AVAILABILITY AND UTILIZATION OF MOBILE TECHNOLOGICAL DEVICES FOR TEACHING AND LEARNING AMONG TERTIARY INSTITUTIONS IN MINNA

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ABSTRACT

This study is aimed at determining the availability and utilization of mobile technological devices for teaching and learning among tertiary institutions in Minna metropolis. The study seeks to find out the different factors that could influence the use of mobile technological devices for teaching and learning. For the purpose of this research a questionnaire was designed for data collection aiming to investigate the availability and utilization as well as the attitude of students and lecturers towards mobile technological devices for teaching and learning in their tertiary institutions education purposes. The survey was used to collect data from 150 undergraduate students from two tertiary institutions in Minna, Niger state. Quantitative survey method of research design was adopted for the study. The targeted population of the study consists of 300L student of Educational Technology department in Federal University of Technology, Minna Bosso Campus and Niger State College of Education Minna. The instrument was validated and its reliability coefficient was calculated using simple percentage method represented with a table. The conclusion indicates that majority of students use mobile technology for self-directed learning and to interact with their colleagues and instructor within and outside the classroom. In addition, there were no statistically significant differences in student use of mobile technologies due to their gender, age, or major. The recommendation made was that lecturers and students should engage more in the use of their mobile devices during teaching and learning to enable easy collaborative learning between student to student and student to teachers.

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CHAPTER ONE

1.0   INTRODUCTION

1.1   Background of the Study

Mobile technological devices are available to make teaching and learning resources in electronic format for student as well as the instructor to access information and instructional material so that there will be equity in access by anyone regardless of location, status, or background. Mobile technology is increasingly being used to support blended learning beyond computer centers. It has been considered as a potential solution to the problem of a shortage of computers for accessing online learning materials (courseware) in a blended learning course. Internet access through mobile devices unlocks the opportunities for student-generated content and student-directed projects (Cochran & Narayan, 2017) while they seeks to investigate problems in the world.

The availability of mobile technological devices as helped in reshaping society, communications and the global economy. With cell phones, and tablets now outnumbering desktop computers, there has been a sea change in the way people access, use, and share information. Powerful mobile devices and sophisticated digital applications enable users to build businesses, access financial and health care records, communicate with public officials, and complete online transactions. More globally, such devices and applications have helped reduce social inequality, increased participation in civic life, and increased education levels, all of which spur national economic development. Mobile digital games can help students to learn about intricate situations in dynamic environments by giving students opportunities role play (Yu et al., 2018).

The utilization of mobile technological devices and the physical boundaries of the classroom and time for learning no longer prevail because the content is ubiquitous (can be accessed from anywhere), student can communicate with teachers, other students and anyone else to satisfy their need for knowledge using the new generation of mobile devices such as digital media players(including ipods and ipods touches) , smart phones (including phones, Android phones, Blackberry's and windows phones), personal digital assistant (PDA), and tablet computers (including ipods). Successful use of mobile technologies in higher education requires instructors who design learning experiences that harness the affordances of mobile devices (Krull & Duart, 2017).

The use of mobile technologies brought certain benefits such as learners could interact with each other and with the practitioner instead of hiding behind large monitors, it's much easier to accommodate several mobile devices in a classroom than several desktop computer; PDAs or tablets holding notes and eBooks are lighter and less bulky than bags full of files, paper and textbooks or even laptops; handwriting with stylus pen is more intuitive than using keyboard and mouse; it's possible to share assignments and work collaboratively. It is in part by employing the use of new media technologies as learning tools that teachers can effectively bridge gaps between theory and application and enhance cultural responsiveness and competency (Ntuli & Nyarambi, 2018).

Beyond its function as a classroom tool, the use of mobile technologies is the primary conduct for some student learning experiences. In a 2018 survey by learning house and Asianan market research of 1,500 exclusively online students, nearly 80 percent said they complete some, if not all, of their course work using a mobile device. More than half of respondents said they access course readings and communicate with professors from their Smartphone's, and more than 40 percent said they conduct research for reports and access the learning management system on mobile devices.

1.2   Statement of the Research Problem

The purpose of this study is to summarize the research findings in the literature by employing content analysis. The challenge would be to explore how to use mobile technologies to transform learning into an evitable seamless part of daily life to the point where it is taken for granted. There are quite a number of challenges with mobile technologies regarding all the available mobile devices and their contribution toward mobile learning. The major challenges facing stakeholders and students are as follow:-

1. Adaptive Learning: This demands that the instructional strategies and learning content should be designed to adapt to the learner's profile and personal needs. Thus, to make up for adaptive learning, the learners 'location needs to be taken into consideration.

2. Limited Text Display: The exploration of how mobile devices could support in providing continuous learning activity during the learning course or a standalone learning module is crucial.

3. Instant Communication: Location and response time are crucial factors in supporting the success of good academic interaction and learner satisfaction. Prompt interaction among learning peers could be built in by the mobile communication network by utilizing the prompt notification of message reception. Also, global interfaces through languages and cultural context pose challenges in regard with mobile learning implementation

1.3 Aim and Objectives

The aim of this study is to assess the availability and utilization of mobile technological devices for teaching and learning among tertiary institution in Minna. Specifically the study will examine:-

i.   Improving access to assessment, learning materials and learning resources

ii. Increasing flexibility of learning for students

iii. Exploring the potential for collaborative learning, for increasing students' appreciation of their own learning process, and for consolidation of learning

iv. Identifying learners' needs for just-in-time knowledge

1.4 Objectives of the Study

The objective of the study is to examine the availability and utilization of mobile technological devices for teaching and learning among tertiary institution in Minna metropolis.

1. The extent to which mobile technological devices are available for use in teaching and learning among tertiary institution in Minna metropolis.

1. The utilization of mobile technological devices for developing instructional material by tertiary institution teacher in Minna metropolis

2. The competent of tertiary institution teachers in the use of mobile technological devices for developing instructional material in tertiary institution in Minna metropolis.

3. The availability of mobile technological devices within the institution for developing instructional material in tertiary institution in Minna metropolis

1.5   Research Question

i. To what extent are the mobile technologies available for use in teaching and learning among tertiary institution in Minna metropolis?

ii. Are mobile technological devices available at teachers' disposal for developing instructional material in tertiary institution in Minna Metropolis?

iii. Are teachers competent in the use of mobile technological devices for developing instructional material in tertiary institution in Minna metropolis affected by their field of study?

iv. How often do tertiary institution teachers in Minna metropolis use mobile technological devices in developing instructional materials?

1.6   Research Hypotheses

H_{01}:   There is no significant difference in the competence of teacher in the use of mobile technological devices for developing instructional material for teaching and learning in Minna metropolis.

H_{02}:   There is no significant difference in the availability and the use of mobile technologies by the learner and instructor on how to manage and use mobile devices towards teaching and learning.

1.7   Significance of the Study

This study will be a significant endeavor to the student, teacher and the government.

This study checked the availability and the utilization of available mobile technologies to tertiary institution and it is use by institution for developing instructional material as well as competence of the teachers in using the mobile technological devices. Based on various findings, it has been observed that the use of mobile technological devices will improve teaching and learning process and so, the relevant from this study revealed the benefit and important of using mobile technologies to all education and tertiary institution and to know

the level of utilization of the available technologies and also encourage educationist as well as the instructor and learners of tertiary institution to enforce the implementation of the available mobile technologies in teaching and learning within and outside the classroom whether conventional setting or online platform it may be synchronous or asynchronous mode of learning.

To the government fast mobile broadband promotes civic engagement and provides new ways to follow politics and government. A number of organizations around the world have developed interactive mapping software that allows citizens to chart data patterns in their neighborhood or create videos or multimedia platforms that engage people in public debates. Geographic information systems (GIS) are increasingly used for purposes of civic engagement. Interactive sites allow people to map a range of social, economic, political, demographic, and policy features onto local, state, national, or international jurisdictions by matching GIS coordinates. For example, a number of cities have mapping capacities on government websites that enable site visitors to see crime or safety data broken down by individual blocks. This allows them to chart crime statistics or transportation patterns along social, economic, or political dimensions. Such information may be used to determine government spending priorities or to direct elected officials' attention to overlooked needs

1.8   Scope of the Study

The scope of this study is limited to tertiary institution in Minna metropolis of Niger state. The study is based on the availability and utilization of mobile technology in tertiary institution in Minna metropolis of Niger state. This research is limited to higher institution that are making use of mobile technological devices in teaching and learning in Minna metropolis of Niger state.

There are six tertiary institutions in Minna this research will therefore cover two of the higher institution in relevant to this study. This study used questionnaires method in data collection. The questionnaire was designed to comprise of five (5) sections. Section A caters for demographic information about the respondents, section B cater for statement to access availability and utilization of mobile technological devices among tertiary institution, section C cater for statement tertiary institution lecturer's perception on the use of mobile technological devices for learning, section D cater for statement to access lecturers and students use of mobile technological devices for teaching and learning.

1.9   Operational Definition of Terms

Availability: it is the possibility of something to be one's disposal or how obtainable something is.

Utilization: it is defined as the usability of something or the rate at which something is being put into use.

Competence: Competence is a term that is used both scientifically and in everyday language. Underlying a large variety of meanings, it is possible to discern a small semantic core

That is captured by the terms "ability", "aptitude", "capability", "effectiveness "and "skill". (Franz E. Weinert). Competences as used in this context refer to the ability of teacher or instructor in using mobile technologies in developing instructional material for teaching and learning of student.

Mobile learning: The term mobile learning refers to the use of mobile and handheld IT devices, such as Personal Digital Assistant (PDAs), mobile telephones, laptops and tablet PC technologies, in teaching and learning.

Smart phone: It is a kind of communication devices that has been designed by adding the features of PDA.

PDA (Personal Digital Assistant): personal digital assistant, also known as palmtop computer is a mobile device that functions as a personal information manager such as keeping addresses or names.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1   Introduction

For this research, the review of literature will be carried out under the following subheading

2.2 Conceptual framework

2.3 Theoretical framework

2.4 Empirical studies

2.5 Summary of Literature Review

2.2   Conceptual framework

2.2.1   Concept of Mobile Technological Devices

Mobile technological devices as the name imply is any device with internet capability that is accessible from anywhere, anytime for the implementation of teaching and learning processes (Develop instruction for teaching and learning). Current devices in this category include devices such as Smartphone's, tablets, iPods, and laptops have become an integral part of today's society, and these devices have changed the way students are learning as well as how teachers are instructing students. There is now potential for utilizing mobile devices for

teaching and learning especially as mobile devices are very popular with young people and the current generation of students and research showing more students are owning them (Brown et al. 2015, 32). Smart phones can be used for many things including instant messaging, social media, playing games, sending emails and general communication. As such they can now be considered essential to both personal and working lives. (Gaskin et al. 2015, 181.). Mobile devices allow people to engage in activities and transactions in locations and situations where it never used to be possible or it was much more difficult, such as during a bus ride or even while walking. The device offers the usage of a computer but with greater portability. As the mobile device offers convenience, it also generates a dependency for the user.

The evolution of mobile technological devices originated in the last decade and consequently the emergence of mobile learning (m-learning) has given rise to new forms of learning in different contexts with the development of wireless networks the mobile technological devices present itself as a new milestones in electronic learning and allow access to any type of information at anytime and anywhere.

2.2.2 Social media and usage of mobile devices in teaching and learning

Students are often users of social media and comfortable using technology to communicate with their peers, with WhatsApp being one of the preferred instant messaging applications used. Research has shown however that more often students will try to solve problems themselves by searching online when they have a difficulty with their course or studies. Students were also less likely to talk to teachers, students in other courses or go to the support centre on their institution when they needed support (Bullen et al. 2016.). Perhaps encouraging students to use group chats in social media, such as Facebook or instant messaging services such as WhatsApp, to discuss coursework would be beneficial to students as they can easily use them on their mobile devicesand are likely already familiar with them.

They may also be able to have more informal discussion as the communication channel would be unofficial and not moderated by a teacher or supervisor.

(Marez et al. 2015, 14.) To fully benefit from teaching techniques that utilize mobile devices, it may be more beneficial to introduce them to students at a younger age and ensure teachers are fully trained in using the devices which they may be unfamiliar with.To encourage students to use mobile applications that can aid their learning, the applications must be designed to provide an enjoyable experience for the student. Applications should be user-friendly, understandable, learnable and aesthetically pleasing to the user.

2.2.3   Learning styles and mobile devices

Every student has their own learning style, how they retain and assimilate learning content or information to the best of their abilities. These activities help to engage and motivate student which encourage success. . E-Learning (electronic learning) takes students learning style into account by being designed with optional activities that students can choose. Applying this to m-Learning (mobile learning) also allows the learning to be more flexible and convenient for the student. (Dawson et al. 2011, 2017.) If mobile devices are considered in learning processes, teachers can use them to help engage students in learning and possibly improve their motivation towards the subject. . As the mobile device offers convenience, it also generates a dependency for the user. Because these devices have internet access, they allow the user to have access to many things including emails, instant messages and social media.

2.2.4   Types of mobile technological devices

Mobile learning is impossible without the use of the mobile devices. They vary significantly in their abilities, sizes and prices. The common ability which united them is their mobility and possibility to make wireless connections. The main types of mobile devices used in the education process are:

Notebook computers: From one hand they have such abilities as desktop personal computer; from the other hand they have small sizes and support wireless communications. Their prices are still high.

Tablet PC: These are one of the newest mobile devices. They also have full range of abilities as personal computers. Some of them haven't keyboard but have software to recognize handwritten text. It is relatively expensive.

Personal Digital Assistant (PDA): They have small sizes and significant processor power. New models support more than 65000 colors, recognize handwritten text and can play different types of multimedia files. The main operating systems used are Palm and Microsoft Pocket PC.

Cellular phones: The low class devices mainly can be used for voice communication and sending and receiving of text messages (SMS). Some of their disadvantages are low memory capacity and low data transfer rate. The cellular phones from the higher class can be used to Internet access via WAP or GPRS technologies. They also can be used to send and receive the multimedia messages (MMS). Their prices continuously decrease.

Smart phones: They are hybrid devices which combine the abilities of cellular phones and PDA. They have smaller sizes than PDA and bigger than cellular phones. Typically they haven't full sized keyboard and can recognize handwritten text. They use Symbian, Windows Mobile or other operating system. As they have Internet browsers they have potentiality to be successfully used in the mobile multimedia education. Today there are several communication technologies which are used in mobile devices. Their abilities vary vastly as well as data transmission range and range.

The use of mobile technological devices helps to enhance teaching and learning. This process can be deployed through the use of internet access via WAP, GPRS technologies or local area network (LAN) which can be made accessible to the student at anytime and anywhere regardless of their location or status. Mobile technology has been considered as a potential solution to problem of a shortage of computers for accessing online learning materials (Courseware). They have the capability of delivering instruction with audios, videos, animations, audio-visuals, graphs, text, and all forms of graphics either separately or in integration, to facilitate teaching and learning. They are classified based on their mode of operation via:-

Audio: They are the mobile technological devices that appeal to the sense of hearing they are designed to produce audio information such headset (recording of learning content for student to listen to) they can be used to design instructions accessible from mobile phones, tablet pc, Smartphone's

Audio-visual: These are mobile technological devices that appeal to the sense of hearing and seeing simultaneously. They have the ability to produce sounds simultaneously as the visual information is being displayed. They are used in classroom settings to display learning content to the learners through the use of technological devices such as computer systems, projectors, video players which is been used to aid student understanding.

Visual: These are mobile technological devices that appeals to the sense of seeing only which is been used by instructor to display learning material to learners in a classroom setting. Such devices are computers, projectors, and video player which are been used for proper illustration.

2.2.5   Advantages of using mobile technological devices in the classroom

The use of mobile technologies in classroom setting or within an institution encourages maximum efficiency and effectiveness, but there are numerous advantages that mobile technology can provide to educators and students alike.

Video projects

Forward thinking teachers are now allowing their students to use mobile technology to create new and interesting projects. Gone are the days of merely relying on lengthy essays to demonstrate a strong level of knowledge on a topic. Now, a student can demonstrate a much deeper understanding of the topic by creating a video.

Online forums

Thanks to our mobile devices, we can now remain connected to our teachers and fellow students for longer periods of time. If there is something we do not understand from class, we can simply use an app to start a thread in an online forum. Being able to chat with a lecturer or classmate when you are at home is an invaluable resource. Having the chance to discuss concepts in a more in depth manner serves to increase a student's understanding of the materials.

Up to date learning

The old days of looking for information in encyclopedias are long gone. Having mobile devices in the classroom allows students instant access to the latest news, information, statistics, est. virtually every question they have is at their fingertips, keeping them connected with what's going on around them and ensuring they are always well informed with the most up-to-date information.

Learning goes outside of the classroom

By allowing mobile devices in school you can expand learning outside of the classroom. Students will not only have access to information during computer lab time (which is also becoming extinct). They can look up information from anywhere on campus. Collaboration will increase as students can use these devices as research tools during projects and group work. If students are really excited and engaged in learning inside of the classroom, they are likely to continue learning outside of the classroom and they can do so with mobile technology.

2.2.6   Mobile learning's technologies key features

Mobile learning applications reduces the barriers of time, place, and distance. It provides learning opportunities to individual learners at their own convenience.

Mobile technologies potentially create a wide variety of ranges for users that differ significantly from desktop and laptop technologies

Mobile learning applications are not only demanded by students of educational institutions but also by individual and autonomous learners focusing special learning objectives (i.e. language learning, technical learning, and additional skills).

Higher educational institutes need m-learning as an additional component of their education method.

2.2.7   Benefit of using mobile technological devices in the classroom

In addition to motivating and engaging students in the learning experience, mobile technology offers the benefit of "portability" so that students can access content and communicate with instructors and classmates from any location. Mobile devices also enable authentic learning experiences such as using interactive maps to find locations or recording content for further viewing; these experiences can be especially important for students with diverse learning needs. A mobile device can be considered as assistive technology (AT) for

some students with disabilities. For example, research supports the use of an iPad as a speech generating or communication device for students with autism (Lorah, Parnell, Whitby, and Hantula, 2015). Due to its ubiquitous use among middle- and highstudents, students with disabilities are more likely to use a mobile device and feel less stigmatized than if they were carrying an AT device. Mobile technology has the ability to increase active student responding (ASR), wherein a student not only has to respond but respond accurately trying new practices. School policy also plays an important part in allowing students to use mobile devices as many administrators and teachers create policies that inhibit the use of devices-even if those devices are being used for educational purposes

2.2.8   Teacher training in the use of mobile technological devices in classroom settings

Teacher training is critical to integrating the use of technology in the classroom successfully. While schools have invested in technology, teachers appear to remain reluctant to use that technology because it alters traditional classroom practices. This area of concern seems to stem from the level of teacher training – in a Digedu survey of over 600 teachers, 46% of teachers reported they lacked the necessary training to integrate technology (as cited in Johnson, Adams Becker, Estrada, & Freeman, 2015). Teacher training should include access to and training on web safety, proper searching techniques, classroom management tips and tricks, and practical ideas for content introduction, skill integration, and self-regulation. Google, YouTube, Microsoft and others offer free online curriculum for teaching many of these skills to students and there are multiple resources with practical tips for integrating technology in the classroom.

2.3   Theoretical Framework

2.3.1   Theory of Cognitive

The learning theories that are in accordance with learning with the use of mobile technological devices are the cognitive and the constructive learning theories. The theoretical framework will be discussed under this two learning theories.

Cognitivism is a learning theory which focuses more on more complex cognitive processes such as thinking, problem solving, language, concept formation and information processing. This theory perceives learning as an active process that occurs within the learner and also influenced by the learner. Gestalt propounds a theory which focuses on the idea of "grouping", i.e., characteristics of stimuli causes us to structure or interpret a visual field or problem in a specific pattern or way. Cognitivism is a learning theory that focuses on the processes involved in learning rather than on the observed behavior. As opposed to behaviorists cognitivists do not require an outward exhibition of learning, but focus more on the internal processes and connections that takes place during learning.

Therefore, learning is relative to their stage of cognitive development. Cognitive teaching methods aim to assist students in assimilating new information to existing knowledge, and enabling them to make the appropriate modifications to their existing intellectual framework to accommodate that information. Cognitive is all about equipping learners with effective learning method of information processing as well as factoring in the students own beliefs and thought.

Techniques in the Cognitive approach

Emphasizes more on the active involvement of the learner in the learning process i.e learner control, metacognitive training (e.g. self-planning, monitoring and revising techniques)

The adoption of hierarchical analyses in the identification and illustration of prerequisite relationships [cognitive task analysis procedures]

More emphasis on structuring, organizing and sequencing information to facilitate optimal processing (cognitive strategies such as outlining, summaries, synthesizers, advance organizers are employed)

Creation of learning environments which encourage students to make connections with previously learned material (i.e. recall of prerequisite skills, use of relevant examples, analogies).

Piaget's cognitive Theory

Cognitive theory is based on the work of the Swiss developmental psychologist jean Piaget 1956. Piaget's theory of cognitive development proposes that humans cannot be with information, which they immediately understand, and use. Instead, human must "construct" their own knowledge and they build their knowledge through experience. One important generalization of piagetian theory is the role of the teacher. In a piagetian classroom an important teacher role is to provide a rich environment for the spontaneous exploration of the child. A classroom filled with interesting thought explores and encourage students to become active constructors of their own knowledge.

Piaget suggested three vital components of learning:

Accommodation: - taking new information into account by modifying what we already know.

Assimilation: - the arrangement of new knowledge inside our heads beside what we know.

Equilibration: - balancing what we already know with the new information that we are trying to acquire.

According to the GSIs Teaching and Resource Center (2015, p.5): Cognitive constructivism states knowledge is something that is actively constructed by learners based on their existing cognitive structures. Therefore, learning is relative to their stage of cognitive development.

Cognitive teaching methods aim to assist students in assimilating new information to existing knowledge, and enabling them to make the appropriate modifications to their existing intellectual framework to accommodate that information.

2.3.2 Theory of Constructivist

Constructivism is learning theory which is of believe that knowledge "is a function of how the individual creates meaning from his or her experiences". Constructivism's central idea is that human learning is constructed, that learners build new knowledge upon the foundation of previous learning.

Constructivist learning theory underpins a variety of student-centered teaching methods and techniques which contrast with traditional education, whereby knowledge is simply passively transmitted by teachers to students. Constructivism

promotes a sense of personal agency as students have ownership of their learning and assessment. What are the three main types of constructivism? Typically, this continuum is divided into three broad categories: cognitive constructivism based on the work of Jean Piaget, social constructivism based on the work of Lev Vygotsky, and radical constructivism

2.4   Empirical Studies

Shonola et al. (2016) study on two Universities in South-West Nigeria found that the students use their portable devices to exchange education-related messages and academic files with classmates, search the internet and library databases for academic materials, practice online quizzes or tests and hold discussions with classmates among others. Consistent with this result, undergraduate students at Igbinedion University, Nigeria reported that they primarily use mobile phones to search for academic materials and to consult scholarly articles for assignments. They also outlined that using the internet on their mobile phones enables them to search and access academic information instantly (Mamudu and Oyewo, 2015).

The usage of mobile phones among students has not only been experienced in the Nigerian context but also in western countries, where studies on mobile learning have been well documented. For example, a survey found that medical students in the University of Coimbra had a positive attitude towards the utilization of mobile learning and applications. Although, the authors demonstrated that students were willing to promote its utilization for learning, yet, they had an average willingness to adopt it due to social influence and behavioral intention, such as perception towards ease of use and the reliableness of this technology for learning (Briz-Ponce et al., 2017). A meta-analysis that summarizes the effects of mobile technology on students' attitudes, engagement, and achievement found that learning content quality, content design quality, interactivity, functionality, user-interface

design, accessibility, personalization, responsiveness, including promoting of the collaborative learning environment to be the primary antecedents of internet mobile learning acceptance among students (Fabian et al., 2018)

Reflecting these results in the Nigerian context, a more recent investigation on mobile learning disclosed that students' initial acceptance of internet mobile learning is due to gratifying factors, such as perceived self-efficacy, outcome anticipations and perceived support for enhancing social ties (Ifinedo, 2017). However, there has been very limited research conducted among students in the Northeastern part of Nigeria. It is worthwhile to note that, in this region, technological development in Universities is not much advanced and very little research has been carried out to show the implementation of ICT as compared to Universities in other parts of Nigeria. Thus, there is a need for a study to investigate how students in this region find ways to make use of the internet to facilitate their studies. This paper, therefore, explores the students' access and their beliefs about the academic benefit of utilizing the internet and digital resources for educational research and learning. To achieve this intention, this study considers four (4) fundamental objectives:

To determine internet resources accessibility pattern among undergraduate students

To demonstrate the students perceived benefits from the use of internet resources for academic research and learning.

To understand the search engines frequently used by the students for educational inquiry.

To realize the challenges confronting the students regarding the use of the internet for educational research and learning.

2.5   Summary

In view of previous studies on the availability and utilization of mobile technological devices in teaching and learning, it has been discovered that the use of mobile devices such as Smartphone's, tablet pc and laptops have help integrate and enhance teaching and learning in a more encouraging and easier way for learners. In order to suppress some of the likely hindrance that maybe encounter by teacher and learner in the use of mobile technologies in tertiary institution it is suggested that teachers should be sent on training, seminar and workshop on the use of mobile technological devices as some of the teacher find it difficult to operate some of the devices that can be use to present and disseminate learning material to the learners.

CHAPTER THREE

3.0   RESEARCH METHODOLOGY

This chapter will focuses on the method, procedures, processes and strategies to be use by the researcher to make a research work a reality. Research methodology will be addressed under the following headings:-

3.1 Research Type

3.2 Population and Sampling

3.3 Research Instrument

3.4 Validation of Research Instrument

3.5 Reliability of Research Instrument

3.6 Method of Data Collection

3.7 Method of Data Analysis

3.1   Research Type

This research project was a survey research which addresses the availability and utilization of mobile technological devices among tertiary institution. Due to the modern advancement of technology the mobile devices present itself a milestone in electronic learning. With the population of institution, teacher and student across the country it will be impossible to setup a general assessment on both the teacher and student across the country to determine their competence in the use of mobile technological devices in teaching and learning rather this study will adopt questionnaires method in the collection of data for the research work.

3.2   Population and Sampling

The population for this study comprises of the tertiary institution making use of mobile technological devices in Minna metropolis of Niger state. There are two tertiary institution in Niger state, the institution include; Federal University of Technology Minna, and Niger State

College of Education Minna. The target population for this study comprises of the two higher institution of learning in Minna, namely; Federal University of Technology Minna, Niger State and Niger State College of Education Minna.

3.3   Research Instrument

The research instrument that was use in this study to collect needed data was questionnaire and will be design by the researcher. The questionnaire was title "Availability and utilization of mobile technological devices among tertiary institution student in Minna metropolis of Niger state". In constructing the questionnaire, effort was made to oversee that the instruction was clear and well understood to the respondents. The questionnaire was divided into four sections;

Section A which consist of demographic information about the respondents.

Section B, consists of statement to access Availability' and utilization of mobile technological devices among tertiary institution usage Extremely Used (EU) awarded 5 points, Moderately Used (MU) awarded 4 points, Somewhat Used (SU) awarded 3 points, Slightly Used (SU) awarded 2 points, Not Used (NU) awarded 1 point scale.

Section C, consist of statement tertiary institution lecturer's perception on the use of mobile technological devices for learning, using Likert scale of Strongly Agree (SA) awarded 5 points, Agree (A) awarded 4 points, Undecided (U) awarded 3 points, Disagree (D) awarded 2 points, and Strongly Disagree (SD) awarded 1-point scale.

Section D, Statement to access lecturer and students use of mobile technological device for teaching and learning using Fully used (FU) awarded 5 points, Used(U) awarded 4 points, Undecided (U) awarded 3points, Partially used (PU) awarded 2 points and Not used (NU) awarded I point scale.

3.4 Validation of Research Instrument

The face and content validity of this research instrument was validated by one lecturer in Education technology department of Federal University of technology including the project supervisor. This validity measurement is known as content validity method.

3.5 Reliability of Research Instrument

The method of reliability measurement employed for the research instrument that was use in this research was questionnaires and method of reliability of the instrument was calculated using percentage method. A total of one hundred and fifty (150) students were selected for the test using the stated institution in Minna metropolis.

3.6 Method of Data Collection

The data used in this research was gathered by the researcher designed questionnaires. The questionnaire was designed in such a way to gathered the necessary information required in the research work encompasses aspect like demographic data, availability and utilization of mobile technological devices for teaching and learning among tertiary institution in Minna metropolis, availability and utilization of mobile technological devices among tertiary institution in Minna metropolis, statement tertiary institution lecturer's perception on the use of mobile technological devices for learning in Minna metropolis, and lastly lecturers and students use of mobile technological devices for teaching and learning. Student and teachers of tertiary institution in Minna metropolis are expected to give answers to the available question which are required and necessary data needed in the study. The researcher is required to go round the school selected and meet with the schools management to discuss what he has come for and to seek permission from the school authorities to meet with the student and teachers of the institution. The researcher gives the student and teacher the research instrument (questionnaire) after been permitted by the school management and give them guideline or rather orientate them on what they are expected to do or how they are

expected to answer the questions in each section. The researcher will later go back to the school to collect the research instrument (questionnaire) on which the information needed have been provided.

3.7   Method of Data Analysis

The data obtained from the questionnaire will be analyzed using descriptive statistics (graphical representation such as tables and simple percentages) as shown below:

Research question 1 was analyzed using simple percentage, represented with a table

Research question 2 was analyzed using simple percentage, represented with a table

Research question 3 was analyzed using simple percentage, represented with a table

Research question 4 was analyzed using simple percentage, represented with a table

CHAPTER FOUR

4.0   RESULTS AND DISCUSSION

4.1   Introduction

This chapter presents the data analysis presentation of result collected from the field through the researcher designed questionnaires. The data collected from the research questionnaire are presented and analyzed using percentage computation.

4.2   Presentation of Results

Data were analyzed based on the needed answer to the three research question which are; Statement to access the availability and utilization of mobile technological devices among tertiary institutions usage? Tertiary institutions lecturer's tolerance on the use of mobile technological device for teaching and learning? Statement to access lecturer's and student use of mobile technological device for teaching and learning?

The questionnaire were administer to a group of one hundred and fifty respondent, seventy five(75) from school of science and technology (Educational technology) in federal university of technology Minna and seventy five (75) from college of education Minna, Niger state

Section A: consist of demographic information of the respondent

Section B: Statement to access the availability and utilization of mobile technological devices among tertiary institutions usage?

Table 4.1: **Shows the responses on statement to access the availability and utilization of mobile technological devices among tertiary institutions usage**

	RESEARCH QUESTION	FREQUENCY	PERCENTAGE (%)
1.	Does your school makes use of mobile devices in teaching and learning		
	Extremely Used	35	23.3
	Moderately Used	25	16.7
	Somewhat Used	30	20
	Slight Used	35	23.3
	Not Used	25	16.7
	TOTAL	150	100.0
2.	Are there availability of mobile devices for teaching and learning in your classroom setting like interactive whiteboard, projector and the use of laptops		
	Extremely Used	40	26.7
	Moderately Used	35	23.3
	Somewhat Used	30	20
	Slight Used	25	16.7
	Not Used	20	13.3
	TOTAL	150	100.0

3. Does your school use social media platform among teacher and student to interact learning materials and to administer test and assignment online

Extremely Used	30	20
Moderately Used	25	16.7
Somewhat Used	35	23.3
Slight Used	40	26.7
Not Used	20	13.3
TOTAL	150	100.0

4. Are there internet connectivity within your school that teacher and student can have access to the internet

Extremely Used	30	20
Moderately Used	25	16.7
Somewhat Used	30	20
Slight Used	40	26.7
Not Used	25	13.3
TOTAL	150	100.0

From table 4.1 35(23.3%) extremely used and 25(16.7%) moderately use of mobile devices for teaching and learning while 30(20%) somewhat used and 35(23.3%) slightly used and 25(16.7%) not use of mobile devices for teaching and learning in their school by respondents.

40 (26.7%) extremely used and 35(23.3%) moderately used that there is availability of mobile device for teaching and learning in their classroom like interactive whiteboard, projector and the use of laptops while 30 (20%) somewhat used and 25 (16.7%)slightly used and 20(13.3%) not use of mobile devices for teaching and learning in their classroom.

30(20%) extremely used and 25 (16.7%) moderately used that their school make use of social media platform among teacher and student to interact learning material and to administer test and assignment online while 35(23.3%) somewhat used and 40 (26.7%) slightly used and 20 (13.3%) not used of social media platform among teacher and student.

 30 (20%) extremely used and 25 (16.7%) moderately used that there are internet connectivity within their school that teacher and student can have access to internet, while 30 (20%) somewhat used and 40 (26.7%) slightly used of internet connectivity within their school, and 25 (13.3%) not used of internet connectivity in the school for teacher and student.

Section C: Tertiary institution lecturer's tolerance on the use of mobile technological devices for teaching and learning.

Table 4.2: Shows responses from respondent on tertiary institution lecturer's tolerance on the use of mobile technological devices for teaching and learning

S/N	RESEARCH QUESTIONS	FREQUENCY	PERCENTAGE
1.	Do lecturer's in your school allows student to use mobile devices in the classroom		
	Strongly Agree	25	16.7
	Agree	20	13.3
	Undecided	35	23.3
	Disagree	30	20
	Strongly Disagree	40	26.7
	TOTAL	150	100.0
2.	Do lecturer's make use of website in classroom while teaching to illustrate learning material in your school		
	Strongly Agree	35	23.3
	Agree	25	16.7
	Undecided	25	16.7
	Disagree	30	20
	Strongly Disagree	35	23.3
	TOTAL	150	100.0
3.	Do lecturer's makes use of social media as an educational tool		
	Strongly Agree	20	13.3
	Agree	25	16.7
	Undecided	40	26.7
	Disagree	30	20
	Strongly Disagree	35	23.3
	TOTAL	150	100.0

4.	Do you make use of web browser and search engines in classroom during teaching and learning process		
	Strongly Agree	25	16.7
	Agree	30	20
	Undecided	35	23.3
	Disagree	35	23.3
	Strongly Disagree	25	16.7
	TOTAL	150	100.0

From table 4.2 25 (16.7%) strongly agree and 20 (13.3%) agree that lecturer's in their school allows student to use mobile devices in classroom while 35 (23.3%) undecided and 40(26.7%) disagree and 15% strongly disagree that lecturer do not allow the use of mobile devices by student in their classroom.

35 (23.3%) strongly agree and 25 (16.7%) agree that lecturer's do make use of websites in classroom while teaching to illustrate learning material in their school, while 25 (16.7%) undecided and 30 (20%) disagree and 35 (23.3%) strongly disagree that lecturer's do not make use of website to illustrate learning in their classroom.

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20 (13.3%) strongly agree and 25 (16.7%) agree that lecturer's makes use of social media as an educational tool while 40 (26.7%) undecided and 30 (20%) disagree and 35 (23.3%) strongly disagree that lecturer's do not makes use of social media as an educational tools.

25 (16.7%) strongly agree and 30 (20%) agree that they make use of web browser and search engines in classroom during teaching and learning process while 35(23.3%) undecided and 35 (23.3%) disagree and 25 (16.7%) strongly disagree that they do not make use of web browser and search engines in classroom during teaching and learning process.

Section D: Statement to access lecturers and students use of mobile technological devices for teaching and learning

Table 4.3: Shows responses from respondents on statement to access lecturers and students use of mobile technological devices for teaching and learning

S/N	RESEARCH QUESTION	FREQUENCY	PERCENTAGE
1	Does lecturers in your school make use of mobile devices such as P.D.A, notebook computer, tablet PC in classroom to disseminate learning materials to the learners		
	Fully Used	30	20
	Partially Used	20	13.3
	Used	50	33.3
	Undecided	25	16.7
	Not Used	25	16.7
	TOTAL	150	100.0
2.	Are there use of mobile devices for teaching and learning on a one on one basis for lecturer and student		
	Fully Used	20	13.3
	Partially Used	40	26.7
	Used	40	26.7
	Undecided	25	16.7
	Not Used	25	16.7
	TOTAL	150	100.0

3. Does your school makes use of internet connectivity for lecturer and student in your school to access learning content and material online

Fully Used	35	23.3
Partially Used	30	20
Used	40	26.7
Undecided	25	16.7
Not Used	20	13.3
TOTAL	150	100.0

4. Does lecturer's make use of learning management system in setting up learning material and content

Fully Used	25	16.7
Partially Used	40	26.7
Used	20	13.3
Undecided	25	16.7
Not Used	40	26.7
TOTAL	150	100.0

30 (20%) fully used and 20 (13.3%) partially used that lecturers in their school makes use of mobile devices such as P.D.A, notebook computer, and tablet PC in classroom to disseminate learning material to learners while 50 (33.3%) used and 25 (16.7%) undecided and 25 (16.7%) not used of mobile devices by lecturer in their school such as P.D.A, notebook computer to disseminate learning material to learners.

20 (13.3%) fully used and 40 (26.7%) partially used that there is use of mobile device for teaching and learning as a one on one basis for lecturer an student while 40 (26.7%) used and 25 (16.7%) undecided and 25 (16.7%) not used that there is no use of mobile device for teaching and learning on a one on one basis for lecturer and student.

35 (23.3%) fully used and 30 (20%) partially used that their school make use of internet connectivity for lecturer and student to access learning content and material online while 40 (26.7%) used and 25 (16.7%) undecided and 20 (13.3%) not used that there is no internet connectivity for teacher and student to access learning content and material online.

25 (16.7%) fully used and 40 (26.7%) partially used that lecturer's makes use of learning management system in setting up learning material and content while 20 (13.3%) used and 25 (16.7%) undecided and 40 (26.7%) not used that lecturer's do not makes use of learning management system in setting up learning material and content.

4.3   Discussion of Results

From table 4.1, it is observed that there is higher percentage of extremely used and moderately used from the respondent. This shows the effective use of mobile devices and the availability of such devices to be utilized by the lecturer and student in the teaching learning process. It also shows that those devices such as interactive whiteboard, laptops, projectors and P.D.A are being put in place for better dissemination of learning material to the learners for their better understanding.

From table 4.2, it is observed that there is higher percentage of strongly agree and agree following the lecturer tolerance in allowing the student to make use of their mobile devices during teaching and learning to search for content that are not understood, it is also observe that lecturer do make use of website of different sources to search current update on learning material and to illustrate learning material during teaching and learning process. Also it is observed lecturer's do make use of social media platform as an educational tool where test and assignment are post, submitted and administer by the course lecturer and for learners who find it difficult to attend face to face classroom they can go online and download the learning material and assignment to study at own pace this follow the synchronous (Real-time) and Asynchronous (Delay time) mode of learning.

From 4.3, it is observed that there is higher percentage of fully used and used of mobile technological devices by lecturers and student in teaching and learning process. Such devices are computer, P.D.A and it is observed that there is availability of internet connectivity within the school for lecturer and student to make connection to the internet so as to have access to current learning materials online.

CHAPTER FIVE

5.0   SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1   Introduction

The purpose of this study is to investigate the availability and utilization of mobile technological devices in teaching and learning among tertiary institution. Following the observation of many researchers on the use of mobile technological devices in teaching and learning it is observed that the use of mobile devices play a vital role in both the lecturers and student of tertiary institution through dissemination of teaching and learning materials.

5.2   Summary

This research study focuses to determine the availability and utilization of mobile technological devices for teaching and learning, utilization if these mobile devices technologies are used by lecturers for teaching and learning, availability and utilization if the lecturers and student makes use of such devices during teaching and learning process.

From the findings it is observed that the availability of mobile technological devices in tertiary institution allows the learners to learn at their own pace, lecturers are able to give detail explanation on learning materials to the learners through the use of available media and material. The result also shows that the use of mobile technologies in tertiary institution have shift education from been face to face to a more technological advancement.

Mobile technological devices usage in tertiary institutions has made learning more effective, easier and more understanding. Mobile technologies have play a vital role in modern education system allowing learners to learn at their own comfort zone.

Result from the respondent shows that making use of mobile technological devices in their various school have help them to interact with lecturers or instructor as well as colleagues using various online platform created by the course lecturer. It is also observed that lecturers

make use of mobile technological devices application in setting up their learning or course materials for the learners.

5.4   Conclusions

From the findings of this study, it is obviously clear that the availability and utilization of mobile technological devices in tertiary institution have contributed to the success and growth of modern education system where student and lecturers now makes use of available media and material during teaching and learning process. Teaching and learning have also shifted from compulsory face to face classroom to use of social networking platform be it Skype, zoom, WhatsApp and also the use of interactive whiteboard, P.D.A (Personal Digital Assistant), projectors, Smartphone, ;laptops, notebook computers and others. Through the use of mobile technological devices in many tertiary institutions will go a long way to improve the standard of teaching and learning in many tertiary institutions.

5.3   Recommendations

Use of mobile technological devices in tertiary institutions should be made compulsory for preparing student for the future; student knowing how to use Smartphone's is getting an important part in the education system of nowadays. In many rural areas if they own a Smartphone they don't know how to actually use many of its features. If the students start using the device continuously, they will get more close to the new trends and technologies.

Adequate mobile devices should be made available for up to date learning; the lapsed trend of searching for the particulars in books and other references has gone away. If students have mobile phones in classroom he can instantly access the latest information about anything and everything and thus increases the motivation and engagement level of students in their studies.

Tertiary institutions should make provision for enough mobile device technologies as it serve as alternative to textbooks; the old way of going to libraries, searching for books, contents topics etc. everything has gone away. Student knowledge will increase only if they get updated, knowledgeable information of anything and everything instantly. Many textbooks will not contain relevant information a student needs. Library books couldn't able to provide updated information as like a Smartphone's do.

Lecturers and student should engage more in the use of their mobile devices during teaching and learning to enable easy collaborative learning between student to student and student to teachers.

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DEPATMENT: - EDUCATIONAL TECHNOLOGY

RESEARCHER NAME: - AJALA NAFIU AKOREDE

MATRICULATION NUMBER: - 2015/1/57904BT

LEVEL: - 500 LEVEL

RESEARCH INSTRUMENT (QUESTIONNAIRE)

RESEARCH TOPIC: - AVAILABILITY AND UTILIZATION OF MOBILE TECHNOLOGICAL DEVICES FOR TEACHING AND LEARNING AMONG TERTIARY INSTITUTION IN MINNA METROPOLIS.

SECTION A

RESPONDENT'S PERSONAL DATA

INSTRUCTION:

Below are the respondents personal information in the column provided

SEX: MALE ( )   FEMALE ( )

AGE: 15-20 ( )   21-26 ( )

DEPARTMENT: _____

LEVEL: _____

INSTITUTION: _____

SECTION B: - Statement to access the availability and utilization of mobile technological devices among tertiary institution usage

Scale: Extremely used (EU), moderately used (MU), somewhat used (SU), slight used (SU), not used (NU).

Instruction: Thick the answer of your choice in the column provided in the table

S/N	RESEARCH QUESTION	EU	MU	SU	SU	NU
1.	Does your school makes use of mobile devices in teaching and learning					
2.	Are there availability of mobile devices for teaching and learning in your classroom setting like interactive whiteboard, projector and the use laptops					
3.	Does your school use social media platform among teacher					

S/N					
	and student to interact learning materials and to administer test and assignment online				
4.	Are there internet connectivity within your school that teacher and student can have access to the internet				

SECTION C: - Tertiary institution lecturer's tolerance on the use of mobile technological devices for teaching and learning.

Scale: Strongly agree (SA), Agree (A), Undecided (U), Disagree (DA), Strongly disagree (SD)

S/N	RESEARCH QUESTION	SA	A	U	DA	SD
1.	Do lecturer's in your school allows student to use mobile devices in the classroom					
2.	Do lecturer's make use of website in classroom while teaching to illustrate learning material in your school					
3.	Do lecturer's makes of social media as an educational tool					
4.	Do you make use of web browser and search engines in classroom during teaching and learning process					

SECTION D: - Statement to access lecturers and students use of mobile technological devices for teaching and learning.

Scale: - Fully used (FU), Partially used (PU), Used (U), Undecided (U), Not used (NU)

S/N	RESEARCH QUESTION	FU	PU	U	U	NU
1.	Does lecturers in your school make use of mobile devices such as P.D.A, notebook computer, tablet Pc in classroom to disseminate learning materials to the learners					
2.	Are there use of mobile devices for teaching and learning on a one on one basis for lecturer and student					
3.	Does your school makes use of internet connectivity for lecturer and student in your school to access learning content and material online					
4.	Does lecturer's makes use of learning management system in setting up learning material and content					

TABLET PC AND NOTEBOOK COMPUTER

LAPTOPS

SMARTPHONES AND DESKTOP

PERSONAL DIGITAL ASSISTANT (P.D.A)