's internal intranet that is unavailable to the public.

Learners Center: Is one where the complete eLearning experience is focused on the learners. For example, the courses need to be very user-friendly, so that learners can navigate the course without any difficulty. They should be able to easily access the content of their choice.

Likert Scale: A Likert scale is a psychometric scale commonly involved in research that employs questionnaires. It is the most widely used approach to scaling responses in survey research, such that the term is often used interchangeably with rating scale, which is use to allow the individual to express how much they agree or disagree with a particular statement.

NPE: The National Policy on Education (NPE) in Nigeria is the followed national guideline for the effective management, administration and implementation of education at all tiers of government.

NEPAD: The New Partnership for Africa's Development (NEPAD) is an economic development program of the African Union. NEPAD aims to provide an overarching vision and policy framework for accelerating economic co-operation and integration among African countries.

NITP: The National Information Technology Policy was approved in 2001 to guide the IT industry in Nigeria, and was followed by the enactment of the National Information Technology Development Agency Act 2007 which became the legal platform for the creation of the National Information Technology Development.

PBL: Problem-Based Learning is an instructional method of hands-on, active learning centered on the investigation and resolution of messy, real-world problems.

SPSS: Special package for social science. SPSS is widely used program for statistical analysis in social science. It is also used by market researchers, health researchers, survey companies, government, education researchers, marketing organizations, data miners, and others.

TVET: Technical and Vocational Education and Training is education and training which provides knowledge and skills for employment. TVET uses formal, non-formal

and informal learning. TVET is recognized to be a crucial vehicle for social equity, inclusion and sustainable development.

TETFUND : The Tertiary Education Trust Fund (TETFund) was established as an intervention agency under the TETFund ACT – Tertiary Education Trust Fund(Establishment, etc) Act, 2011; charged with the responsibility for managing, disbursing and monitoring the education tax to public tertiary institutions in Nigeria.

Opinion: Is a feeling of an individual about something. It is the controller of the actual behavior of an individual consciously or unconsciously.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

4.0 Introduction

This chapter presents the analysis and interpretation of data collected using statement- wise. The collected data was analyzed by descriptive statistical approach in order to get the answer of research questions. The data collected from section A questionnaire was presented in form of frequency and percentage. Furthermore, the data that collected from section B questionnaire were presented in form of frequency, percentage, mean score and standard deviation Itincludes tabulation to explain the opinions of the respondents about: the availability of e-learning hardware and software for effective TVET program. Also to examine the teacher's computer literacy and competency in Yobe state TVET tertiary institutions.

4.1 Demographic data

Since data was collected from 120 respondents drawn by purposive sampling from two TVET tertiary institutions in Yobe state, the respondents were categorized according to gender, institution; year of service, present designation; age and department were presented in term of demographic.

4.1.1 Institutions

The two tertiary institutions were involved in this study namely; College of education (tech) potiskum and maiIdrissAlooma polytechnic Geidam. The descriptive statistical analysis revealed that the 56 participants in the study are from polytechnic with 56% while 44 are from the college of education (tech) with the 44%. The statistics also show that the institutions have a mean of 1.56, median 2.00, mode 2 and a standard deviation of 0.499 respectively.

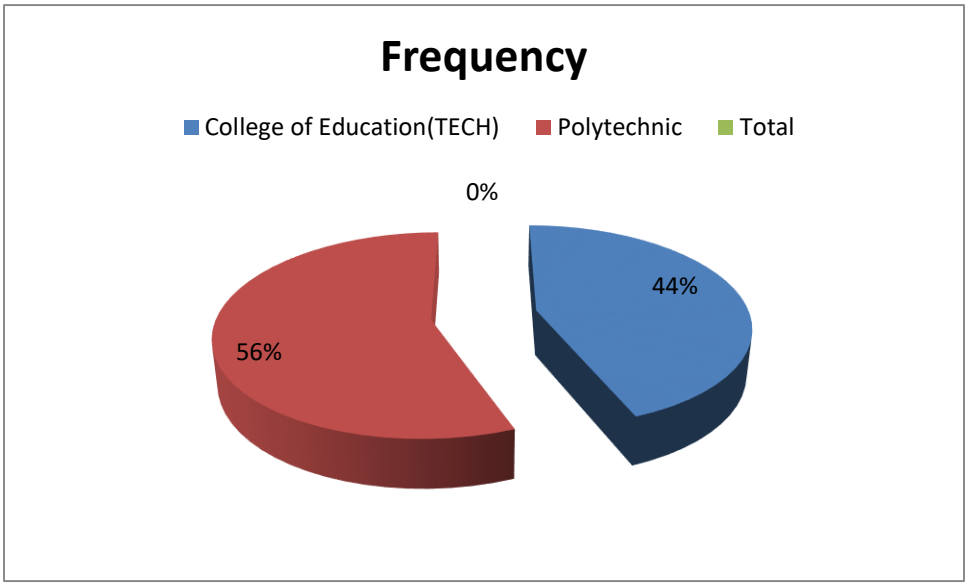


Figure 4.1.1participants' distribution at institutional level

4.1.2 Departments

The figure 4.1.2 showsthe various departments who participated in this study. Base on the descriptive statistical analysis, technical education department and science engineering department participated more than the others departments with the 22% participants from each and general studies department merging the least with only 4% participants.

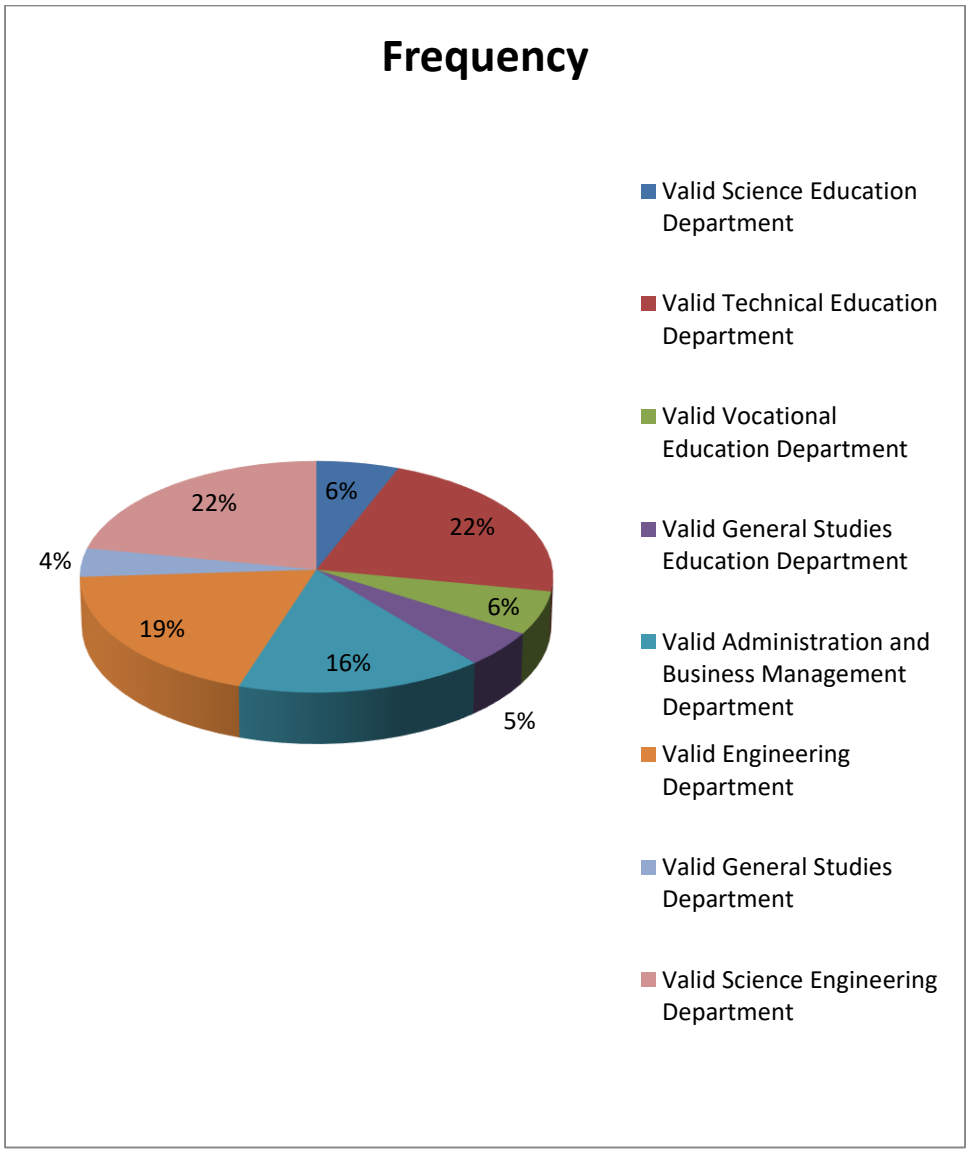


Figure 4.1. 2 Distributions of data within different departments

4.1.3 Years of service

The years of service of the participants was categories on range bases as showed in the figure4.1.3. The statistics of the table implied that participants who had experience above 10 years participated more while participants with experience between 0 to 3

years were 12% represented. Therefore, majority of participants had great' exposure to teaching and learning and whose opinion could be trusted.

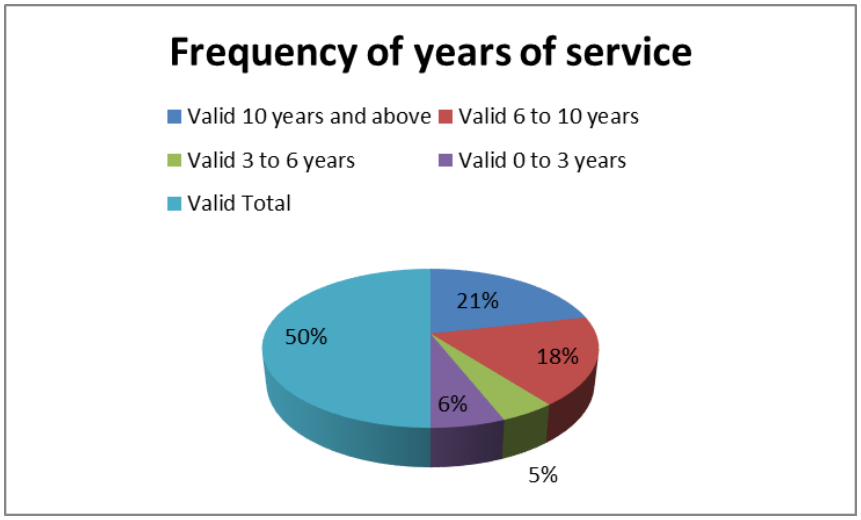


Figure 4.1. 3 participants' distribution with respect to their years of service

4.1.4 Gender

The descriptive analysis revealed that male participants had dominated their counterpart with wide range 97% to 2% and 1% missing. This implied that female teachers in Yobe state TVET tertiary institutions are less compared to male ones. This can also be attributed to the fact that there is low female enrollment in technical education program in the study area.

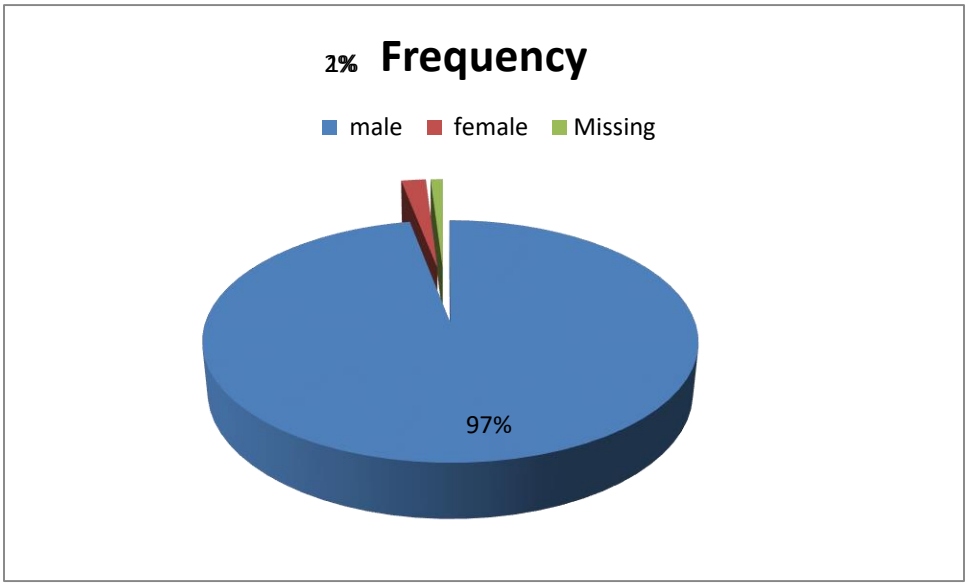
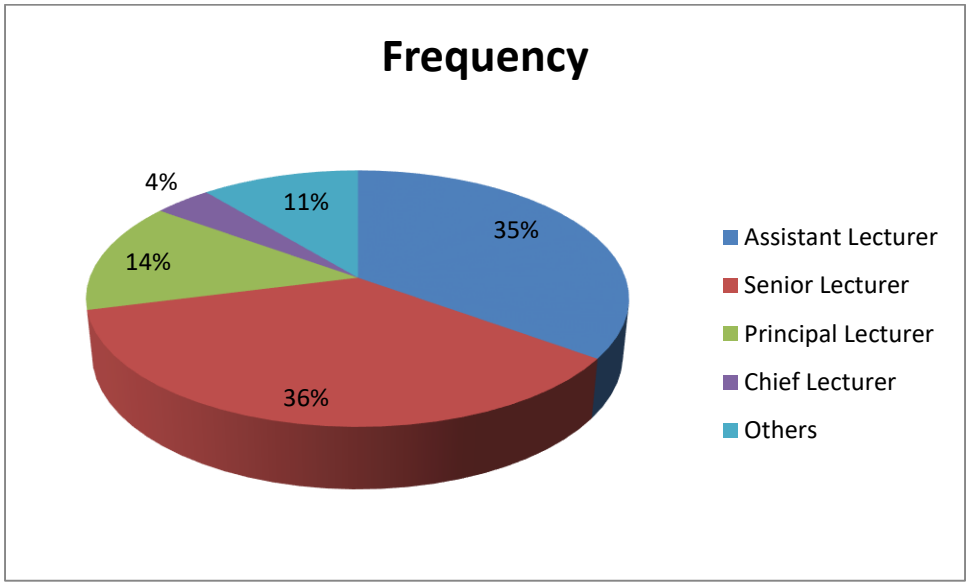


Figure 4.1. 4 Distribution of the data gender wise

4.1.5 Present designation

The designations of the participants of this research are of five differences rank. Teachers with senior lecturer rank are the highest with 36 participants while chief lecturer with least representative of 11.

Figure 4.1. 5participants' distribution basing on their current designation



4.1.6Age

The ages of the participants of ranging between 40 to 49 are highest with 51 participants while under 25year's old with only (one) 1% participant.

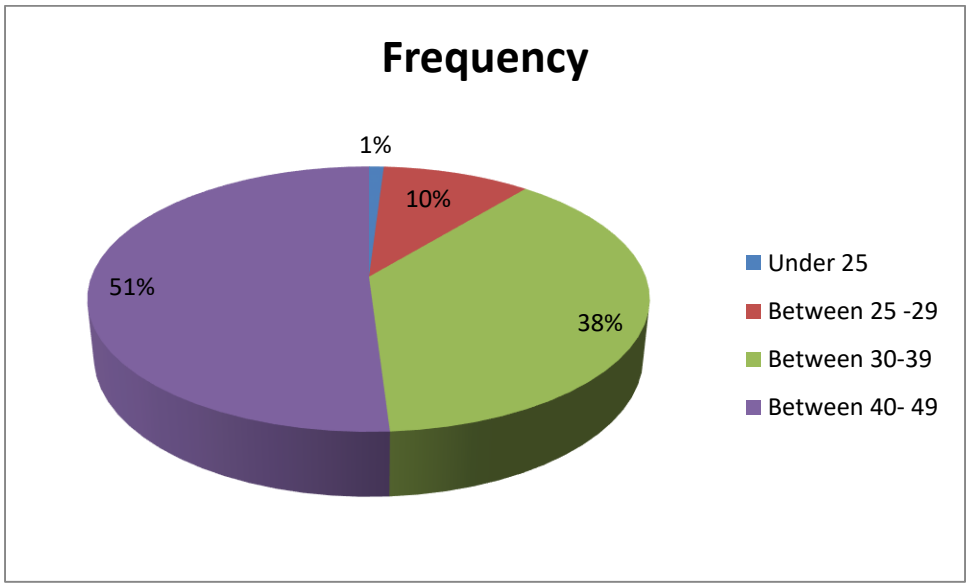


Figure 4.1. 6: participants' distribution base on their age.

4.2 General descriptive data analysis decision Rule.

As for analysis, responses with a mean score of 1.00 to 1.79 were classified as highly not available, 1.80 to 2.59 as not available, 2.60 to 3.39 as moderate, 3.40 t0 4.19 as available and 4.20 to 5.00 as highly available(Hadi, Yusop, Mohamad, & Jaafar, 2010).The table 4.2.1 and 4.2.2.1 below shows the analysis for the teacher's opinion on availability of e-learning hardware and infrastructure in Yobe state TVET tertiary institutions. The title columns represent the items statement, five-point scale and its corresponding values where highly available (HA)=5, available (A)=4, neutral(N)=3 not available (NA)=2 and highly not available (HNA)=1, while table 4.2.3.1 and 4.2.4 their corresponding value were strongly agree (SA) = 5, Agree (A) = 4, Neutral (N) = 3, disagree (D) = 2, strongly disagree (SD) = 1 and their mean and standard deviation. The figures in the parenthesis indicate percentages and std represent the standard deviation.

4.2.1: Teacher's perception on availability of e-learning hardware.

Table 4.2.1 shows the 10 items statement identified by the researcher in determining the teacher's opinion on the availability of e-learning hardware in Yobe state tertiary institutions in which the finding wereanalyzed and interpreted as follow.

4.2.1.1Computers with hardware and software for teaching and learning

In the table 4.2.1below reveal that the Yobe state tertiary institutions teachers showed that the computer with hardware and software were available. The mean score of 3.15 which is within the range of 2.60-3.39 and it was classified as moderately available.

4.2.1.2 Printers for teaching and learning purposes

For the printer for teaching and learning, the teacher's opinions show that the item is moderately available. The mean score of 3.31 falls between 2.60 to 3.39 which indicated that the item is moderately available.

4.2.1.3 Multimedia projector

The table 4.7 below revealed the opinions of TVET teacher on the statement that multimedia is available. The mean of mean 3.41 is fall between 3.40 to 4.19 which classified as available.

4.2.1.4 Interactive smart board

For teacher's opinions on the availability of interactive smart board, research shows that the item is available. A mean of 3.04 indicate that the interactive smart board are moderately available.

4.2.1.5Internet enables smart TV for teaching and learning

Base on the result of analysis, teacher's opinions shows that internet enables smart TV are moderately available in the Yobe state tertiary institutions mainly for teaching and learning purposes with the mean of 2.74 which is within the average evaluation range of 2.60 t0 3.39.

4.2.1.6 Slide changer (pointer) for teaching and learning

The result of statistical analysis revealed that slide changer (pointer) was moderately available for teaching and learning. Mean of 2.65 which is within the range of 2.60 to 3.39.

4.2.1.7 CCTV camera for recording teaching and learning information

In the table of 4.2.1 revealed that CCTV camera recording teaching and learning information in the schools under study are not available. A mean of 2.24 is less than the average thus implied that the item is not available.

4.2.1.8 Flash drive for storing teaching information

The statistical analysis indicated that the flash drive for teaching and learning in Yobestate tertiary institutions are available. Mean of 3.60 was classified as available, because is within the range of 3.40 t0 4.19.

4.2.1.9 CD/DVD ROMS for teaching and learning

The result of statistically analysis revealed that slide changer (pointer) is moderately available for teaching and learning. Mean of 3.37 is within the average evaluation.

4.2.1.10 Smartphone for teaching and learning

Teacher's opinion shows that Smartphone is moderately available among the TVET teachers in Yobe state tertiary institutions. The mean of 2.95 which is within the average value.

Base on the statistical analysis above on availability of e-learning hardware, the result of finding shown that flash drive and multimedia projector was available; CCTVcamera is not available while the remaining seven items were at average level of availability.

Table 4.2. 1 Analysis for the teacher's perception on availability of e-learning hardware

Items Statement	Percentage (%)						
	HA	A	N	NA	HNA	Mean	Std
Computers with hardware and software for teaching and learning.	9	42	13	27	9	3.15	1.18
Printers for teaching and learning purposes.	12	42	19	19	8	3.31	1.15
Multimedia projectors.	16	45	10	22	7	3.41	1.19

Interactive Smart board.	9	35	15	33	8	3.04	1.17
Internet enables smart TV for teaching and learning.	9	17	23	41	10	2.74	1.13
Slide changer (pointer) for teaching in digital class.	4	25	13	48	10	2.65	1.09
CCTV camera for recording teaching and learning information.	1	11	21	45	22	2.24	0.96
Flash drive used for storing teaching and materials.	20	47	9	21	3	3.60	1.10
CD/DVD ROMS for teaching and learning.	13	43	16	24	4	3.37	1.11
Smartphone for teaching and learning.	9	31	18	30	12	2.95	1.21
					Total mean 3.04		

4.2.2: Availability and use of e-learning software

4.2.2.1: Digital library for downloading open access learning resources

From the data analysis, the digital library for downloading open access learning is moderately available in Yobe state tertiary institutions with a mean of 3.14.

4.2.2.2: Access of educational materials from the school‘s website

The teacher’s opinions show that access to education materials from the Yobe state tertiary institution’s website is at moderately available.Mean of 3.0 which fall within the range of 2.60 to 3.39. 0.492.

4.2.2.3: Links to educational resources websites and e-journal on the school’s website

Regarding the link to educational resources and e-journal on school’s website, the findingindicates that the item was moderately available. The mean of 2.91 was within the range of 2.60 t0 3.39 which were classified as moderate.

4.2.2.4: Learning management system

Table 4.1.3 reveals that learning management system is moderately available in the Yobe state tertiary institutions for TVET program with a mean of 3.15.

4.2.2.5: Google classroom use for teaching and learning

The finding reflected that using Google classroom for teaching and learning purpose among the Yobe state tertiary institutions teachers is not there (not available). The mean of 2.52 signified that teacher's use of Google classroom is not there because 2.52 is fall within the range of 1.80 to 2.59 which classified as not available.

4.2.2.6: Use of social network platform for group discussion with students

Teacher's use of social network platform is moderately there for group discussion with their students. A mean of 3.14 is within the range of 2.60 to3.39 which is classified as moderately available.

4.2.2.7: Cyber security and vision protection system

Analysis result revealed that cyber security and vision protection system are moderately available in Yobe state tertiary institutions. The total mean of 2.64 is within the range of 2.60 to 3.39 which is classified as moderate.

Teachers opined that, availability and use of e-learning software in Yobe state tertiary institutions were at average level. But the use of Google classroom for teaching and learning purposes is not available.

Table 4.2.2.1: Availability and use of e-learning software.

Items Statements	SA	A	N	DA	SD	Mean	Std
Digital library is available for downloading open access learning resources.	12	31	21	31	5	3.14	1.14
Educational materials could be accessed from the school's website.	7	40	17	26	10	3.08	1.16
Links to educational resources website and e-journal can be found on the school's website.	5	33	18	36	8	2.91	1.10
Learning management system is available at the institution.	3	44	26	19	8	3.15	1.03
Google classroom is used for teaching and learning purposes.	4	14	26	42	14	2.52	1.03
Social network platform (Face book/Twitter) is used for discussion groups for the students.	8	43	14	25	10	3.14	1.18
Cyber security and vision protection system are available.	2	27	22	31	18	2.64	1.12
					Total mean	2.94	

The table below shows the analysis for teacher's computer literacy and competency in Yobe state tertiary institutions for TVET program. The researcher identified some basic computer's literacy and competency where TVET teachers are required to have regard to e-learning; the result was analyzed and interpreted.

Title columns represent the item statement, five-point scale and its corresponding values.

Table 4.2.3: Teacher's computer literacy and competency.

Items Statements	SA	A	N	DA	SD	Mean	Std
I am competent in using learning management system (LMS)..	14	49	18	14	5	3.53	1.06
I am confident in using web browsers to access educational material s effectively.	35	46	11	7	1	4.07	0.91
Access to educational materials in online libraries is not difficult for me.	32	48	11	7	2	4.01	0.95
I know how to download and views PDF files.	55	36	5	2	2	4.40	0.84
I am competent in using Microsoft Office packages for teaching-learning.	50	38	8	2	2	4.32	0.86
					Total mean	4.06	

4.2.3.1: Competent in using learning management system (LMS)

With regard to teachers competent in using LMS, the table above shows that, teachers in Yobe state tertiary institutions have competent to using LMS. Even thought, learning management system is moderately available in their various schools but the knowledge of using it is available. Their mean responses were 3.53 is within the range of 3.40 to 4.19 which is classified as available.

4.2.3.2: Confident in using web browsers to access educational materials effectively

The analysis reveals that teacher's competent of using web browsers to access educational material is available. The mean of their responses was 4.07 which fall within the range of 4.20 to 5.00.

4.2.3.3: Teacher's difficulty in accessing educational materials by online

For difficulty in accessing educational material online, Yobe state TVET teachers are accessing educational material online without any difficulty. A mean of 4.0 implied that the knowledge of accessing educational material among the TVET teachers in Yobe state is available for effective TVET program.

4.2.3.4: Teacher's knowledge of how to download and view PDF files

The finding indicates mean of 4.40 for teachers' knowledge of how to down load and view PDF files. This means that the TVET teacher in Yobe state tertiary institutions have a good knowledge of how to down and view the PDF files successfully.

4.2.3.5: Teacher's competent in using Microsoft Office package for teaching and learning purposes

The finding reveals that teacher's competent in using Microsoft Office Package is available. The mean of their responses is 4.32, this implied that teachers in Yobe state tertiary institutions have enough confident in using Microsoft office pack for teaching and learning purposes effectively.

4.2.5: Relationship between different Variables.

Pearsonproduct-moment correlation examined the relationship between the variables mentioned below:

- The relationship between software used and demographics.
- The relationship between teacher's software use and availability of hardware, software and infrastructure.

Table 4.3. 1 relationship between software used and demographic.

		Software use	Years of service.	Age	Gender
Software use	Pearson Correlation	1	.006	-.140	.045
	Sig. (2-tailed)		.954	.165	.657
	N	100	100	100	99

**. Correlation is significant at the 0.01 level (2-tailed).

A Pearson product-moment correlation was conducted to examine the relationships between the teacher's software use and years of service, age, and gender in the e-learning field. The test result indicated that there is a no significant relationship between the years of service, and gender and the teacher's use of software. While there is negative association between the Age and the use of software. For the years of service (98) = 0.006, p= 0.954, age r,(98)=-140, p= 0.165 and gender r,(98)=0.045, p=0.657. A complete list of correlation is presented in the one (1) above. These finding indicated that the use of e-learning software by the TVET teachers does depend on their gender and years of service.

Table 4.3. 2 Correlation relationship between teacher's software use and availability of e-learning Hardware, Software and Infrastructure

		software use	Software	Infrastructure	hardware
software use	Pearson Correlation	1	0.737**	0.480**	0.610**
	Sig. (2-tailed)		0.000	0.000	0.000
	N	100	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

The table above shows the relationships between the teacher's use of software and the availability of e-learning hardware, software and infrastructure. Pearson's product-moment correlation was conducted measure level of their relationship. Nevertheless, the finding shows that, teacher's software use has very strong relationship with the software availability. r = 0.737,and p= 0.000., teacher's software use has substantial relationship with the availability of hardware r,= 0.508, p= 0.000 and infrastructure has moderate relationship r = 0.337, p 0.000.This implied there is significant relationship between the teacher's use of software and the items mentioned above with regard to e-learning opportunity in Yobe state tertiary institutions.

CHAPTER V

5.0 Dicussion of finding

In this study, information has been generated on the perception of TVET teachers over availability of e-learning opportunities.Reseach questions 1, 2,and 3, looked for the information on availbility of e-learning hardware, teachers's use and avilability of software, and teacher's computer literacy and competency respectively.These were designned to determine the perception of teachers on availability of e-learning opportunities for effective TVET programme in Yobe state tertiary institutions.Furthermore,the reseacher used pearson correlation.

5.1 Demographic

5.1.1: Institutions

Two TVET teriary institutions were involved in this study,one college of education technical and one polytechnic.Result shows that 56% of the respondants of the study are from polytechnic while 44% are from college of education technical.

5.1.2:Departments

The data collection instrument of this study gotted responses from eight (8) differencesdepartments which include: Technical education department and Sxience engineering department with 22% of participants from each (44%), Engineering department 19%, Adminitrativeand business management department 16%, Vocational education department and Science education department with 6% each, General studies education department5% and General studies department with 4%(Total 100%).

5.1.3:Year of service

Result revaeled that 43% of the teachers had worked for over ten years, 36% had worked for 6 to 10 years, 12% worked for 0 to 3 years and 9% had worked for 3 to 6

years.This indicates that mostof the respondants had worked for a reseanable period of time and had acquired more teaching experience.

5.1.4:Gender:

Research finding revealed that male participants has 97% while female has only two 2% and one missing gender.This signified that there is gender disparity among the TVET teachers in Yobe state.

5.1.5:Present designation

Base on the analysis,the research findings showed that teachers with the rank of senior lecture occupied 36% of the respondants, assistant lecturer 35%, pricipal lecturer14%, chief lecturer 4% and others with 11% of the participants.This indicated that in Yobe state tertiary institutions lecturers with the lower ranks are the mojority among others.

5.1.6:Age

Result of the study revealed that teachers of age between 40-49 has 51 respondants, between 30-39 with 38, between 25-29 with10 and under 25 year's old with one participants.

5.2:The relationship between teachers softwareuse and Demographics and also between teacher's softwareuse and availability of software, hardware and insfrastructure.

A Pearson product-moment correlation was conducted to examine the relationships between the teacher's software use and years of service, age, and gender. The test result indicated that there was no significant relationship between the years of service, age, and gender and the teacher's use of software.Nevertheless,result further indicated that there wasa relationship between teacher's software use and availability of hardware, software and infrastructure.

5.3: Teacher's opinion on availability of e-learning opportunities for TVET program in Yobe state tertiary institutions.

As research questions were structured and organized into four themes (5.3.1, 5.3.2, and 5.3.3 the following discussions will examine each one of them in depth.

5.3.1:Teaches opinion on availabilty of e-learning hardware

From statistical point of view, some e-learning hardware equipments were found available, moderately available and others werenot available basing on teachers opinion, as discussed below. Two hardware equipments for e-learning were reported available : flash drive andmultimedia projector. The findings are also in line with Geage & sleeth's (2000) study that reported a great improved in adaptation of multmedia presentation among teachers as compared to black board.

On the other hand,e-learning tools likecomputer with hardware and software,printer, interactive smart board, internet smart TV, slide changer, CD/DVDROMs,and smart phonefor teaching and learning were all moderately available.Majority of the participants reported CCTV camera for teaching and learning is not available.

When teachers are adquately exposed to available computers and others electronics gadgates,students will benefit amazimally there by leading to high academic achievement and gradually ICT integration in education will automatically follow(Akinwale Victor, 2017; Niederhauser & Stoddart, 2001).

5.3.2: Availability and use of e-learning software

The reseacher found out that majority of the teachers perceived that the use and availabilty of e-learning software likes: digital library,link to educational resources and journal on shool's web site and learning management system were moderatelyavailable.All so, the teacher's use of school's web site to access educational material, use of socialnetwork platform for teaching and cyber security protection

system were also found at average levelwhile a considerable number of participants found that use of google classroom for discussion were not available in Yobe state tertiary institutions.However, lack of usage of those e-learning software can be attribute to thelimited resources,dificulty in accessing the available materials,lack of practice and competentency in using them.Additionally,elecritricty outtage,weak internet services and lack of proper guidelines from techninical team have greately affected the use of ICT resource in Nigerian educational system.

Further more,it has been noted by reseachers that if the teachers do not have available and accesssble of ICT tools ,they will be drown away from encouraging the imlementation and use of ICT in teaching.Availability is is akey determinant of teachers ICT utilazation.(Aramide, Ladipo, & Adebayo, 2015). A study conducted by jude $ Dankaro (2012) and Abubakar (2016), have stated that lack of ICT resources availabilty andaccessability always prevent the adoptation and integration of ICT in teaching and learning in Nigeria. The finding of this has proved the relationship between availability and use of of e-learning tools by teachers,which revealed that e-learning facilities were not available to the best level which discourage or stop teachers from using them.

5.3.3: Teacher's computer literacy and competency.

Result of finding revealed that the Yobe teriary institutions teachers has a basic computer literacy and competency as the mean of the table shown 4.06.Teacher's computer literacy and competencywas one of the main target areas of this study among the TVET teachers. The result of the study discovered that,most of the teachers possesed the knowledge,competentand skills in using learning management system(LMS), competent in using web broser to access educational materials, knowledge of how to download and views PDF files, and easy acessing educational materials in online library among others.This could beattribute to the availabilty of ICT resources and opurtunities to practice or using computers in their daily life activities(Elemam, 2016). Without adequate skills, knowledge, competent and mastery of how to perform basic ICT skills, using ICT will be difficult(Moila& Makgato, 2014).

The findingsare in line with the literature,for example, a study conducted in Malaysia by Tasir, Abour, Halim, and Harun (2012), report that teachers computer competency level was found to be high at an overall mean of 3.95.This is almost the same with the mean of this finding which is 4.06.A studyconducted byMahmud and Ismail (2010)found different result from this study, they reported that teachers had average level of ICT knowledge and skills (ICT competency) and they did not use ICT in teaching because they consider themselves not competent enough to use ICT materials.

According to Stephen (2013) the use of ICT in education in Nigeria depend on the teacher's computers literacy and competent. Teachers, who perceive themselves competent enough to use ICT, usually make use of ICT in their classroom.(Becker, 2000) find out that teacher has moderate level of ICT competent. Therefore, the use of e-learning in Yobe state tertiary institutions, teacher's computer literacy and competent should be at optimum level.

5.4 Conclusion

It has been noted that e-learning is the application of internet and electronic media to enhance learning. This research revealed that e-learning hardware and software were at average level of availability with a mean of 3.04 and 2.94 while teacher's computer literacy and competency are highly available (with mean of 4.06) among the teachers of Yobe state tertiary institutions. Therefore e-learning hardware and software should be provided to meet a high standard of availability to facilitate effective teaching and learning process in to order meet present days of education challenges. Efforts should be made to deal with any factors that will hinder the usage and development of e-learning educational system in Yobe and Nigeria in general. Also, ICT training programme should be well plan to improve the existing teacher's basic computer literacy and competent.

It is therefore uncertain that with the average levels of availability of e-learning facilities the possibility of optimizing e-learning opportunities for teaching and learning in TVET tertiary institutions will be realized by this insufficiency. The question then is that what exactly happened to the huge amount of money pumped in to the educational system by TETFund and NEPAD as they claim. The government should also hold people accountable for those in charge of allocation and management of educational resources, especially ICT tools that are aimed at promoting digital learning in Yobe state institutions (Adetokunbo, 2013). It is better to note that corruption has a devastating impact on developing nations, and hinders the progress toward the millennium Development Goal and can jeopardizes social and economic development of any nation.

5.5 Recommendation

Base on the finding of study, it is therefore recommended that

1. The government should remove or reduce the tax on all e-learning tools and resources. Because high cost of e-learning tools and resource have direct negative effect on their availability. Also, government should collaborate with

internet service provider (ISP) to provide free and reliable internet service to schools.

2. Adequate alternative power supply should maintain in all schools. Hence electricity is central backbone of e-tech and e-learn.
3. Schools should have update website that can allow both the teachers and students to access current educational materials with ease.
4. Basic ICT knowledge should be included in all school's level curriculum ranging from primary level to tertiary level of education.
5. Awareness and training programme should be created among the teachers to accept and understand the important role ICT is playing in educational systems, and make free from making negative perception about the ICT in education.
6. Separate and adequate budget allocation should make for TVET tertiary institutions. Hence multiple organizations or sectors budget should stop.
7. Government should release the necessary fund to enable TVET institutions to put in place necessary ICT infrastructures that will facilitate teaching and learning

REFERENCES

ADELABU, O. A., ADU, E. O., & Adjogri, S. J. (2014). *The availability and utilization of e-learning infrastructures for teaching and learning.* Paper presented at the EdMedia: World Conference on Educational Media and Technology.

Ademuyiwa, J., & Longe, I. (2017). E-Learning and CBT in Polytechnic Education System in Nigeria. *International Journal of Computer Applications, 168*(3).

Adetokunbo, M. (2013). Transparency International, SERAP Want Nigeria To Account For Money Spent On Education. *Available at: View*.

Akinwale Victor, A. (2017). Extent of Information and Communication Technology (ICT) Utilizationfor Students' Learning in Tertiary Institutions in Ondo State, Nigeria. *Extent of Information and Communication Technology (ICT) Utilizationfor Students' Learning in Tertiary Institutions in Ondo State, Nigeria (July 3, 2017)*.

Al-Zaidiyeen, N. J., Mei, L. L., & Fook, F. S. (2010). Teachers' Attitudes and Levels of Technology Use in Classrooms: The Case of Jordan Schools. *International education studies, 3*(2), 211-218.

Alazam, A.-O., Bakar, A., Hamzah, R., & Asmiran, S. (2013). Teachers' ICT skills and ICT integration in the classroom: The case of vocational and technical teachers in Malaysia. *Creative Education, 3*(08), 70.

Alio, A. (2008). Fundamentals of educational research. *Enugu: Samireen Nigeria Ltd*.

Aramide, K. A., Ladipo, S. O., & Adebayo, I. (2015). Demographic Variables And Ict Access As Predictors Of Information Communication Technologies' Usage Among Science Teachers In Federal Unity Schools In Nigeria. *Library Philosophy and Practice*, 1.

Atsumbe, B., Raymond, E., & Duhu, E. E. P. (2012). Availability and utilization of e-learning infrastructures in Federal University of Technology, Minna. *e-learning, 3*(13).

Bamigboye, O., Bankole, O., Ajiboye, B., & George, A. (2013). Teachers' attitude and competence towards the use of ICT resources: A case study of university of

agriculture lecturers, Abeokuta Ogun State, Nigeria. *Information Manager (The), 13*(1-2), 10-15.

Bappa-Aliyu, M. (2012). Integrating e-learning in technical and vocational education: a technical review. *International Journal of Academic Research in Business and Social Sciences, 2*(5), 52.

Becker, H. J. (2000). Who's wired and who's not: Children's access to and use of computer technology. *The future of children*, 44-75.

Danner, R. B., & Pessu, C. O. (2013). A survey of ICT competencies among students in teacher preparation programmes at the University of Benin, Benin City, Nigeria. *Journal of Information Technology Education: Research, 12*(1), 33-49.

Effiong, J. (2005). Business education in the era of information and communication technology: Issues, problems and prospects. *Business Education Journal, 5*(1), 3-7.

Elemam, A. E. (2016). Barriers to implementation of information and communication (ICT) in public Sudanese secondary schools: teacher's prospective. *Journal of Sociological Research, 7*(1), 33-43.

Hadi, A., Yusop, M., Mohamad, B., & Jaafar, M. (2010). Study of information and communication technology (ICT) usage in technical and vocational special education programme. *Global Journal of Human Social Science Research, 10*(1), 35-43.

Ifeakor, A., & Okoli, J. (2010). Appraisal of the availability and utilization of new technological resources for science curriculum delivery in Nigerian universities. *African research review, 4*(2).

Khan, M. S. H., Hasan, M., & Clement, C. K. (2012). Barriers to the introduction of ICT into education in developing countries: The example of Bangladesh. *International Journal of instruction, 5*(2).

Likoko, S., Mutsotso, S., & Nasongo, J. (2013). The adequacy of instructional materials and physical facilities and their effects on quality of teacher preparation in emerging private primary teacher training colleges in Bungoma County, Kenya.

Liu, X., & Pange, J. (2015). Early childhood teachers' perceived barriers to ICT integration in teaching: a survey study in Mainland China. *Journal of Computers in Education, 2*(1), 61-75.

Mahmud, R., & Ismail, M. A. (2010). Impact of training and experience in using ICT on in-service teachers' basic ICT literacy. *Malaysian Journal of Educational Technology, 10*(2), 5-10.

Moila, O., & Makgato, M. (2014). Teachers and Learners Level of Computer Literacy to Enhance E-education in Classroom: A Case Study of Six Public Secondary Schools in Atteridgeville Township in South Africa. *Mediterranean Journal of Social Sciences, 5*(23), 1017.

Niederhauser, D. S., & Stoddart, T. (2001). Teachers' instructional perspectives and use of educational software. *Teaching and teacher education, 17*(1), 15-31.

Okoye, K., & Michael, O. I. (2015). Enhancing Technical and Vocational Education and Training (TVET) in Nigeria for Sustainable Development: Competency-Based Training (CBT) Approach. *Journal of education and practice, 6*(29), 66-69.

Okoye, K., & Okwelle, P. (2013). Technical and vocational education and training (TVET) in Nigeria and energy development, marketing and national transformation. *Journal of education and practice, 4*(14), 134-138.

Okwudili, O. P. (2018). Teachers opinion on availability of e-learning opportunities for effective technical and vocational education and training (TVET) programme in tertiary institutions in South east Nigeria. *International Journal of Vocational and Technical Education, 10*(1), 1-6.

Oye, N., Salleh, M., & Iahad, N. (2011). Challenges of e-learning in Nigerian university education based on the experience of developed countries. *International Journal of Managing Information Technology, 3*(2), 39-48.

Saud, M. S. (2004). *Computer technology compentencies perceived as needed by vocational and technical teachers in Malaysia.* The Ohio State University.

Tasir, Z., Abour, K. M. E. A., Halim, N. D. A., & Harun, J. (2012). Relationship between Teachers' ICT Competency, Confidence Level, and Satisfaction toward

ICT Training Programmes: A Case Study among Postgraduate Students. *Turkish Online Journal of Educational Technology-TOJET, 11*(1), 138-144.

Torruam, J. T. (2012). Application of e-teaching and e-learning in Nigerian educational system. *Academic Research International, 3*(1), 30.

Victor, A. A., & Bolanle, R. R. (2017). Extent of Information and Communication Technology (ICT) Utilization for Students' Learning in Tertiary Institutions in Ondo State, Nigeria. *Online Submission, 3*(3), 2369-2376.

APPENDIX

Dear Respondent,

REQUEST FOR RESPONSE TO QUESTIONNAIRE

I am a student of Master of Science in Technical and Vocational Education, undertaking **a** study on a topic titled: "**Teacher's perception on the Availability of e-Learning Opportunities for Technical and Vocational Education (TVET) Programmes in Tertiary Institutions, Yobe State – Nigeria".** Your objective responses are highly needed in ascertaining the facts under investigation. Please, feel free and open to share your mind objectively, for your responses have great impact on the findings. All collected responses will be treated confidentially and be only used for the research purpose.

Thank you

Yours faithfully

Abubakar Saleh
(ID: 171031205)

Meaning of Technical and Vocational Education and Training (TVET)in this Context.

Technical and Vocational Education and Training (TVET) is used as comprehensive term referring to those aspect of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in the job sectors.

Section: A Background information

It is under ethical requirement that all your personal information will be kept confidential.

Please choose the correct answer that applies to you from letter a, b, c, d and e.

1. Name of your institution.

   a) College of Education (TECH.)
   b) Polytechnic

2. Department

……

3. Years of service.

   a) 10 years and above
   b) 6 to 10 years
   c) 3 to6 years
   d) 0 to 3years

4. Gender?

   a) Male
   b) Female

5. Your present designation.

   a) Assistant lecturer
   b) Senior Lecturer
   c) Principal Lecturer
   d) Chief Lecturer
   e) Others (If have any) ……

6. Age

    a) Under 25
    b) Between 25-29
    c) Between 30-39
    d) Between 40-49

Section B: Questionnaire

OBJECTIVE 1: Availability of e-Learning Hardware Technology.

The following rating scales give the weighted average of the opinion.

1. Highly Not Available (HNA)
2. Not Available (NA)
3. Neutral (N).
4. Available (A)
5. Highly Available (HA)

S/NO	Statements	HNA	NA	N	A	HA
1	Computers with necessary hardware and software for teaching and learning are---					
2	Printers for teaching and learning purposes are---					
3	Multimedia projectors are--- .					
4	Interactive Smart boards are---					
5	Internet enable smart TV for teaching and learning are---					
6	Slide changer (pointer) for teaching in digital class is---					
7	CCTV camera for recording teaching and learning information is---					

8	Flash drive used for storing teaching and learning materials is---					
9	CD/DVD ROMS for teaching and learning are---					
10	Smartphone for teaching and learning is---					

Please provide any other eLearning resource used at your institution that is not mentioned above?

……

……

OBJECTIVE 3: Availability and the use of e-learning software

The following rating scales give the weighted average of the opinion.

1. Strongly Disagree (SD)
2. Disagree (DA)
3. Neutral (N)
4. Agree (A)
5. Strongly Agree (SA)

S/NO	**Statements**	**Responses**				
		SD	**DA**	**N**	**A**	**SA**
1	Digital library is available for downloading open access learning resources.					

2	Educational materials could be accessed from the school's website.					
3	Links to educational resources websites and e-Journals can be found on the school's website.					
4	Learning Management System is available at the institution.					
5	Google classroom is used for teaching and learning purposes.					
6	Social network platform (Face book/ Twitter) is used for discussion groups for the students.					
7	Cyber security and vision protection system are available.					

Please provide any other e -Learning software use at your institution that is not mentioned above?

……

…… ……

OBJECTIVE 4: Teacher's computer literacy and competency

The following rating scales give the weighted average of the opinion.

1. Strongly Disagree (SD)
2. Disagree (DA)
3. Neutral (N)
4. Agree (A)
5. Strongly Agree (SA)

S/NO	Statements	SD	DA	N	A	SA
1	I am Competent in using Learning Management System (LMS).					
2	I am confident in using web browsers to access educational materials effectively.					
3	Access to educational materials in online libraries is not difficult for me.					
4	I know how to download and view PDF files.					
5	I am competent in using Microsoft Office Packages for teaching-learning.					

Please provide any other basic computer skill used in eLearning use at your institution that is not mentioned above?

……

……

Thanks, for your valuable comments.