Journal of Education and Society
Vol., 12(3), 2936–2943 June 2022.
ISSN: 1596-1462.

ICT Integration for Effective Instructional Delivery in Nigerian Universities

VINCENT-RIWO, STEPHANIE
Department of Educational Management,
Faculty of Education,
Ignatius Ajuru University of Education, Port Harcourt,
stephanievincent817@yahoo.com

NWOSU, CAROL CHIKODILI AUGUSTINA
Department of Educational Management,
Faculty of Education,
Ignatius Ajuru University of Education, Port Harcourt,
favour.nwosu911@gmail.com
Ref: No. 97

Abstract

This paper discussed the need to achieve effective instructional delivery in the universities through the use of ICT. In this digital era, ICT use in the classroom is important for giving students opportunities to learn and apply the required 21st century skills. The need to fully integrate ICT in instruction at the universities has become necessary in view of the demand on university graduates to be ICT literate in an emerging world that is ICT driven. The products of the system are not for the Nigerian educational industry alone but for a collaborative and competitive global village where knowledge is created and shared using ICT. It explored the concepts of effective instructional delivery, ICT and ways of integrating ICT in teaching. Furthermore, the major constraints to the integration of ICT in the class room were highlighted. The paper concluded among others that seamless integration of ICT in instructional delivery has the potential of facilitating instruction and enhancing learning amidst other benefits. The paper suggested that Government should equip university ICT centers with functioning computers and internet services as well as funding for the running cost of ICT maintenance.

Keywords: ICT integration; Instructional delivery; Effective; Universities; Nigeria.

INTRODUCTION

Educational institutions the world over have recognized the important roles technology plays in the learning environment hence the amount of money spent and importance attached to its acquisition. This has made the business of education in the developed world highly hinged on digital technology to the effect that any teacher who is not digitally literate may not have a place in the electronically driven classroom. Literacy is now synonymous with acquisition of computer literacy, skills and competencies. The Federal Republic of Nigeria is not oblivious of this modern trend and seriously recognizes the role of ICT in the advancement of knowledge at the tertiary level of education (FRN, 2004). The launching in 2004 through the Federal Ministry of Education of the ministerial initiative

making e-education one of the initiatives for the attainment of Education for All (EFA) and the Millennium Development Goal (MDG) was a practical
demonstration of this fact. ICTs were meant to be used as the mode for instructional delivery.

The characteristics and benefits of ICT in higher education according to Simuyi as cited in Adegbija (2011) can be summarized as follows:

- Increase access to instructional resources through the Internet,
- Share experiences through technologies such as the virtual university,
- Increase access to higher education through distance teaching and learning,
- Increase flexibility in what to learn, how to learn it, and where to learn it, and
- Motivate potential learners to engage in higher education.

In an organized learning environment, where the sole intent is to improve learning, all these benefits are easily realizable with the adequate provision of needed ICTs, availability of technical support staff and the provision of requisite infrastructure such as uninterrupted electricity. University education is the education received after secondary school particularly in Nigeria. It is the major source of providing the required knowledge that will help generate and accelerate knowledge flow for modern based economics. This implies that university education is a pivotal tool in addressing urgent economy related issue of national importance.

Though Universities in Nigeria have established ICT centers to cater for the information and communication technology needs of the staff and students in the academic environment, the job of integration of ICT in ensuring effective instructional delivery at this level has gone beyond setting up of such centers. The information and communication technology need of a university in this knowledge era goes beyond the assemblage of computers in a room called computer or ICT laboratory without internet connectivity and regular and uninterrupted supply of electricity. Even where the computers are connected to the Internet, it does not have the magic wand to transform the learning environment without a teacher with the technological, pedagogical and content knowledge (TPACK) to use them in the classroom situation (Koehler& Mishra, 2013).

The university being a place where future leaders are trained to develop the high- level technical capacities that underpin economic growth and development should be adequately equipped with ICT resources which the teacher educators in these universities need to use in the training of the much needed manpower to accelerate the socio- economic development of the nation. There is no gainsaying that a teacher trained using ICT resources will definitely use same in their teaching after training unlike a teacher trained without them.

CONCEPTUAL CLARIFICATION

Information and Communication Technology (ICT)

Generally, the term Information and communication technology (ICT) refers to any arrangement that is capable of capturing, storing, retrieving, manipulating, transmitting or receiving of information or data. In a broad sense they include; television sets, bulletin boards, radio, record players, disc players, still camera, video camera projectors, computers, interactive white board, internet and the internet resources etc. Mejiuni and Obilade (2006) defined ICT as the electronic and non-electronic technologies and infrastructure systems used to create, store, manipulate, retrieve, and communicate or disseminate information. Information and communication technologies are computer based tools used by people to work with information and communication processing needs of an organization. Its purview covers computer hardware and software, the network, and other digital devices like video, audio, camera, and so on, which convert information (text, sound, motion, etc.) into digital form (Moursund & Bielefeldt, 1999).

As a general term, information technology encompasses all forms of technology to create, manipulate, store, communicate and disseminate information in its various forms through the network of computers and other emerging technological devices. ICT is defined as computer based tools used by people to work with the information and communication processing needs of an organization

Effective Instructional Delivery

Teaching and learning being two faces of the same coin presupposes that teaching leads to learning. Many methods and strategies have been variously used in the learning situation to achieve the desired objectives of classroom instruction. Mostly used in the Nigerian universities is the traditional mode of delivery which is the face to face mode. This mode of delivery has been variously viewed as not being able to meet the challenges of learning in a technology driven age. The student in this learning situation is passive as it is the job of the teacher to present the content (Anderson, 2013; Thiagarajan, 2005). In this learning setting, what is promoted is shallow learning in the sense that assessment is usually based on memorization and regurgitation of facts.

The coming of ICT into instruction is supposed to mark a paradigm shift signalling the end of the teacher being perceived as the sole repository of knowledge especially with the availability of numerous amount of information on the Internet and the worldwide web. Gone should be the days of "hypodermic needle" method of teaching when teachers and academic practitioners saw themselves as knowledge oracles and sage of the stage delivering data, information and knowledge to eager learners whose minds are empty vessels that needed to be filled (Ajayi, 2001). However, a close observation of the manner in which lecturers carry out their instructional delivery in the universities today shows that we are far from achieving effective teaching and learning using ICT. The coming of ICT into teaching and learning have necessitated a paradigm shift from the traditional method that was teacher centered to the modern method which is learner centered (Trucano, 2005). The gains of such a new approach have been extolled by Buabeng-Andoh (2012) who affirmed the great capabilities of ICT in the spreading of knowledge, making education more real and the development of more efficient educational service.

Abolade and Yusuf (2005) posited that information and communication technologies are essential tools in any educational system with the possibilities of being used to meet the learning needs of individual learners, support equality of educational opportunities; offer high quality learning materials, increase self-efficacy and independence of learning among students, and enhance teachers' professional development. The integration of ICT in the classroom creates a more inclusive learning platform which kindles interaction there by removing passivity (Ibeh et. al; 2007). Similarly, Olorundare (2006) asserted that ICT is important in teaching and learning as it guarantees unrestricted access of teachers to relevant information and development in subject area as well as the provision of efficient and effective tools to take care of students' individual differences.

Effective instructional delivery embraces all human interactive skills employed by the lecturer to promote/facilitate learning in the classroom situation thereby leading to improved performance on the part of the learner. It is a process in which teachers apply repertoire of instructional strategies to communicate and interact with the learners around academic content, and to support student engagement for better learning outcome. Many institutions have adopted ICT and so much money has been invested in computerizing these institutions however, some scholars have argued that there is no positive impact of these huge investments in making learning effective (Stool, 1999). This can be explained by the fact that the teachers who are meant to use such technologies have no initial training on how to use same in teaching (Ojo, 2005; Jegede, 2009). It turns out to bea challenging situation for these teachers to attain adequate mastery of skills and contents that are inherent in ICT. There is therefore the necessity to add in the teacher education program as a

necessary component of the course, provision of instructional models for classroom application of ICT (Novak & Knowles, 1991).

Teacher educators are models in the faculties of education in universities. In playing this role, it is imperative to use appropriate pedagogy when utilizing technology in a classroom of pre-service teachers (Yalcin et.al; 2011). They maintain that it is not enough for lecturers to use technology to learn; in addition, they must learn how to use them effectively in their lessons and classroom. The TPACK model readily becomes relevant in this regard as lack of technological pedagogical and content knowledge has been the missing link in our teacher education programs. Thus, a lecturer using internet search to find materials for research, teaching materials and word processing their lecture notes though using ICT, has not fully integrated it into learning. Their ICT usage has not impacted on the students' learning since the students have no contact and usage of the ICT in their learning.

Need for ICT Schools

There is widespread belief that ICT can and do empower teachers and learners, changing teaching and learning processes from being highly teacher-dominated to student-centered. The result of this transformation will automatically be increased learning gains for learners, creating and allowing for opportunities for the development of their creativity, problem-solving abilities, information reasoning skills, communication skills, and other higher-order thinking skills (Trucano, 2005). In the 21st century, there are basic skills and competencies which an individual is expected to possess for optimal functioning and survival in the digital age.

These skills are centered on the effective utilization of ICT in learning and performing other daily routine activities, thus making room for lifelong learning. This being the case, no effort should be spared in making sure that Nigerian classrooms are ICT driven through its integration in instruction. Two things are involved when we talk about integration of ICTs in effective instructional delivery in order to prepare the pre-service teacher to use technology in teaching. The first is general computer literacy (operating system, word processing, spreadsheet, and database) and telecommunication. The second is professional literacy- a basic understanding of how computer and related technology can be used in education, as well as specific novice skills for integrating technology into the curriculum at the grade level and in the subjects that preservice teachers plan to teach (Willis, 2001). A combination of computer literacy and professional literacy in a conducive-learning environment will invariably enhance the performance of the learner. Attainment of enhanced learning is highly dependent on the will and competencies of the teacher in performing their duties. Given the role education plays in the development of any nation, Kwache (2007) noted the indispensability of the school in the growth of an ICT learning culture of any country maintaining that the school should offer efficient leadership in ICT integration through research, modelling of effective integration of ICT and provision of opportunities for professional development of citizens of a country. The teacher education institutions such as the colleges of education as we have them in Nigeria should play a leading role in this regard.

State of ICT Integration in the Universities

Despite the fact that the Federal government of Nigeria recognizes the need for ICT in education in her various policies (FRN, 2004; FRN, 2014)) the state of infrastructure on ground is not commensurate to the media attention generated. The availability, adequacy and accessibility of these resources have been issues of research.

There seem to be a dearth of research information as to the actual impact of ICTs in instructional delivery in the Nigerian Higher institutions especially at the university level. Jude and Dankaro (2012) opined that ICT resources were not adequately available in some of the Nigerian

universities since accessibility and utilization of any resource is dependent on availability, they concluded that ICT has not been used effectively in those universities. The actual integration of these resources in teaching and learning is yet another. This is because available ICT resources can be used by both lecturers and students for other purposes other than in the classroom situation.

The digital technologies which are presently the crux of ICT integration in education are not available in some institutions of higher learning in Nigeria (Ajayi, 2008). It is rather sad to note that some educational administrators at university level in Nigeria tend to perceive ICTs as tools to pass NUC accreditation rather than a necessary tool for effective teaching and learning (Awoleye et. al; 2008). The capability and readiness of any teacher educator to infuse ICTs into their teaching will largely be determined by the professional training and development which such a lecturer receive (Pearson, 2003; Watson, 2001; Williams, 2003; Selinger & Austin,2003). The right step to effective use of ICT in the classroom will be ICT literacy before professional competence. This is against the backdrop that most lecturers were trained without the use of ICT hence it is usually difficult for one to give what they do not have.

It is not also certain that management of these universities do organize regular in-service trainings for these lecturers who initially did not possess ICT literacy on employment to develop the skills and competencies needed for teaching with ICT. The so called capacity building workshops occasionally organized for teacher educators most often lack proper planning and adequate follow up activities to make the learned materials practicable and useful to both the teacher educator and the teacher education institution. Most of these programs apparently are mere jamborees aimed at certificating teacher educators already in the system. This is perceived so because ICT literacy has been made a prerequisite for their continued stay in service by Nigeria University Commission (NUC) (Owolabi et. al; 2013). A visit to the classrooms in most institutions of higher learning in the country may reveal that ICT is not yet a common feature of the classroom environment despite the claim that all teacher educators are now ICT literate by virtue of the fact that they attended these workshops. Even when the workshops are well organized, the working environment in these colleges with its attendant lack of adequate infrastructure drastically reduces the gains of the programmes.

Constraints to the Integration of ICT in Teaching and Learning

Despite the important role and obvious need for the integration of ICTs in teaching and learning, many factors constitute constraints to its use at the university level in Nigeria. Such factors among others include:

- Epileptic supply of electricity throughout the country
- Limited and inadequate ICT facilities
- Lack of technically experienced lecturers
- Inadequate course content and Lack of access to ICTs in trainee teachers' field experience
- Lack of support for the integration of ICT in teaching
- Expensive nature of ICT resources
- Lack of internet connectivity in the universities especially in the classrooms
- Lack of the technological pedagogical and content knowledge (TPACK) required for teaching with technologies

The Way Forward to the Constraints of ICT Integration in Nigerian Universities

For effective instructional delivery at all levels of Nigerian educational system, the groundwork should be done at teacher training institutions.

- Teaching methods in the universities should be integrated with the ICT course so as to enable the teacher trainee to acquire the ICT skills of teaching alongside the methods of teaching

through modelled examples by teacher educators. This integrated approach has been empirically found to yield better students' achievement than the stand alone ICT courses as prevalent in universities in the country (Garba et.al; 2013).

- The Federal Government of Nigeria should wake up from slumber and vigorously pursue the faithful implementation of her policies as it concerns ICT in education. More especially as stated in Section 11 subsection 102 (d) of the National Policy on Education that "Government shall provide facilities and necessary infrastructure for the promotion of Information and Communication Technology at all levels of education" IT policy should be carried out after assessing the success or failure observed in implementing the policy through research so as to ascertain what is lacking in its implementation after more than a decade of its operation. Teachers' awareness of the existence of ICT policies and initiatives is lacking (Adesina et. al; 2014). This assessment will no doubt strengthen the policy as well as make room for more focus on its implementation.
- In the appointment of leadership personnel of universities, government should make it a point of duty to include proficiency in the use and exemplary attitude towards ICT as criteria for such leadership positions. As it is usually impossible for one to give out what they do not have, appointing leaders who lack competence and interest in ICT will further deteriorate situation. This will help to empower people who are enthusiastic about ICT to strive to reposition the system for the attainment of the benefits of ICT in our universities.

SUGGESTIONS

Based on the aforementioned constraints to the Integration of ICT in Teaching and Learning, the following suggestions among others were made:

1. Government should provide conducive learning environment for the use of ICT in the universities.
2. There should be continuous training and retraining of staff/Administrators to make them capable to utilize the available ICT facilities.
3. Government should provide enabling environment such as stable power supply for ICT facilities to function properly
4. Government should provide fund for the running cost of ICT maintenance.
5. qualified personnel should be hired/employed in managing ICT software
6. Government should provide ICT facilities in the entire universities in the country
7. Government should equip university ICT centres with functioning computers and internet services.

CONCLUSION

In conclusion, the role of ICT in the 21st century classroom has been variously stressed. The university system being responsible for the development and production of high- level manpower within the context of the needs of the nation should be responsive to the demands of teacher training in this milieu. The benefits accruable to the education industry if ICT is effectively integrated in instruction at all levels are enormous and yet to be realized. Seamless integration of ICT in instructional delivery has the potential of facilitating instruction while at the same time enhancing learning amidst other benefits. The potentials of ICT can be harnessed for the benefit of Nigerian educational system if suggestions made in this paper are given a trial among other initiatives as this is not exhaustive but basis for further initiatives towards achieving effective instructional delivery in Nigerian universities.

REFERENCES

Abolade, A. O., & Yusuf, M. O. (2005). Information and communication technology and Nigerian teacher education. *African Journal of Educational Studies*, *3*(10), 19-23.

Adegbija, M. V. (2011). Technologies for instruction as innovative strategies in higher education: a Nigerian Perspective. *European journal of scientific research*, *63*(4), 557-562.

Adesina, A. I., Udeani, U., & Adeoye, B. F. (2014). Science and technology teacher's level of awareness of Nigeria's ICT initiatives for teaching. *science and technology*, *5*(6).

Ajayi, I. A. (2008). Towards effective use of information and communication technology for teaching in Nigerian colleges of education. *Asian Journal of Information Technology*, *7*(5), 210-214.

Anderson, M. (2013). Advantages and disadvantages of lectures in middle school and high school.

Awoleye, M., Siyanbola, W., Egbetokun, A. A., Yesufu, T., & Adewoyin, J. (2008). Pattern of computer and internet use among teachers in higher institutions in Nigeria .https://mpra.ub.uni-muenchen.de/25226/

Buabeng-Andoh, C. (2012). An exploration of teachers' skills, perceptions and practices of ICT in teaching and learning in the Ghanaian second-cycle schools. *Contemporary educational technology*, *3*(1), 36-49.https://dergipark.org.tr/en/pub/cet/issue/25727/271451

Federal Republic of Nigeria (2004). National Policy on Education, NERDC.

Federal Republic of Nigeria (2014). National Policy on Education, NERDC.

Garba, S. A., Singh, T. K. R., & Yusuf, N. M. (2013, June). Integrating technology in teacher education curriculum and pedagogical practices: the effects of web-based technology resources on pre-service teachers' achievement in teacher education training. In *2013 International Conference on Information Science and Technology Applications (ICISTA-2013)* (pp. 60-77). Atlantis Press. https://dx.doi.org/10.2991/icista.2013.14

Ibeh, A. E., Adamu, B. & Owoseni, A. A. (2007) Innovation in the teaching and learning of adults: The changing role of the teachers of adults in a connected learning environment. *Ikere Journal of Education, Special Edition on ICT*. pp 79-87.

Jegede, P. O. (2009). Age and ICT-related behaviours of higher education teachers in Nigeria. *Issues in Informing Science & Information Technology*, *6*.

Jude, W. I., & Dankaro, J. T. (2012). ICT resource utilization, availability and accessibility by teacher educators for instructional development in College of Education Katsina-Ala. *New Media and Mass Communication*, *3*, 1-6.

Koehler, M. J., Mishra, P., & Cain, W. (2013). What is technological pedagogical content knowledge (TPACK)?. *Journal of education*, *193*(3), 13-19. https://journals.sagepub.com/doi/abs/10.1177/002205741319300303

Kwache, P. Z. (2007). The imperatives of information and communication technology for teachers in Nigeria higher education. *MERLOT Journal of Online learning and teaching*, *3*(4), 395-399.

Mejiuni, O., & Obilade, O. (2006). The dialectics of poverty, educational opportunities, and ICTs. In *Widening access to education as social justice* (pp. 139-148). Springer, Dordrecht. DOI: 10.1007/1-4020-4324-4_9 https://link.springer.com/chapter/10.1007/1-4020-4324-4_9?noAccess=true

Moursund, D., & Bielefeldt, T. (1999). Will new teachers be prepared to teach in a digital age? A national survey on information technology in teacher education. https://eric.ed.gov/?id=ED428072

Novak, D. I., & Knowles, J. G. (1991). Beginning elementary teachers' use of computers in classroom instruction. *Action in Teacher Education*, *13*(2), 43-51.https://doi.org/10.1080/01626620.1991.10462772

Ojo, M. O. (2005). Information and communication technology (ICT) and teacher preparation for basic education. *Journal of teacher education*, *8*(1), 39-46.

Olorundare, S. A. (2006, May). Utilization of ICT in curriculum development, implementation and evaluation. In *national conference on Information and Communication Technology in the service of Education University of Nigeria Nsukka May* (pp. 15-18).

Owolabi, T. O., Oyewole, B. K., & Oke, J. O. (2013). Teacher education, information and communication technology: Prospects and challenges of e-teaching profession in Nigeria. *American Journal of Humanities and Social Sciences, 1*(2), 87-91.https://doi.org/10.11634/232907811604314

Pearson, J. (2003). Information and communications technologies and teacher education in Australia. *Technology, Pedagogy and Education, 12*(1), 39-58.https://doi.org/10.1080/14759390300200145

Selinger, M., & Austin, R. (2003). A comparison of the influence of government policy on information and communications technology for teacher training in England and Northern Ireland. *Technology, Pedagogy and Education, 12*(1), 19-38. https://doi.org/10.1080/14759390300200144

Stoll, C. (2000). *High tech heretic: Reflections of a computer contrarian*. Ancho

Thiagarajan, S. (2005). *Thiagi's interactive lectures: Power up your training with interactive games and exercises*. American Society for Training and Development. Trucano, M. (2005) Knowledge Maps: ICTs in Education. Washington, DC: infoDev/World Bank.

Watson, G. (2001). Models of information technology teacher professional development that engage with teachers' hearts and minds. *Journal of Information Technology for Teacher Education, 10*(1-2), 179-190.https://doi.org/10.1080/14759390100200110

Williams, K. (2003) Literacy and computer literacy: Analysing the NRC's being fluent with information technology. *The Journal of Literacy and Tech*
https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.116.5164&rep=rep1&type=pdf

Willis, J. E. R. R. Y. (2001). Foundational assumptions for information technology and teacher education. *Contemporary Issues in Technology and Teacher Education, 1*(3), 305-320.https://www.citejournal.org/wp-content/uploads/2016/04/article1-2.pdf

Yalcin, S. A., Yalcin, S., Sagirli, M. O., Yalcin, P., &Koc, A. (2011). The usage of instructional technologies by lecturers (examples of Erzincan). *Procedia-Social and Behavioural Sciences, 28*, 435-438.https://doi.org/10.1016/j.sbspro.2011.11.083