

E-Learning as Instructional Innovation in Higher Education Institutions (HEI's): Lessons Learnt from the Literature

Nonzukiso Tyilo

*University of Fort Hare, Faculty of Education, School of Further and Continuing Education,
Private Bag X 1314, Alice, 5700, South Africa
E-mail: ptyilo@ufh.ac.za*

KEYWORDS Digitalized. E-Learning. ICT Integration. Institution. Instructional. Innovation

ABSTRACT The paper is a desk review that explores e-learning as an instructional innovation in higher education institutions (HEI). Education continues to be influenced by the advent of technology due to global digitalization. As a result, the government championed ICT integration in all education sectors where HEIs modernized their teaching approaches through e-learning systems. Despite the challenges faced when integrating ICT, namely, shortage of resources, network connection, lack of support and capacity of the lecturers to ensure that teaching strategies are in line with proposed innovations, there are some pockets of good practice where some lecturers use e-learning systems effectively to enhance learning environments. The paper was guided by the educational change model that emphasizes on the importance of buy-in from the implementers (lecturers). This paper recommends adequate staff training, network upgrade and reinforced technical support for staff for effective instructional innovation through e-learning systems.

INTRODUCTION

For the previous years, e-learning has evolved as an innovative model for current education systems worldwide (Luppigini 2008; Raaij and Schepers 2008) due to its effectiveness in enhancing teaching and learning in any learning environment. For e-learning to be effective, the main focus should be on the established connection between education, teaching and learning through ICT (Friesen 2009). Nowadays students are more conversant with technology before they reach university level because they continue to be exposed to the digitalized world from early years (Hitlin and Rainie 2005). This is because e-learning enhances a child's development holistically, for example, socially, eye-hand coordination skills, numeracy skills and literacy skills (Chimururi 2016). This implies that if children are technologically empowered at a younger age they develop survival skills, as a computer becomes part of their lives. Therefore, the call for instructional innovation through e-learning is very important for the current generation. Furthermore, implementing e-learning brings about

flexibility in the learning environment, enables the content taught to learners to be reused and is ideal for large teacher-learner ratios (Kocura and Kosc 2009). E-learning caters to all different learning styles in class because it encourages that sense of independence and creativeness during the learning process. The concept of e-learning is explored in the next section.

Concept of E-learning

E-learning is defined as the strategy that adopts up to date technological forms that are integrated in the curriculum to intensify student engagement and adapt to traditional teaching approaches used in teaching (Ma et al. 2008). On the other hand, Salawudeen (2010) believes that e-learning is the form of learning that uses network technologies to cultivate, supply and expedite teaching and learning processes anytime and anywhere. Several studies done by Liao and Lu (2008), Ellis et al. (2009), E-learning portal (2009) and Li et al. (2009) define e-learning into four different classifications, namely, technology-driven, delivery system oriented, communication oriented and educational paradigm oriented. Looking at the technology driven perspective, more emphasis is on the technological aspect of e-learning where e-learning is perceived as distance learning that uses technology to deliver learning programs in a remote manner (E-learning portal 2009), whereas, delivery

Address for correspondence:

Nonzukiso Tyilo
University of Fort Hare,
School of Further and Continuing Education,
Private Bag X 1314, Alice, 5700, South Africa
E-mail: ptyilo@ufh.ac.za

system oriented e-learning is viewed as using electronic means or web techniques to deliver educational programs (Li et al. 2009; Liao and Lu 2008). On the other hand, with communication oriented, e-learning is considered as a communication tool used to assign certain responsibilities to people. In educational paradigm oriented, e-learning is perceived as a modernized educational paradigm aimed at supporting and improving students' learning endeavors (Ellis et al. 2009). Thus, the Ministry of Communication and Technology of New Zealand (2008) simplifies the concept of e-learning as the interaction between students, content and lecturer/instructor using the web.

For the purpose of this paper, e-learning is the learning that uses network technologies to construct, nurture, provide and facilitate teaching and learning purposes, which are not confined by geographical proximity (Liaw et al. 2007; Sun et al. 2008). This implies that students can access materials, learning experiences and activities even beyond the classroom setup. Moreover, students can engage in discussions that relate to the course through interaction with their classmates and lecturers anytime and anywhere. As stated in the Teaching and Learning Centre, Concept Paper on e-learning (2009), 'e' from e-learning stands for electronic, however, the same 'e' is more useful when viewed as 'enhanced', 'engaged' or 'empowered'. Therefore, e-learning has to be viewed as technology enhanced learning, as this will make it easy for every person to understand e-learning and its purpose. It may be inferred that e-learning cannot be seen as an initiative that intends to replace the instructor but instructors are expected to use technology to augment the teaching and learning process. In the next section, justification of utilizing e-learning in HEIs is discussed.

Justification for E-learning in Higher Education Institutions

E-learning provides opportunities and possibilities for innovative teaching and learning practices, as lecturers discover new ways of improving their instructional approaches through enhanced teaching and learning activities. This is very important because observations have been made that the current cohort of students in higher learning institutions process information differently than their forerunners due to en-

hanced use of technology (Goodfellow 2007; Mason and Rennie 2008). Moreover, through e-learning, opportunities for innovating traditional methods are explored (Herrington et al. 2010). This gives lecturers the room to accommodate varying needs of students by encouraging them to be actively involved in their learning through guided discussion forums based on a specific theme covered for that particular period. As e-learning requires digital means in terms of transferring knowledge, the students are therefore, able to interact with the available information according to the different learning styles (Peterson et al. 2007). This encourages independence and innovation among the students, as they might devise better ways of studying the available material. Smith and Greene (2013) also contend that true technology integration is not just using Microsoft PowerPoint or an overhead projector (OHP), as these have nothing to do with instructional innovation.

E-learning opens new ways of learning, which adjust the principle of teaching and the underlying forces of learning through various methods of technology that are more enriching. Therefore, this might cultivate a learning environment that is more inventive, functioning and more engaging (Sims 2008). E-learning enables students to learn and interact together through discussions, comments, collaborative writing or team work in certain or specific projects (Safran et al. 2007). Studies further reveal that use of technology can augment students' learning and online resources need not be mistakenly perceived to be replacing the lectures. Hence, e-learning should be used to aide contact sessions with lecturers (Mohamed and Peerbhay 2012). As e-learning facilitates and develops efficient academic administration, this makes it easier for the lecturer to detect a student's plagiarized work, conduct online assessment with automated marking facilities and track students' progress for intervention purposes. The institutions therefore, need to move with times and acknowledge the use of technology to meet the current students' needs. The next section examines the use of e-learning as instructional innovation in HEIs.

E-learning as Instructional Innovation in Higher Learning Institutions

The advent of e-learning around the world has brought about many benefits aimed at inno-

vating instructional methodologies to be at par with the current digitalized world. In addition, for the past years, there have been some initiatives aimed at encouraging HEIs to incorporate e-learning as a way of improving teaching approaches (Hénard and Roseveare 2012). Subsequent to that, universities acceded to the call to adopt various e-learning and course development strategies suitable for their different teaching and learning contexts (Paechter and Maier 2010). This implies that as e-learning can enhance the teachers'/lecturers' instruction, there has to be a comprehensive basis of pedagogical principle for e-learning to be effective (Mohamed and Peerbhay 2012). Therefore, e-learning cannot be perceived as substituting human contact because computer systems can never do what a person can do (Mouzakitis 2009).

An introduction of learning management systems like WebCT and Blackboard applications have influenced the institutions of higher learning to take advanced steps in e-learning (Alexander and Golja 2007). As the world changes due to various technological innovations that the students are exposed to through their smartphones, e-learning is expected to serve as a strategy that helps lecturers match their students' daily needs and effectively prepare them for the digital world by ensuring that they get to be exposed to latest sources of information regarding the courses that they are taught. The next section discusses underpinning theoretical framework adopted for this paper.

Theoretical Framework

The efforts made by HEIs in encouraging lecturers to adopt e-learning as instructional innovation is based on the assumptions that all lecturers are computer literate for easy execution of e-learning systems. However, from an educational change perspective that was propounded by Fullan in 1982 for any curriculum to be successfully implemented, the implementers need to be prepared and empowered (Fullan 1993). This implies that institutions of higher learning should prepare lecturers so that they can be able to use e-learning as instructional innovation in their classes. Once the implementers are prepared it is expected that they will not experience challenges when it comes to adopting e-learning for their teaching environments. Program implementers need to understand the

characteristics of change, clear goals and objectives of change and whether people understand it (Fullan 1993). In the case of e-learning as instructional innovation lecturers need to understand its benefits for their teaching and learning before thinking about how they can adopt it for their various courses. This theory aligns with the paper because it looks at the important aspects that enable effective implementation of the new proposed program or innovation. Another important dimension about this theory is that it looks at the implementers and the support they will need for effective implementation of any program (Fullan 1993). Hence, the model believes in staff development initiatives in order for the implementers to know what they should do. Literature observations about studied phenomenon are explored in the following section.

OBSERVATIONS AND DISCUSSION

The literature reviewed in relation to the studied phenomenon revealed some challenges and pockets of good practice pertaining to e-learning. The studies reveal both systemic and pedagogical challenges. The pockets of good practice have to do with the strides made by the institutions with regards to e-learning as innovative initiative in teaching and learning process. The next section discusses the challenges.

Challenges of E-learning as Instructional Innovation

Institutions still experience difficulties to involve a reasonable number of staff and students in e-learning (Salmon 2005) due to resistance to change. Tham and Werner (2005) indicate that academics perceive e-learning as detached, time restraining and inadequately adaptive to the necessities of many students. The distance learning format lessens the level of contact and level of discussion between students. E-learning has lesser contact among students and teachers (McCog 2008). Some overarching obstacles identified as hindering adoption of e-learning are inadequate skills and unavailability of resources. Scarcity of resources, unprepared teachers, scheduling glitches and software accessibility (Bauer and Kenton 2005) are some of the challenges to e-learning systems because teachers may feel that incorporating technology is invaluable considering the time and efforts

made (Hsu 2010). With the absence of firm framework on how e-learning will be infused in teaching and learning, students cannot be encouraged to learn using this teaching and learning method. Hence, a high level of self-control is required as e-learning is often characterized by the absence of a learning atmosphere (Bouhnik and Marcus 2006). As a result, when lecturers are uncomfortable and feeling incompetent in adopting e-learning, they may continue to use drill skills as their approaches when teaching (Kirk 2011; Little 2011; Steffenhagan 2011). Czerniewicz and Brown (2009) contend that staff members always find themselves in awkward positions when it comes to adopting e-learning in their teaching because they feel that they are not fully supported by their institutions. Hence, lecturers are often still reluctant to change their instructional approaches to teaching and learning, as they still need to realize the repercussions of e-learning interaction when it comes to quality and how it will benefit their teaching. Some lecturers still do not view e-learning as instructional innovation, and hence, they perceive it as more related technical aspects (Salmon 2005).

According to Khan (2003), some challenges that contribute to the difficulty of adopting e-learning as instructional innovations by staff are identified. For example, absence of Internet access, networks problems, outdated hardware and software upgrades. (Khan 2003). On the other hand, adequate technical support is a challenge when it comes to effective execution and integration of e-learning in a learning environment (Sife et al. 2007). The availability of computer laboratories in most HEIs and inadequate network facilities jeopardizes the proposed initiative of adopting e-learning in an attempt to bring about innovated instruction. In some instances, students may feel secluded and might perceive the learning as not supported due to the reduced levels of social interaction with classmates (Welsh et al. 2003). Therefore, this implies that students might be bored due to lack of interaction with other students. Despite the challenges, there are still pockets of good practice that have been identified though e-learning teaching and learning tool and these are discussed below.

Good Practices of E-learning as Instructional Innovation

The reviewed literature reveals that e-learning provides teachers with many interesting tools aimed at improving the teaching and learn-

ing process (Martin-Blas and Serrano-Fernandez 2009). These e-learning stages allow lecturers to provide various kinds of materials that can be effective and applicable for the courses they teach (Weller 2007). Rosenberg (2006) believes that e-learning can be very influential in modernizing teaching and learning in classrooms. This is because e-learning does not aim to replace lecturer interactions. However, its focus is to make learning more meaningful, as it contributes effectively to the teaching and learning process. This enables students and lecturers to collaborate and experiment with the course material. Salmon (2005) further asserts that e-learning is complex and can be unsuccessful in the absence of suitable, nurtured and dedicated human involvement. Whereas, Ng'ambi (2013) believes that when e-learning is blended with human interaction it improves learning outcomes and encourages lecturers to support varied students' necessities in an individualized manner of learning (Bozalek and Gachago 2013). Furthermore, if e-learning is properly implemented it can instill flexibility in the learning process where different resources can be provided to students and students given an opportunity to pace and time their learning (Koruc and Kosci 2009).

Lecturers exercise a degree of freedom where they are given opportunities to decide what has to be learned, how it will be learned and what activities and materials would be used in ensuring that learning takes place (Bouhnik and Marcus 2006). E-learning allows for freedom of expression and allows students to ask questions without any limitations, as they have easy access to the materials. This means that the students' learning is not deprived by time constraints as student-lecturers interactions can be enhanced because e-learning encourages interactions that are more succinct and discussions that can stay on track based on the course through shared electronic conversation and discussions (Capper 2001). E-learning also provides unique opportunities for lecturers and students to share innovations with the immediate support to electronics group. Lecturers who are capable of handling e-learning activities are able to quickly respond to student problems and this brings about student learning satisfaction and instant feedback (Arbaugh 2002). A lecturer's capability and attitudes toward e-learning are likely to influence students' learning interest

(Sun et al. 2008). Student motivation is a factor that contributes to successful e-learning because a motivated person always performs better and gives the best in any given task (Andersson and Grönlund 2009). As e-learning is engaged in nature it increases student engagement by shifting from lecturer-centered to student-centered learning, which encourages students' independence when learning (Albion 2008).

From the foregoing study, It has been observed from the literature reviewed that the advantages and disadvantages institutions face in modernizing their instructional approaches are similar. When it comes to disadvantages, the literature reveals that infrastructural problems negatively impacts the lecturers' efforts to modernize the methods through e-learning (Baldwin-Evan 2004). Lecturers and students need to adjust teaching and learning approaches for effective implementation of e-learning in a learning environment. Inadequate software and Internet connectivity are some of the challenges that negatively impact e-learning (Netteland et al. 2007). Unavailability of technical support often contributes to the difficulty effectively implementing e-learning in the learning situation and this contributes to the reluctance of the implementers to adopt e-learning because of support (Horton 2011). Despite the alarming challenges found in the literature, there are some good practices emerging from utilization of e-learning that lecturers can find useful when innovating their instructional methods through e-learning. E-learning benefits the teaching and learning environment because its implementation in various institutions brings about instructional innovation where traditional methods, that are lecturer centered, are replaced by student engagement that is enhanced through e-learning (Kigundu 2014). This is further supported by Ally (2004) who indicates that e-learning encourages and sustains students' interaction and this is the key to an e-learning environment, as students can take charge of their learning.

CONCLUSION

For the past years, e-learning has impressively developed although the provision of adequate support is very crucial to make sure that it is properly implemented. It is also very important to view e-learning as an instructional innovation than viewing it as something that replac-

es lecturer contact with learners. Hence, its effective implementation needs to be informed by a solid pedagogic base. The effective e-learning usage can also bring about positive results because students can also be encouraged to become lifelong students who know what is expected of them from the teaching and learning process. E-learning also encourages students to be responsible for their own learning, as they are able to pace their own learning through e-learning. Lecturer and student motivation are perceived as important ingredients that fuel the adoption of e-learning despite the anticipated challenges. The study therefore concludes that with more support and available resources, e-learning can become effective as an instructional innovation initiative in higher institutions.

RECOMMENDATIONS

This paper recommends that institutions should ensure that the implementers (lecturers) are properly prepared through training workshops and short courses in order to effectively adopt e-learning for their teaching environments. The training can also enable lecturers to address the concerns that the students have regarding e-learning systems. Technical support should be strengthened and readily available to help lecturers when experiencing problems during the e-learning process. Students should also have access to technical support when using university resources. E-learning can never be effective if the Internet connections and servers are a problem. The institutions therefore need to upgrade the network systems for effective e-learning and the Wi-Fi spots need to be increased so that students can have access anywhere and at any time.

REFERENCES

- Albion P 2008. Web 2.0 in teacher education: Two imperatives for action. *Computers in the Schools*, 25(3/4): 181-198.
- Alexander S, Golja T 2007. Using students' experiences to derive quality in an e-learning system: An institution's perspective. *Educational Technology & Society*, 10(2): 17-33.
- Andersson A, Grönlund A 2009. A conceptual framework for e-learning in developing countries: A critical review of research challenges. *The Electronic Journal on Information Systems in Developing Countries*, 38(2): 1-16.
- Arbaugh JB 2002. Managing the online classroom: A study of technological and behavioral characteris-

- tics of web-based MBA courses. *Journal of High Technology Management Research*, 13: 203-223.
- Baldwin-Evans K 2004. Employees and e-learning: What do the end-users think? *Industrial and Commercial Training*, 36(7): 269-274.
- Bauer J, Kenton J 2005. Toward technology integration in the schools: Why it isn't happening? *Journal of Technology and Teacher Education*, 13(4): 519-546.
- Bouhnik D, Marcus T 2006. Interaction in distance-learning courses. *Journal of the American Society Information Science and Technology*, 57(3): 299-305.
- Bozalek V, Gachago D, Alexander L, Watters K, Wood D, Ivala E, Herrington J 2013. The use of emerging technologies for authentic learning: A South African study in higher education. *British Journal of Educational Technology*, 44: 629-638.
- Capper J 2001. E-learning Growth and Promise for the Developing World. TechKnowLogia. From <<http://www.techknowlogia.org>> (Retrieved on 20 March 2015).
- Chimururi S 2016. E-learning Vital for Child Education. The Herald. From <www.herald.co.zw/e-learning-vital-for-child-education/> (Retrieved on 2 December 2016).
- Concept Paper 2009. The Promotion of Technology-enhanced Learning. Fort Hare: University of Fort Hare, Teaching and Learning Centre.
- Czerniewicz L, Brown C 2009. A study of the relationship between institutional policy, organizational culture and e-learning use in four South African universities. *Computers & Education*, 53: 121-131.
- E-learning Portal 2009. E-learning Glossary. From <<http://www.e-learningguru.com/glossary/e.htm>> (Retrieved on 28 November 2016).
- Ellis RA, Ginns P, Piggott L 2009. E-learning in higher education: Some key aspects and their relationship to approaches to study. *Higher Education Research & Development*, 28(3): 303.
- Friesen N 2009. *Re-thinking E-learning Research: Foundations, Methods and Practices*. New York: Peter Lang.
- Fullan MG 1993. The complexity of the change process. In: MG Fullan (Ed.): *Change Forces: Probing the Depth of Educational Reform*. Bristol, PA: Falmer Press, pp. 19-41.
- Goodfellow R, Lea MR 2007. *Challenging E-learning in the University: A Literacies Perspective*. New York: McGraw Hill Society for Research into Higher Education and Open University Press.
- Guri-Rosenblit S 2005. 'Distance Education' and e-learning: Not the same thing. *Higher Education*, 45: 467-493.
- Hénard F, Roseveare D 2012. Fostering Quality Teaching in Higher Education: Policies and Practices. An IMHE Guide for Higher Education Institutions. From <www.eocd.org/edu/imhe> (Retrieved on 2 December 2016).
- Herrington J, Reeves TC, Oliver R 2010. *A Guide to Authentic E-learning*. New York: Routledge, Taylor and Francis Group.
- Hitlin P, Rainie L 2005. Data Nemo: Teen Use of the Internet at School has Grown 45 Percent Since 2000, Pew Internet & American Life Project. From <http://www.pewinternet.org/pdfs/PIP_Internet_and_schools_05.pdf> (Retrieved on 28 November 2016).
- Horton W 2011. *E-learning by Design*. San Francisco, CA: Wiley.
- Hsu S 2010. The relationship between teacher's technology integration ability and usage. *Journal of Educational Computing Research*, 43(3): 309-325.
- Khan B 2003. A Framework for E-learning. From <<http://www.bookstoread.com/framework/>> (Retrieved on 5 September 2016).
- Kigundu S 2014. Engaging e-learning in higher education: Issues and challenges. *International Journal of Educational Sciences*, 6(1): 125-132.
- Kirk A 2011. Apple in the Classroom: Students Using iPods, iPads to Improve Reading, Math. [Online Newspaper Article]. From <http://news.hjnews.com/news/education/article_937f4736-1c7b-11e0-94f2-001cc4c03286.html> (Retrieved on 20 May 2015).
- Kocur D, Kosci P 2009. E-learning implementation in higher education. *Acta Electrotechnica et Informatica*, 37(8): 20-26.
- Kwofie B, Henten A 2011. The Advantages and Challenges of E-Learning Implementation: The Story of a Developing Nation. *Paper Presented at WCES-2011 3rd World Conference on Education Sciences*, Bahcesehir University, Istanbul, Turkey, 3-7 February.
- Li FW, Lau RW, Dharmendran P 2009. A Three-tier Profiling Framework for Adaptive E-learning. *Proceedings of the 8th International Conference on Advances in Web Based Learning*, 19-21 August, Aachen, Germany.
- Liao H, Lu H 2008. Richness versus Parsimony Antecedents of Technology Adoption Model for e-Learning Websites. From <http://dx.doi.org/10.1007/978-3-540-85033-5_2> (Retrieved on 28 November 2016).
- Liaw SS 2008. Investigating students' perceived satisfaction, behavioral intention, and effectiveness of e-learning: A case study of the blackboard system. *Computers & Education*, 51: 864-873.
- Liaw SS, Huang H M, Chen GD 2007. An activity-theoretical approach to investigate learners' factors toward e-learning systems. *Computers in Human Behavior*, 23: 1906-1920.
- Little K 2011. Web School to Require Students in Grades 4-12 to have iPads for Learning. [Online Newspaper Article]. From <<http://www.knoxnews.com/news/2011/feb/06/turning-the-electronic-page/>> (Retrieved on 22 May 2015).
- Luppici R 2008. Educational technology at a crossroads: Examining the development of the academic field in Canada. *Journal of Educational Technology and Society*, 11(4): 281-296.
- Ma X, Wang R, Liang J 2008. The E-learning System Model Based on Affective Computing. *Proceedings of the Seventh International Conference on Web-based Learning*. College of Computer and Information Engineering, 20-22 August, Zhejiang Normal University, Jinhua, China.
- Manuela P, Maier B 2010. Online or face-to-face? Students' experiences and preferences in e-learning. *Internet and Higher Education*, 13: 292-297.
- Martín-Blas T, Serrano-Fernández A 2009. The role of new technologies in the learning process: Moodle as

- a teaching tool in physics. *Computers & Education*, 52: 35-44.
- Mason R, Rennie F 2008. *E-learning and Social Networking Handbook. Resources for Higher Education*. New York: Routledge.
- McCoog I 2008. 21st Century Teaching and Learning. From <<http://www.eric.ed.gov/ERICWebPortal/recordDetail?accno=ED502607>> (Retrieved on 19 June 2015).
- Ministry of Communication and Technology of New Zealand 2008. Digital Strategy of the Ministry of Communication and Technology. From <<http://www.irrodl.org/index.php/irrodl/article/view/1161/www.digitalstrategy.govt.nz/Resources/Glossary-of-Key-Terms/>> (Retrieved on 28 November 2016).
- Moersch C 2011. Turning up the H.E.A.T. on student learning: Assessing 21st century skills in classrooms today. *Educational Technology*, 52(3): 42-46.
- Mohamed N, Peerbhay F 2012. Introducing dental students to e-learning at a South African University. *African Journal of Health Professions Educations*, 4(2): 123-127
- Mouzakitis GS 2009. E-Learning: The six important "Wh...?" *Procedia - Social and Behavioral Sciences*, 1(1): 2595-2599.
- Netteland GB, Wasson, Mørch AI 2007. E-learning in a large organization: A study of the critical role of information sharing. *Journal of Workplace Learning*, 19(6): 392-411.
- Ng'ambi D 2013. Effective and ineffective uses of emerging technologies: Towards a transformative pedagogical model. *British Journal of Educational Technology*, 44: 652-661.
- Paechter M, Maier B, Macher D 2010. Students' expectations of, and experiences in e-learning: Their relation to learning achievements and course satisfaction. *Computers & Education*, 54: 222-229.
- Peterson D, Kaakko T, Smart E, Jorgenson M, Herzog C 2007. Dental students' attitudes regarding online education in pediatric dentistry. *Online Journal of Dentistry for Children*, 74(1): 10-20.
- Raaij EM, Schepers J 2008. The acceptance and use of a virtual learning environment in China. *Computers & Education*, 50(3): 838-852.
- Rosenburg MJ 2006. *Beyond E-learning: Approaches and Technologies to Enhance Organizational Knowledge, Learning and Performance*. San Francisco: Pfeiffer.
- Safran C, Helic D, Gutl C 2007. E-learning Practices and Web 2.0. *Paper Presented at the Meeting of the International Conference on Interactive Computer Aided Learning*, 23-25 September 2009, Villach, Austria.
- Salawudeen OS 2010. *E-learning Technology. The Nigerian Experience*. Abuja: Roger Printing and Publishing Limited.
- Salmon G 2005. Flying not flapping: A strategic framework for e-learning and pedagogical innovation in higher education institutions. *Research in Learning Technology*, 13(3): 201-218.
- Sife AS, Lwoga, ET, Sanga C 2007. New technologies for teaching and learning: Challenges for higher learning institutions in developing countries. *International Journal of Education and Development Using ICT*, 3(2): 57-67.
- Sims R 2008. Rethinking (e) learning: A manifesto for connected generations. *Distance Education*, 39(92): 153-164.
- Smith JJ, Greene C 2013. Pre-service teachers use e-learning technologies to enhance their learning. *Journal of Information Technology Education*, 12: 121-140.
- Steffenhagan J 2011. No More Pencils, No More Books: This Vancouver School has Embraced ipad, ipods, and Apps. The Vancouver Sun. From <<http://www.vancouversun.com/technology/Photos+more+pencils+more+books+Vancouver+school+embraces+iPads/4106245/story.html>> (Retrieved on 9 June 2015).
- Sun P-C, Tsai RJ, Finger G, Chen Y-Y, Yeh D 2008. What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & Education*, 50: 1183-1202.
- Tham CM, Werner JM 2005. Designing and evaluating e-learning in higher education: A review and recommendations. *Journal of Leadership and Organizational Studies*, 11(2): 15-25.
- Weller M 2007. *Virtual Learning Environments: Using, Choosing and Developing your VLE*. London: Routledge.
- Welsh ET, Wanberg CR, Brown KG, Simmering MJ 2003. E learning: Emerging uses, empirical results and future directions. *International Journal of Training and Development*, 7(4): 245-258.

Paper received for publication on March 2016
Paper accepted for publication on December 2016