Evaluating the Use of Information Communication Technology and Its Full Integration into the Educational System in University of Jos

Gilbert Paul Igboechesi

Assistant Librarian, Library Department, University of Jos, Nigeria

Tihyaunin Luka Dang

Lecturer I, Department of Library and Information Science, University of Jos, Nigeria

Ruth Kwatlat Angulu

Assistant Librarian-in-training, Library Department, University of Jos. Nigeria

ABSTRACT: *In this present age globally, information and communication technology has transformed the educational system positively. Africa, Nigeria in particular, is not left out in the quest for full automated education. This study evaluated the use of information communication technology and its full integration into the educational system in University of Jos. Five research objectives and questions were designed to find out the level of use of different ICT platforms for teaching and learning. The study adopted the descriptive survey design. The population and sample size of the study consisted of 100 academic staff, non-academic staff and students. The instruments for data collection were an online questionnaire and Focus Group Discussion (FGD). Descriptive statistics of percentages were used to analyse the data. The result of study revealed that the level of ICT integration into the university of Jos educational system is fairly in place. Based on the findings, the study recommended that there should be adequate funding to take care of the numerous challenges and intended policies outlined. It also recommended that effective mechanism be put in place to monitor its disbursement and implementation of such funds.*

KEYWORDS: Information Communication Technology (ICT), Teaching, Learning, ICT gadgets, Education.

INTRODUCTION

Information and Communication Technology (ICT) has brought in significant changes in the educational sector today. The 21st century education system has been described as vital to being in tune with rapidly changing technologies.Therefore, its development in the Nigerian educational system has come to stay because its importance has been translatedinto huge

potentials in terms of positive outcomes for the Nigeria educational system, though investments in ICTs in Nigerian's education system have not yielded much when compared to similar investments made in communication (Atureta, 2011). Advances in technology has created a major shift from the traditional way of handling information and communication among staff and students to a stage where information is predominantly processed, managed, stored and communicated in digital formats. According to Agbetuyi and Oluwatayo (2012), the field of education has certainly been affected by the penetrating influence of ICT worldwide. Meaning that ICT has made impact on the quality and quantity of teaching, learning and research in the institutions using it. The introduction of ICT usage, integration and diffusion initiated a new age in educational methodologies, radically changing the traditional method of contemporary teaching and learning experience for both teachers and learners because it has the potential to accelerate, enrich and deepen skills, motivate and engage students in learning and provides opportunities for connection between the local institution and the other institutions in the world at large. This advancement has caused tremendous changes and has transformed the way students learn and how teachers teach. The development has improved access to appropriate, current and rich information at incredible speed. in today's society different Information and Communication Technology (ICT) gadgets are often blended simultaneously to give maximum output and better utilization. For instance, a lecturer can use his phone or modem to access the internet and video conferencing facilities like zoom, Microsoft teams, Google classroom etc. to connect with students who may be in same location or different locations at the same time for their   lectures. Other kinds of technology that might be added in such instance (especially if they are in a hall) is a television and even a radio to help out in the audibility of the conference.

Essentially, ICT has the potential to pave way for total transformation and innovation in the educational sector while also attaining additional instructional materials for study, research, entertainment and development and by extension, meeting the demands of modern information society at large (Tezci, 2009 and Tondeur et al., 2007). Drawing closer attention to higher institutions of learning, the impact of ICT is evident in many ways. Worldwide research has shown that ICT can lead to improved student learning and better teaching methods. A report made by the National Institute of Multimedia Education in Japan, proved that an increase in student exposure to educational ICT through curriculum integration has a significant and positive impact on student achievement, especially in terms of knowledge comprehension, practical skill and presentation skill in subject areas such as Mathematics, Science and Social Studies. Chiejina & Fakae (1996) submitted that the use of ICT allows for strategic reforms for effective and quality education by overriding all areas of human ineptitude, putting away manual manipulation of the key processes of teaching, learning, testing and monitoring. Adding that these processes can be made much more transparent and efficient with the application and use of ICT. It has been realized by other researches that through the application of ICT in the classroom, images can easily be used in teaching and disseminating knowledge thereby making lessons more enjoyable. This means has proven effective in improving the retentive memory of students and as such student attendance has improved tremendously. ICT has also paved way for individualistic learning, students are encouraged to look for information on the internet themselves and other means of searching such as the Library Online Public Access Catalogue

(OPAC) and other relevant books which also exposes students to diverse ways of obtaining information.

Furthermore, communication becomes easy as teachers can make use of projectors and smart/digital boards for descriptions and demonstration which may not easily be described verbally. Complex instructions can be broken down into pieces of data that can be easily grasped. Classes become more interactive and comprehension becomes easy. Ogunsola and Aboyade (2005) suggest that Rapid communication, plus increased access to IT in the home, at work, and in educational establishments, could mean that learning becomes a truly lifelong activity- an activity in which the pace of technological change forces constant evaluation of the learning process itself. In addition to this, some studies have submitted that "the importance of educational technology in the classroom will continue to increase" (Becker & Ravitz,2001) and as such much can be done to fully grasp the potentials inherent in adding ICT as a major source of instruction in the traditional classroom setting. Despite this incredible discoveries, it is imperative to mention that there are many educational technology solutions provided in the world that are yet to be realised here in Nigeria considering the slow pace of penetration of ICT and some which have been realised but are misleading and their capabilities not fully explored nor utilised. However, it is important to state here that Nigeria as a nation recognizes the relevance of ICT in her educational system. The Nigerian national policy on computer education emphasized the need for the full integration of ICT into the Nigerian educational system. Apart from its position on the integration in primary and secondary schools, the tertiary institutions are also required to not only teach computer science as a discipline but to integrate it in school administration and instruction and learning. Also, the National Policy on Education (NPE) as revised in 1988 and 2004, re – emphasized the need for the integration of ICT in the Nigerian educational system. Among the major objectives emphasized in the Nigerian National policy for Information Technology (FRN, 2004), one of them is to "integrate ICT into the mainstream of education and training and establishment of multifaceted ICT institutions as centers of excellence of ICT" (FRN, 2004). Effect implementation of this laudable policy remains to be seen.

University of Jos was established in February 1972. It was part of the computerized automation process that emanated within the Nigerian federal universities in the 90s. Then, it was gradual process to them but as the revolution on ICT intensified, it became glaring that the issue of staying or lagging behind was no longer an option to the institution. Irrespective of the various interventions, moves and policies by the institution and different organizations/bodies on the computer literacy and procurement of ICT gadgets (availability in the institution), the need for more was still prevalent. From 2006, the university benefitted from the university-wide capacity building intervention by the Carnegie Corporation of New York to develop human resources and automate, with the ultimate objective of making academicians, librarians and the library respond adequately to the dynamics of emerging Information and Communications Technology (ICT) moderated teaching and learning environment. This gesture improved the capacity of the university from then. By and large, based on established Focus group discussion with some trained personnel who manage ICT in the institution and system unit of the university of Jos library and students, Unijos is ICT inclined in these three aspects:

Teaching and learning such as:

    I.   Computer Based Test (CBT): Formerly. Reports from students and staff (both teaching and ICT staff) show that the system is still under development and they experience failure in being able to complete a test or work either due to power failure, leakages (due to insufficient computers and CBT halls) and students data/records not properly tracked (especially due to online registration faults),. This situation has led to malpractice, fraud and other related corrupt practices.

   II.   Library OPAC user perspective responses show that is not fully utilized because their responses indicated low usage of electronic resources from the preliminary observations gathered.

  III.   Projectors and smart/digital boards in classrooms are inadequate and not fully utilized.

Management functions such as:

    I.   University portal basically utilized for results grading and approval, payments of fees, hostel allocation, students' and staff record management, transcript processing and generation etc. report is that inaccuracies are experienced hence no effective results of such activities.

   II.   Academic planning: preparation and allocation of lecture venues, lectures, CAs, and Exam time table planning and planning of academic calendar. Reports indicate inaccuracies, leakages and low usage by students.

  III.   Security, CCTV Cameras and control panels are not fully utilized

Administrative functions:

    I.   Bursary depts. (Bursary app - payroll, loan, store etc), Apps not utilized at all, given lack of skills amongst staff.

   II.   Registry (Human resource application – staff documentation, leave management etc) clinic apps (patient record processing) – requires improvement such as pharmacy and inventory, doctor's examination and prescription record keeping and tracking, etc.

General Functions:

    I.   Network issues due to low bandwidth subscription and large number of staff and student users thereby overstretching the network and leading to poor work delivery. 2. Poor network coverage on campus as a result of few and/or faulty access point radios.

It is on this basis that this research seeks to evaluate the already existing technology as well as explore new technological tools that will contribute to the education system in higher academic institutions of learning. Specifically, it will analyse the already existing technologies while providing strategies on how ICT can be fully integrated into the educational system as well as introducing new ICT solutions that can be effectively utilized using University of Jos Plateau State as a case study to other higher institutions.

Research Problem

University of Jos, over time has seen to the application and utilization of ICT with diverse activities ranging from Management and Administrative functions to Teaching and Learning in the classroom. While efforts are made to introduce and enhance more capabilities, there, have been noticeable challenges in the effective utilization of ICT in these areas especially the area of teaching and learning; Google classroom, Microsoft team, zoom etc. Preliminary findings by the researchers, show that the process and methods of handling activities that involve the use of ICT are handicapped.

What could possibly be the reason for the above mentioned issues? Could it be that there are not enough ICT gadgets and materials available? Could it be that the system is porous and not effectively managed? Could it also be that the personnel who maintain such do not have the required requisite skills resulting to poor inspection and utilization of the systems? Additionally, since the university is increasing in capacity and number, what strategies are put in place to sustain the application of ICT to ensure that the current facilities in place are not over-stretched, considering the current issues the institution is facing, especially with proper funding? Is it a general problem in the country or it is just specific to University of Jos? These questions highlighted herein indicate that there is a gap that needs to be filled which necessitates this research. However, this research will only focus on ICT in teaching and learning aspects.

Research Objective

The aim of this paper is to analyse the use of ICT in University of Jos, particularly as it applies to teaching and learning, and to develop strategies in ensuring ICT is fully integrated into the educational system. More specifically, in the light of the research findings, this study will examine the following aspects:

1. ascertain the availability of ICT gadgets and materials in the institution
2. outline the various aspects the institution need/use ICT for teaching and learning
3. determine the level of awareness of the existence of ICT tools and resources used in classrooms for teaching and learning
4. analyse the extent of use of ICT in the classroom
5. proffer suggestions to the development of domestic policies to ensure that ICT tools and platforms are fully integrated in education and training at all levels, and to promote e-literacy skills among students and staff of University of Jos with emphasis on creating mass qualified and skilled ICT professionals, and in support of lifelong learning.

Research Questions

1. What are the available ICT gadgets and materials in the institution?
2. What are the various aspects or platforms the institution needs/uses ICT for teaching and learning?
3. What is the level of awareness of the existence tools/platforms used in classrooms for teaching and learning?
4. What is the extent of use of ICT in the classroom?

5. What are your suggestions to the development of domestic policies to ensure that ICT tools and platforms are fully integrated in education and training at all levels, and to promote e-literacy skills among students and staff of University of Jos with emphasis on creating mass qualified and skilled ICT professionals, and in support of lifelong learning?

Significance of the Research

The research will be beneficial to the institution, members of staff, students and researchers in the following ways:

*   To the institution, the research will potentially provide the required strategies of how ICT can be fully deployed and implemented while providing tactics of promoting the already existing ICT technology in the University of Jos in order to either improve or design better technological platforms that will enhance students experience and create mass qualified and skilled ICT professionals.
*   The research will also reveal how ICT influences the day-to-day activities of students and staff, this may lead to creating better output and services in University of Jos.
*   The researchers will gain a deeper understanding and knowledge on how to promote the integration of ICT into the educational curriculum while exploring new knowledge. More so, it will provide current knowledge on integration of ICT into the educational system, an idea which appears to be the most welcomed development in most institutions in Africa. This knowledge can be useful to future researchers.
*   Assessment and analysis of the ICT services provided by the institution is necessary in order to have a deeper understanding and ascertain the level of its value and satisfaction of users. This will increase users' acceptance of the institution's ICT setup and systems which may lead to providing better services.

Generally speaking, if it is true and evident that the use of ICT in our educational system for teaching and learning is apt and a must for modern and comprehensive education, then this study is imperative.

LITERATURE REVIEW

ICT in Education

Online Oxford Dictionary sees Information and Communication Technology (ICT) as an extended synonym for information technology (IT), but is usually a more general term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers, middleware as well as necessary software, storage- and audio-visual systems, which enable users to create, access, store, transmit, and manipulate information. Thus, ICT consists of IT as well as telecommunication, broadcast media, all types of audio and video processing and transmission and network based control and monitoring functions. This basically means that Information and communication technology (ICT) can be used for information storage and retrieval since it encompasses a range of applications, communications and technologies which aid administration, research, teaching, learning, communication etc. It has therefore become a global invention with great importance

in all known aspects of human life, ranging from governance, education, productivity, business, agriculture, etc.

To give a deeper understanding of what the term ICT means, perhaps it will be appropriate to trace the history way back when it was first introduce in the 1940s during the first development of the modern electronic digital computers. Information has always played a very important role in human life. However, in the mid-20th century, the role of information increased immeasurably as a result of social progress and the vigorous development in science and technology Ogunsola 2005. This paved way for rapid advancement of a mass of diversified information occurring as a result this development. This period received the name "information explosion" as put in by Trostnikov (1970) The pace of change brought by this expansion has had a significant effect on the way people live, work, and relate worldwide. New and emerging technologies challenged the traditional process of teaching and learning, and the way education is managed. Hubackova and Klimova (2014) submit that the early concept of information technologies (IT) has been amended with the element of communication, when separate computers and closed networks began to communicate among each other. Businesses and industrial sectors embraced the use of ICT for effective communication and delivery of services. (Allen. 2011) reports that the application of ICT is not only emphasized in corporate business and the industrial sector, but it is an essential part of education at all levels.

Over the years several definitions of ICT have emerge from different scholars. However, the seemingly most comprehensive definition may be that of Ciroma (2014). Who explains that ICT is a term used to describe a diverse set of technological tools and resources used to communicate, create, disseminate, store and manage information. These technologies include Computers, the Internet, Broadcasting Technologies (radio and television) and telephony. In other words ICT includes all kinds of technologies used for communication and for the work with information these are not only the hardware element computers, servers but also the software equipment, operating systems and network protocols. As the years go by it is apparent that the application of technology in education has far reaching impact across the globe, in Africa particularly, it has created new educational environments, provided new teaching methods, changed the traditional teacher-student relationship and improve the quality of education.

The Use of ICT in University of Jos

As of the time of this research, the University of Jos has twelve departments running about 73 departments. The institution over time has taken frantic efforts in utilizing ICT for diverse activities ranging from management and administrative functions to teaching and learning in the classrooms. In the classroom for instance, the application and usage of a transparent computer Based Testing (CBT) for Post UTME screening, GST, and other courses' assessment and examinations are very limited. Among other things is the e-learning platform for course management, lecture notes and assessment of students, online lecture and Examination time table. Depending on the ICT knowledge of lecturers, notes are made available to users online who through a username and password have access. They can also be downloaded and transferred to any device of choice. In some departments, examination grading and transcript management software and results are usually ready within 3 weeks after examination. It is

pertinent to state here that there is an internet presence to the University community. The few activities mentioned out of many others are supported by ICT infrastructures made available by the institution. Despite the poor nature of the network bandwidth and electricity in the country, it is being utilized by the university community. There is also a limited knowledge and usage of online platforms like Google Classroom, Microsoft Teams, Zoom etc between lecturers and students as these are some of the primary aspects of using ICT in teaching and learning.

The University library which serves as the house of knowledge is not out of place with the use of ICT. The library since the penetration of ICT has begun operation using the integrated library software module KOHA for some of its major activities. The library resource materials are in print and electronic formats. The online resources include E-books, journals, reference and serial materials made available to users for open and easy access. This is made easy using the Online Public Access Catalogue (OPAC). The OPAC embedded in the KOHA module is the electronic form of catalogue the library uses for patrons consisting of the staff and students of the university who have direct access to materials online through the URL, http://elibrary.unijos.edu.ng/. Some of the aspects of KOHA that is not fully operational in the library as at the time of this research includes the inability for patrons to view whether or not resources needed are available or not, that is, to know if on loan or not, from their comfort zone. This has posed as a challenge to the circulation unit, technical, serial and reference section of the library in the University campuses of the for users. There are also computers mounted in the e-library section of the library to help users achieve their research goals.

RESEARCH METHODOLOGY

Considering that the research questions are both exploratory and cognitive in nature, a multi-method approach will be suitable for the study. That is, using the quantitative and the qualitative method. Glosiene and Manzhukh, (2005) comment that multi-method approach accommodates organisational constraints, enable wider user involvement and facilitate validation. In this research, quantitative approach was used to determine the extent of the issue associated with the gaps in the use of ICT in University of Jos which assisted in bringing to the researchers' attention information about the wider context that is being investigated while the qualitative approach was used for data collection and analysis.

After a close review of different methods in the process of data collection, the researchers established that the Focus Group Discussion (FGD) and the use of Questionnaire will be best suited to gather sufficient data for the study. FGD was selected because data is easily generated through person to person (one on one) discussions which often put participants at ease and encourage realistic responses. While the questionnaire is an effective method of data collection which is often used to gather information about users' attitudes, beliefs, previous or current behaviours, and level of satisfaction Ghariep (2007). Finding out what particular digital service they use , how they use the system, what is useful to them and why, how effective is the monitoring and inspection of the particular digital service they use through interactive discussion with a group of individuals particularly the lecturers who are the ones directly involved in using these tools to deliver lectures. For the questionnaire, the students will be selected to respond. Questions that will be asked will reflect on their understanding of the use of ICT, what particular service they use what is effective and what is not. Participants were solicited to

deposit their degree of agreement to a number of statements using the researchers modified rating scale following each usefulness parameters or attributes of each digital service. 30 academic staff respondents, spread across each faculty of the institution were randomly selected for the FGD, 20 non-academic staff respondents were also selected from the various arms of administration and management and 50 students from different faculties and departments were equally randomly selected and the questionnaire was administered to them. Less may not generate diversified answers and more may be difficult to manage. All participants were recruited by sending request through the institution's official emails which was sent in advance and time for the FGD fixed based on the stipulated schedule. The researcher contacted students and elicited their support through WhatsApp, by sending and electronic questionnaire prepared through Google forms. The University library assisted the researchers by providing venue for the FGD. On data analysis, data collected was analysed using descriptive statistics including percentage. That is, ssimple percentage was used for data interpretation and analysis. Lastly, secondary sources were equally used to bring out the perceptions of different authors and scholars on the various aspects of this research as well as views of authors that also support aspects of the research findings.

Research Respondents Data

Table 1. *Population and Sample Size*

S/N0	Respondents	Field	Sample Size
1	Academic Staff	Community Service, Research and Teaching	30
2	Non Academic Staff	Administration and Management	20
3	Students	Research and Learning	50
	TOTAL		**100**

RESEARCH FINDINGS, ANALYSIS AND DISCUSSION

Research question 1:

1. What are the available ICT gadgets and materials in the institution? Available (A), Not Available (NA).

Table 2. *Available ICT Gadgets and Materials*

S/N0	ICT Gadgets and Materials	A	NA
1	Laptops	55	45
2	Desktop Computers	69	31
3	Smart Digital boards	36	64
4	Scanners/Printers	51	49
5	Projectors	31	69
	TOTAL PERCENTAGE	**48.4%**	**51.6%**

On the availability of ICT gadgets and materials in Table 2 above, respondents indicated that Tool laptops are 55% available, desktop computers are more available from the respondents perspective with 69%, scanners 36%, Scanner/Printers is 51% and Projectors had the least score from the respondents by recording 31% in availability of ICT gadgets and materials for teaching and learning.

Results indicated that the total percentage of the available ICT gadgets and materials in the university of Jos for teaching and learning is 48% and 51% is not available for the lecturers to use it offering modern and effective teaching to students. This means that, in spite of the importance of ICT in the education set up today, there is an almost all-time low practicality in the use of ICT for teaching and learning in the University of Jos. This result is easily justified by the incessant pressure on the government to augment the funding of the public universities in to enable them become better efficient in modern methods of teaching as this is not only needed but important especially because of the volume of students that are admitted each year into these universities. This finding agrees with that of Okwudishu (2005) who indicated that unavailability of some ICT components in schools hampers teachers' use of it to effectively teach the students in the modern ways required.

Research Question 2:

1. What are the relevant platforms the institution needs/uses ICT for teaching and learning?

Table 3. Relevant Platforms of ICT for Teaching and Learning

S/N0	Teaching and Learning	HR	R	NR
1	Computer Based Test (CBT)	20	55	25
2	Zoom	20	42	38
3	Google Classroom	18	34	48
4	OPAC (Online Public Access Catalogue)	28	49	23
5	Microsoft Teams	5	25	70
	TOTAL PERCENTAGE	**18.2%**	**41%**	**40.8%**

On the relevant platforms of ICT for Teaching and Learning in Table 3 above, 20% of respondents indicated that CBT is Highly Relevant, 55% said it is Relevant and 25% is of the opinion that they are Not Relevant. Zoom had the same output with the former, 20% indicated that the platform is Highly Relevant, an encouraging 42% indicated that the zoom platform is Relevant and 38% posited that it is Not Relevant. On Google classroom, 18% agreed that it is Highly Relevant, with a 34% saying that it is Relevant, while 48% opined that the platform is Not Relevant. OPAC had the highest output with 28% of the respondents who said that the

platform is Highly Relevant, 49% of the respondents agreed that it is Relevant and 23% states that it Not Relevant. Microsoft Teams had the least from the record on level of Relevance. Only 5% of the respondents stated that the platform is Highly Relevant, 25% agreed that it is Relevant and a substantial 70% of the respondents are of the view that on the relevant platforms of ICT for Teaching and Learning, Microsoft Teams is Not Relevant.

On total percentage of the level of relevance, results on relevant platforms of ICT for Teaching and Learning, indicated that 18.2% of the respondents agrees that the different platforms are Highly Relevant, especially the OPAC, CBT and Zoom. 41% of the respondents said all the platforms are Relevant and 40.8% said the aspects/platforms of ICT for Teaching and Learning are Not Relevant.

Based on this, the interpretation is that the relevance level is not very encouraging, though it is fair, but not good enough for an educational institution expected to be at par with other similar institutions like her in the world. Technically speaking, the relevance level is on the same spread with the Not- Relevant. This proves that there are glaring gaps between the Highly Relevant and the Relevant. It is only in line to state that a lot needs to be done to achieve better relevance for these platforms. This findings correlates with that of Agbetuyi and Oluwatayo (2012) who stated that Students understand the relevance of ICT when they interact more with computer and learn how to use them to improve their educational capacity.

Research Question 3:

1. What is the level of awareness of the existence tools/platforms used in classrooms for teaching and learning? Highly Aware (HA), Aware (A), Not Aware (NA).

Table 4. *Level of Platforms Awareness*

S/N0	ICT and Platforms Awareness	HA	A	NA
1	Computer Based Test (CBT)	22	45	33
2	Zoom	20	55	25
3	Google Classroom	19	33	48
4	OPAC (Online Public Access Catalogue)	27	50	23
5	Microsoft Teams	3	22	75
	TOTAL PERCENTAGE	**18.2%**	**41%**	**40.8%**

On the awareness level of the platforms for teaching and learning, Table 4 indicates that 22% the respondents are Highly Aware of the CBT, 45% is Aware and 33% is Not Aware. 20% of respondents are Highly Aware of Zoom, an encouraging 55% is Aware of the platform and 25% is Not Aware. On Google Classroom, 19% is Highly Aware, 33% of the respondents are

Aware while 48% is Not Aware. OPAC had the highest output in this segment too with 27% Highly Aware, 50% is Aware and 23% is Not Aware. Microsoft Teams had the least from the record, 3% Highly Aware, 22% is Aware and 75% is Not Aware on the level of platforms awareness.

On the awareness level of the platforms, results indicate that a total percentage of 18.2% respondents are Highly Aware, 41% are Aware and 40.8% is Not Aware of any platforms for teaching and lecturing. The interpretation of this is that the awareness level of the various platforms for teaching and lecturing is on the fair side. Not good enough to be on the average side. The deduction in this, based on the numerical analysis, is that the awareness level is at par with the Not-Aware. The there is a distant gap between the highly aware and the aware, making the need to do better awareness of the platforms pertinent. This finding is supported by the research carried out by Ogechukwu & Osuagwu (2009) who placed that the awareness level of ICT in Nigerian educational system is still in the emerging phase in Nigerian educational system. In their article; "ICT in Education: Achievements so far in Nigeria", which discussed ICT dimensions, its transforming power; status in Nigerian educational institutions, plus limitations to its infusion, both experts opined that the country's educational system is yet to move beyond the emerging phase of ICT in education which according to them, is only one of four approaches, the goals of ICT in education embraces. These approaches are: emerging, applying, infusing, and transforming. They are of the opinion that 90% of Nigeria's educational institutions fall within the emerging phase, 7% in the applying phase and 3% in the infusing and transforming phase, while few other sectors of the economy have progressed beyond that phase.

Research Question 4:

1. What is the extent of use of ICT in the classroom? Highly Utilized (HU), Utilized (U), Not Utilized (NU).

Table 5. *Extent of Utilization*

S/N0	Extent of Utilization	HU	U	NU
1	Academic Staff (30 respondents)	5	9	16
2	Non Academic Staff (20 respondents)	3	8	9
3	Students (50 students)	5	15	30
	TOTAL PERCENTAGE	**13%**	**32%**	**55%**

In Table 5, out of the100 respondents 30 are academic staff from different faculties and departments. Their response shows that only 5% said that they are Highly Utilized, 9% said they are Utilized while 16% of them said they are Not Utilized. The Nonacademic staffs are also part of this because they are primary players in policy making that affects the procurement and implementation, thereby making utilization possible. 3% of them are of the the view that

the ICT platforms are Highly Utilized, 8% agrees that it is Utilized while 9% posits that it is Not Utilized. The remaining 50% of respondents are the students of the University of jos from different faculties and department. 5% of them agree that the platforms are Highly Utilized, 15% agree that they are Utilized and 30% insists that they are Not Utilized. The difference between the positive and negative narrative on staff and student perspective of ICT platform utilization poses a need to be worried. This clearly shows the reason why the traditional ways of teaching and learning is yet to be improved upon in our Nigerian public universities.

Results indicated that the total percentage of the platforms Highly Utilized is 13%, 32% of the respondents stated that in University of Jos, these platforms are Utilized while 55% supports the view that they are Not Utilized in the institution. The extent of the disparity seen in this findings is also evident in the yearning and quest for a better educational system at the tertiary level in Nigeria. This does not say much about the capacity of the Nigerian public University in keying into the international standard of teaching and learning that has rapidly helped to revolutionize a lot in the effectiveness needed and given to students in terms of modern knowledge and capacity.

Based on the findings also, the researchers discovered that the need to use ICT in teaching is more cumbersome as most of the lecturers don't have access to the needed ICT gadgets. Some are discouraged to take the orientation classes to know how to use these ICT inventions to better their teaching styles. Even when some do, the gadgets are mostly occupied, not in good condition as a result of wear and tear that is caused by frequent use since it is limited. This is seen more in the ICT gadgets needed to lecture students like projections, smart digital boards, laptops/desktop computers etc. the problem of network is also a serious one in terms of live connectivity for online classes. This is the primary reason why there is less knowledge and patronage of online platforms like zoom, Google classroom, Microsoft Teams etc. Students are not left out of this challenge too in aspects of owning laptops, good android phones and data for online connectivity. This is mostly an issue with them if an online class is to take place at the comfort of the students.

The whole change in teaching and learning dimensions for lecturers and students is the basis for the utilization of ICT. As stated by Agbetuyi and Oluwatayo (2012), ICT has changed the relationship between students and lecturers and has made it open and intimate. Students become more aware about how to learn when using ICT because they must interact with computer. The idea of sharing knowledge and the capability of using new resources for teaching and learning are enhanced by using ICTs. This is due to the fact that there is a national policy supporting ICT in schools. It has also helped students' curiosity and motivation that has in turn forced the lecturers to seek more knowledge on how to use different ICT gadgets and platforms available to impart sound and all-encompassing knowledge.

Research Question 5:

1. What is your input in the development of domestic policies to ensure that ICT tools and platforms are fully integrated in education and training at all levels, and to promote e-

literacy skills among students and staff of University of Jos with emphasis on creating mass qualified and skilled ICT professionals, and in support of lifelong learning?

Table 6. Development Policies

S/N0	Challenges Faced in IL Delivery	HS	S	NS
1	Development of Mobile App for the School	67	23	10
2	Enhanced training and Re-training of Staff	80	18	2
3	Frequent orientation for Students (Each Session) on the Platforms	60	32	8
4	Availability and adequate ICT Gadgets for the institution's use	84	16	0
5	Special Task for Monitoring the level of implementation (Feedback Unit)	79	20	1
6	Increased Funding for the institution	54	31	15
7	Deliberate/intentional use of OPAC for learning (Lectures) and Research	49	42	9
8	Increased Internet bandwidth for faster connectivity	66	25	9
	TOTAL PERCENTAGE	**67.4%**	**25.9%**	**6.7%**

From the study figures in Table 6, respondents input in the development of domestic policies to ensure that ICT tools and platforms are fully integrated in education and training at all levels, and to promote e-literacy skills among students and staff of University of Jos with emphasis on creating mass qualified and skilled ICT professionals, and in support of lifelong learning are on the high side. Deducing from what the studies show in all the itemized intended policies, deliberate/intentional use of OPAC for learning (Lectures) and Research is the only intended policies with 49% on "Highly Supported." Others are at a very high figures, distant from anything close to contesting them. The "Supported" also took another reasonable figures from the little remaining figures leaving the "Not Supported" almost non-existent.

On total percentage, results indicate that Highly Supported is 67.4%, Supported is 25.9%, while Not Supported is 6.7%. with these findings on the respondents input on intended policies to better the present situation, it is clear that the use of information communication technology (ICT) and its full integration into the educational system in university of Jos should be addressed on the level of "emergency." There is no way any meaningful impact can be made and sustained in the trend of modern education with such reality because the literal place of this result indicates that need for the intended policies to be put in place to ensure that the system of teaching and learning is fully automated practically is 93.3%, supporting the fact that it is on a high side. On the other flip, it means that the yearnings and need to get this right is also on the high side. This supports the views of Agbetuyi and Oluwatayo (2012) who placed that In Nigerian educational system, one interesting thing is that ICTs are also a

transformational tool that has promoted the shift to a learner – cantered environment, which empowers the learner to make demands (take part in policy making that concerns the learner; student). By making these demands, it has assisted in improving the quality of education and training by increasing learners' motivation and engagement, facilitating the possibility of creating a better environment fo teaching and learning, which invariably means acquiring more skills to improve oneself.

CONCLUSION

The vision to make the Nigerian public tertiary institutions ICT compliant is only possible if she fully keys herself into the international standards by using ICT as an engine for sustainable development and global competitiveness. Anything outside this, leaves much to be desired not to talk of achieving them. This is because at the moment, ICT is at a unique stage in the world, it is a beautiful bride full of many untapped potentials in Africa and Nigeria at large. In the University of Jos, Nigeria, several challenges are responsible for the non-actualization of its full actualization. These include poor IT infrastructure, inadequate ICT manpower, inadequate computers and other ICT gadgets, poor internet connectivity, epileptic power supply and high cost of ICT facilities among others, lack of maintenance culture. All these have been the challenges of the institution over time and sadly enough, they still persist.

RECOMMENDATION

Thus, it is believed that in order to emerge beyond the present stage the university of Jos is in terms of full integration of ICT in teaching and learning, a lot of policy formulation implementation is required first in the Nigerian educational system (government), the Nigerian Universities Commission (NUC) and the University of Jos in particular. Based on the discussion in this study, these should cut across the areas of:

1. Adequate Funding:
   This is the most vital aspect of the recommendation as it will determine the pace and reality of achieving all the following:
   a. Availability of ICT gadgets to both the teachers and students. They should be readily available in class rooms for use. Aacquiring the facilities will aid effective electronic teaching and learning.
   b. Good internet connectivity to boost the effectiveness of online classes and sessions when in place. This will also come in handy when the students need to download materials attached or linked to lectures either through hyperlinks and the likes.
   c. Capacity development: Training and retraining of staff to be able to translate to students and get them in tune with the needed changes in teaching and learning.
   d. Development of institutional mobile Apps with friendly maneuvering environment for staff and students to make the quest for teaching and learning come in handy, especially by using the mobile phones to do what will be done in the computer system through the app.
   e. Access to different measures of ensuring power stability like solar energy, standby generators etc.

f. Basic ICT knowledge should be made compulsory at all levels of our tertiary educational system to grow more in the needed skills and need for it.
g. Government and the institution management should assist in promoting partnership with ICT organizations like CISCO, Microsoft Corporation, Intel Corporation, SchoolNet to enhance its full actualization.

2. Proper use of the funding provided is the greatest of it all. There should be mechanisms put in place to monitor the affective use of the allocated funds because overtime, this has been the bain of the educational system. The cry for funding is enlarged every now and then because out of the scarce resources, the limited funds made available are further extinguished by those charged with using them attain the specific objectives they are meant for.

REFERENCES

Atureta, A. (2011). Reviewing the benefits of ICTs in the Nigerian educational system.

Agbetuyi, P. A. & Oluwatayo, J. A. (2012). Information and communication technology (ICT) in Nigerian educational system. *Mediterranean Journal of Social Sciences,* 3(*3*).
    Doi: 10.5901/mjss.2012.v3n3p41

Becker, H. J., & Ravitz, J. L. (1999). The influence of computer and internet use on teachers' pedagogical practices and perceptions. Journal of Research on *Computing in Education*, *31*(4), 356–384.

Chiejina S.N & Fakae B.B. (1996). Applications and transfer of information technology in veterinary research in developing countries: the Nigerian experience. *Veterinary-Parasitology*, *64*(1-2), 121-128.

Federal Ministry of Education (FME) (1988). Report on National Policy on Computer Education. Lagos: NERDC Press.

Federal Ministry of Education (FME) (2004). Ministerial initiative on e – education for Nigerian educational system. Abuja: NERDC Press.

Federal Republic of Nigeria (FRN) 2004. National Policy on Education (4th ed) Lagos: NERDC Press.

Okwudishu, C. H. (2005). Awareness and use of information and communication technology (ICT) among village secondary school teachers in Aniocha South Local Government Area of Delta State, Abraka

Ogechukwu N. I. & Osuagwu, C. C. (2009). ICT in education: Achievement so far

Ogunsola L. & Aboyade, W, (2005). Information and Communication Technology in Nigeria: Revolution or Evolution. *Journal of Social Sciences*. 11. 10.1080/09718923.2005.11892487

Tezci, E. (2009). Teachers' effect on ict use in education: the Turkey sample, Procedia. *Social and Behavioral Sciences*, *1*(1), 1285-1294. https://doi.org/10.1016/j.sbspro.2009.01.228.

Tondeur, J., van Braak, J., & Valcke, M. (2007). Primary school curricula and the use of ICT in education. Two worlds apart? *British Journal of Educational Technology*, *38*, 962-975.