Journal of Education and Practice
ISSN 2222-1735 (Paper) ISSN 2222-288X (Online)
Vol.9, No.9, 2018

Lecturers of Fine-Arts' Digital Technology Utilization in Tertiary Institutions of North-Central Geo-Political Zone, Nigeria

Olatayo Olanrewaju[1*] Michael Odewumi[2]
1.Faculty of Education, University of Benin, PMB 1154, Benin City, Nigeria
2.C/o Faculty of Education, University of Ilorin, PMB 1515, Ilorin, Nigeria

Abstract
Investigation on utilization of Digital Technology by lecturers of Fine-Arts in North-Central tertiary institutions in Nigeria was studied. Descriptive survey research type was used with researchers' designed questionnaire; the population were Fine-Arts lecturers in Colleges of Education and Universities in North-Central, Nigeria. Purposive as well as simple random sampling techniques were used to select 100 lecturers of 50 male and 50 female. Three research questions were raised and two hypotheses formulated for the study. Simple percentage and means were used to answer the research questions, while hypotheses were tested with t-test and ANOVA at level 0.05 of significance. The findings revealed that the lecturers utilized some digital tools for their instructional delivery. Therefore, it is recommended that tertiary institutions in general and North-Central Nigeria in particular, should procure digital technology devices for lecturers' utilization in instruction and that they should make use of them accordingly.
Keywords: digital, technology, digital technologies, utilization, fine-arts, gender

1. Introduction

The advent of digital technologies and their rate of involvement at all levels of education had brought changes in streamlining the educational system. This is because learners are more influenced by technology drive to a large extent of faster rate than curricular changes. Studies confirmed that the learners fully acquire skills, knowledge and competencies in and through digital technologies, within and outside the four walls of the classroom. Therefore, the teachers' competency tells much more in the use of digital technology and it is a challenge (Weller & Anderson, 2013).

The digital technology has metamorphosed learning to become positive in art institutions of higher learning globally and in particular, Nigeria. Beaudoin (2013) opined that digital technology plays vital role in the instructional dissemination and process which equip the learners for further challenges globally. Lu, Lu, Yu and Yao (2014) explained that lecturers are able to get useful information through the digital technologies; they help them integrate into active and meaningful learning for the students. Beetham and Sharpe (2013) submitted that digital technology has turned the lecturers' roles to learner-centred, collaborative and constructivist in learning and yielding positively.

The digital technology revolution exposes the higher education to a number of opportunities that increases the skills and knowledge of both the learners and their instructors. It also widens the avenue for both learners and instructors to solve multiple challenges in teaching and researching. This affects a number of scholarship functions which in turn influenced by the level of technology acceptance and adoption behaviour in terms of teachers' drive to work (Maldonado, Khan, Moon & Rho, 2011; Weller & Anderson, 2013)

The digital technology plays numerous roles in the field of Arts. These are: it empowers learners on how they see themselves as unique person, how they learn about the world they are, and how their work can be of impact on the broader socio-political landscape. Students of Arts with these self-worth skills and correct perception of great potentials this digital technology has brought will do well with the use of it in all areas of their course of study. But, it should be noted that right perception of digital technology is a principal importance in an era where social networks and online provide prevalent delivery of learners' perspectives to any quarters (Jenkins, Purushotma, Clinton, Weigel & Robison, 2009). In addition, the digital technology makes it simple to inculcate media artefacts into imaginative art, whereby it gives opportunity for learners to expresses their views on matters of concern of creativity to their mates and the communities which they live (Freedman, nd; Peppler, 2010).

Changes in the digital technology occur not only to the tools, equipment, materials and modes of arts involvement in education, but also, to both Arts lecturers as well as students; practices, processes and products. Gauntlett (2011) reaffirmed that Artist engages within the world and create connections purposely to get information from each other through digital technologies. This has brought about transformations in all facets of his/her being and also influenced the production of how and what young Artist creates, from nonvisual (drawings, writings or designing) to audio-visual productions (Peppler & Kafai, 2010).

The role of Arts lecturers is that of developing digital technology epistemologies, form increasingly connections and networked the world. Globally, Arts lecturers are shifting from conventional method of teaching to a better suit and increasing use of digital technologies that are already existing and relatively new in education.

Thus, active involvement and active learning in digital education have become more interactive, meaningful and interesting. The lecturers and students now share, collaborate and create vital information on the digital technology which boosts their morale in education. The many challenges faced by the lecturers within the scope of performing their functions, have drastically influenced positively the lecturer-student relationship due to the advent of digital technology (Lemley, Schumacher, & Vesey 2014; Thiele, Mai, & Post, 2014; Olanrewaju, Adeshina & Kareem, 2016). Learners preferred not to have serious education confined to the classroom settings, but, preferred to have freedom to learn at any time and in any place (Richardson, 2012).

Maiers and Sandvold (2010) submitted that the digital technology creates avenue for the lecturers to have a variety of tools and resources purposely for dissimilating curriculum content to the students. This provokes students to discover the pleasures in lifelong learning, and turns the classroom into a global audience. Also, Couros (2010) stressed the importance of digital technology as a collaborative pedagogy that functions together as educators and learners in the community to persist in moving education forward. Badagliacco (1990) stated that the new technology has given another name to male learners as males' domain, while women are tagged as latecomers in accessing digital technology (NTIA, 1999). Despite new name, the women still stand up in technology by performing well in the use of digital technology than men. But, that men are more into technology devices to solve educational and other problems than women, in essence, men are more tech savvy (Fallows, 2005; Hilbert, 2011). These diverse views and results of researches should still continue and probed into the more in order to actually authenticate the true nature of how gender has been affected or impacted upon in the utilization of digital technology among others.

In another development, Hargittai and Shafer (2006) explained that women underutilised their self-efficacy to Information Communication and Technology usage and that men have more experiences on the internet than women. Also in favour of male folks, Faulkner (2001) stated that ICT is like a simple toy in the hand of boys. Brodman and Berazneva (2007) submitted that women also manipulate ICT for entrepreneurship. In another development, women were at a significant disadvantage in term of ICT because of the challenges of motherhood (Hafkin & Huyer, 2007). Also, studies affirmed that women have a negative attitude toward ICT especially at home when all the offspring are around (Varank, 2007). However, digital technologies are not gender bias in its design and or production, but, it has absolutely been premeditated to meet the desires of both men and women for learning (Basu, 2000; Hafkin, 2000; Olanrewaju, et al 2016).

The learning theorists, Brown and Adler (2008) described the end products of a shift from a "push" term method of approach to education, whereby learners were asked in given content to a "pull". This social learning is used in a new technology by way of solving problems at particular times. It helps the learners to learn faster in learning and equip learners to be a dynamic contributor to activate lesson.

However, many theories, ideas and models have been proposed in the integration of technology in instruction. Notable among them are the diffusion of innovation theory and idea and the technology acceptance model (Olasedidun, 2014). His study was based on the Technology Acceptance Model (TAM) which was developed by Davis (1998) to explain how individuals make a decision to accept and use a particular technology. Learning has been referred to as any positive measurable changes in behaviour which are conditioned by experience. The theorists further stressed that learning results when new knowledge and skills are acquiring as one interacts with the environment, and that learning takes place as a result of instruction and efforts. Psychology defined learning as a relative permanent change in organisms' behaviour due to experience. More so, in psychology and education, learning is believed as a process that bring together cognitive, emotional, and environmental influence for acquiring, enhancing, or making changes in ones' knowledge, skill, value and global views.

The notion of social learning can be traced back to the theory of social constructivism, the theory stressed the students learn most effectively by engaging in carefully selected collaborative problem-solving activities, under the close supervision of instructors. Although, apart from other usage of social media, in academic arena, research supports connectionism theory and found benefits in using social media by instructors if the technology is adopted for teaching. The digital technology, proposed the connectionism theory, where social learning is integrated with technologies (Downes, 2007). Learners gather information from connecting to others' knowledge. One of the principles of connectionism is that capacity to learn is more critical than what is currently known (Siemens, 2004). The teacher helps learner to build learning paths and make connections with existing and new knowledge resources (Anderson & Dron, 2011). Social learning theories, especially "connectionism", provide insights on the roles of educators in this social networked environment.

In essence, the digital technology encourages active learning, and providing new recommendation of software which can be utilized in the illustrative and encourage the process of creating Arts lesson (Zepke & Leach, 2010). The digital technology introduced developments in collaboration technologies, such as knowledge creation that enabled the emergence of a new paradigm of collaboration. This affords people from diverse fields form a linkage and be connected in order to influence and positively bring about active learning; and possibility of inculcating different types of traits into learning experience in Arts (Behrend, Wiebe, London, & Johnson,

2011; Olanrewaju, et al 2015).

The tertiary institutions and particularly universities have become a scene of digital devices utilization for various purposes (Salter & Lam, 2010). Studies have confirmed learning through digital art in informal settings and indications academic content as positive (Lam & Tong, 2012). It could be deduced that digital increases active learning and might be effective in promoting interactions between students and their lecturers. The roles of Art lecturers in fulfilling the purposes of instruction were described as very functional in nature to bring up learners to total discovery of their potentials fully. But, despite this laudable efforts by the teachers, students still operate at lower levels of skill, communication, and academic achievement whereas, Art teacher needs to teach with digital technology to all students in accordance to their individualities and personalities from whatever background (Gerber & Guay, 2006). Teachers manipulates easily the digital technology to communicate vital information to the students, this is so, because students are verse in the digital world (Bull & Bell 2010).

However, the extent to which digital technology is utilized by Fine-Arts lecturers in Nigeria tertiary institutions is still unknown. The study, therefore, intended to fill the gaps created by previous studies, especially finding out how utilization of digital technology is capable to changing the roles of Fine-Arts lecturers regarding gender and tertiary institutional type of North-Central, Nigeria.

2. Purpose of the Study

The study explored Fine-Arts lecturers' Digital Technology utilization in instructional delivery; specifically to find out:

(a) Types of digital technology commonly possessed by lecturers for utilization
(b) If there are differences in digital technology utilization based on gender, and
(c) Whether differences exist in digital technology utilization regarding institutional type.

2.1 Research Questions

The following questions raised guided the study:

(a) What digital technology devices possessed for utilization in instruction by lecturers of Fine-Arts?
(b) Is there difference between Fine-Arts lecturers' utilization of digital technology in North-Central tertiary institutions in Nigeria based on gender?
(c) Is there any difference in digital technology commonly used by lecturers in teaching and learning of Fine-Arts based on institutional type?

2.2 Research Hypotheses

The following two hypotheses were tested in the study.

H_{01}: There is no significant difference in digital technology utilization between male and female Fine-Arts lecturers in North-Central tertiary institutions in Nigeria.

H_{02}: There is no significant difference in digital technology utilization of Fine-Arts lecturers in North-Central tertiary institutions in Nigeria based on institutional type.

3. Methodology

The design for the study was a descriptive survey type. The population for the study were all lecturers of Fine-Arts in Colleges of Education and Universities in North Central, Nigeria. The North-Central geo-political zone in Nigeria included Abuja: federal capital territory, Benue State, Kogi State, Kwara State, Nassarawa State, Niger State and Plateau State. Purposive sampling technique was used to select those institutions where Fine-Arts as a field of study is being taught; random sampling technique was used to sample 100 lecturers; and to select 50 males and 50 females. The instrument for the study was a questionnaire adopted online from Odora and Matoti, (2015) on digital technology.

The institutions were visited by the researchers and copies of the questionnaire were distributed to the study sample at each of the institutions covered with the help of research assistants in each of the institutions of study. The questionnaire copies were collected immediately after the respondents had filled them for onward computation. The items on the questionnaire were arranged and coded under a four points scale. Strongly Agree (SA) = 4 points, Agree (A) = 3 points, Disagree (D) = 2 points and Strongly Disagree (SD) =1 point. Response to each statement was identified by ticking under the appropriate column assigned to the statements. The data was analysis with simple percentage, and mean to show frequencies regarding responses of the respondents. The Analysis of Variance (ANOVA) and t-test were employed to test the hypotheses at significance 0.05 level.

4. Results

Research Question 1: What digital technology devices possessed for utilization in instruction by lecturers of Fine-Arts?

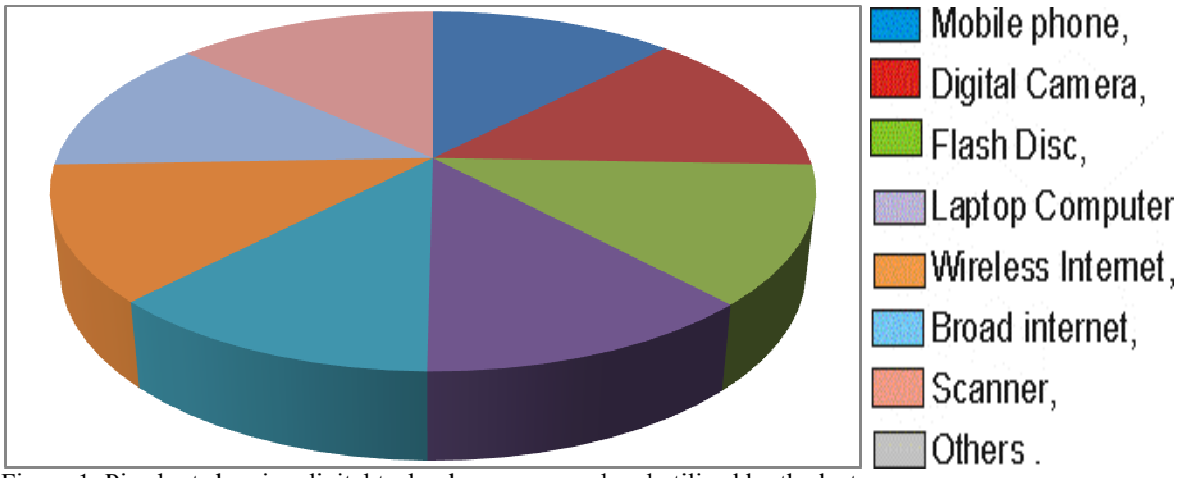

Figure 1: Pie chart showing digital technology possessed and utilized by the lecturers

The digital technology devices possessed for utilization in instruction by Fine-Arts lecturers are: Mobile phone, Digital Camera, Flash Disc, Laptop Computer, wireless Internet, Broad internet, Scanner and Others

Table 1: Types of digital technology commonly utilized by Fine-Arts lecturers in instruction

SN	Item	SA%	A%	D%	SD%	Mean Value
1	Mobile Phone	43.5	29.5	18.5	8.5	3.08
2	Laptop computers	65.0	25.5	5.0	4.5	3.50
3	Camera	46.5	37.0	10.0	6.5	3.24
4	Broad internet	52.5	29.0	13.0	5.5	3.40
5	Wireless Internet	42.5	23.5	14.0	19.5	3.29
6	Scanner	42.0	31.5	19.0	7.5	2.89
7	Others	45.0	34.0	10.0	11.0	3.08
	Grand Mean					3.21

Table 1 showed various digital technology possessed and used by the Fine-Arts lecturers in North-Central tertiary institutions for their instructional delivery. The items on the table revealed the mean score of 3.18, 3.50, 3.24 and 3.40 for Mobile Phone, Laptop computers, camera and Broad internet respectively as possessed by the Fine-Arts lecturers. Other mean scores are 3.29, 2.89 and 3.08 for wireless internet, Scanner and other digital technology respectively owned by the lecturers. From the table we can deduce that overwhelming majority of the lecturers utilized digital technology for instructional delivery; therefore, the grand mean value of 3.21 translating to 80.25%.

Hypothesis 1: There is no significant difference in digital technology utilization between male and female Fine-Arts lecturers in North-Central tertiary institutions in Nigeria.

Table 2: t-test result of male and female Fine-Arts lecturers' utilization of digital technology for instruction

Variables	N	Mean	SD	df	F	Sig (2 tailed)
Male	50	13.44	2.68146	98	610	.543
Female	50	13.74	2.21138			

Table 2 indicates calculated t-value to be 610 which is not significant, because the value is higher than 0.05 alpha levels. The result implies that there is no significant difference between male and female lecturers' utilization of digital technology for Fine-Arts teaching. Therefore, the null hypothesis is accepted.

Hypothesis 2: There is no significant difference in digital technology utilization of Fine-Arts lecturers in North-Central tertiary institutions in Nigeria based on institutional type.

Table 3: One way ANOVA result of Fine-Arts lecturers' utilization of digital technology for teaching and learning based on institutional type

	Sum of square	df	F	Sig
Between group	2.250	1	2.250	.543
Within group	291.940	98	6040	
Total	594.190	99		

Table 3 indicates that F-value calculated is 2.250 and the significant value of .543 is greater than 0.05 alpha levels. The result implies that there is no significant difference in the utilization of digital technology based on institutional type in North-Central, Nigeria. Therefore, the null hypothesis is accepted.

4.1 Discussion of findings

The study examined the types of digital technology commonly used by lecturers in teaching and learning. Research Question one sought information on the types of digital technology possessed and utilized by lecturers in teaching and learning of Fine-Arts. The result revealed that lecturers of Fine-Arts in North-Central Nigeria, possessed different kinds of device in digital technology and utilized them for their instruction. That is, digital devices like mobile phones, laptops, scanners, digital camera, flash discs, among others were used by the lecturers.

On hypothesis one of the study, the finding revealed that the lecturers' utilization was not significantly different in the use of digital technology based on gender. This means that male lecturers of Fine-Arts were not significantly different in the utilization of digital technology from their female counterparts in North-Central tertiary institutions of Nigeria. The finding supported the findings of Ruth (2006), who found that women invented personal learning through digital story, tales, or cultural myths and used same in instruction. Also, it is in line with Isabel (2005), who reported that women access to digital technology through the use of cell phones for learning and communication. It corroborates Sharma's work in (2003), who confirmed that women used digital technology for operational and educational enrolment purposes. Some studies reported differences in gender, regarding the use of digital technology; gender studies on this subject should be probed into still, whether more evidences could still be discovered and substantiated.

Hypothesis two on institutional type, the lecturers of Fine-Arts in North-Central were not significantly different in the utilization of digital technology for their instructional delivery. The result of the study supported those studies of Biggs and Tang (2007), Lam and Tong (2012) and Beetham and Sharpe (2013) who found positive use of digital technology maximally for Fine-Arts instruction. In all, the continual utilization of digital technology is expected to expand the horizon of knowledge of the lecturers of Fine-Arts in their various fields of specialty. From the findings of this study it

5. Conclusion

The results obtained from all data gathered and analysed in the study indicated that lecturers used various digital technology for teaching Fine-Arts in the sampled tertiary institutions. It also showed that digital technology acceptance, adoption and application for instructional delivery were sustained and the use actually enhanced the discharge of Fine-Arts lecturers' job to a large extent. The utilization of digital technology was not gender bias and not significantly different institutionally. The different digital technology utilized in Fine-Arts instruction by lecturers of tertiary institutions in North-Central of Nigeria actually led to richer classroom activities and thus, enhanced learning outcomes.

5.1 Recommendations

In view of the findings and conclusion of this study, the following recommendations are made:

- The school authorities should provide school with digital technology to be leased for utilization by lecturers to increase instructional delivery the more. Also, provision of loan for lecturers by the school authority to procure more digital technology devices to enhance better performance of their work.
- Other facilities in digital technology to bring about smooth delivery of lecturers' job and increase students' participation in learning activities should be procured by the authorities of the schools of the study particularly and those of Nigeria in general.
- Fine-Arts lecturers should be encouraged to attend seminars and workshops in the area of digital technology, to broaden their utilization competence and prepare them ready to integrate more digital tools in instructional activities.

References

Anderson, T., & Dron, J. (2011). Three generations of distance education pedagogy. *The International Review of Research in Open and Distance Learning, 12* (3), 80

Badagliacco, J. M. (1990). Gender and race differences in computing attitudes and experience. *Social Science Computer Review*, *8*(1), 42-63

Beaudoin, M. (2013). The evolving role of the instructor in the digital technology. In Y. Kats (Ed.): *Learning Management Systems and Instructional Design: Metrics, Standards, and Applications*. Learning Management System and Instructional Design-Best Practices in Online Education, 233-262.

Beetham, H. & Sharpe, R. (2013). *Rethinking pedagogy for a digital technology: designing for 21st century learning*. New York: Routledge.

Behrend, T. S., Wiebe, E. N., London, J. E., & Johnson, E. C. (2011). Cloud computing adoption and usage in community colleges. *Behaviour and Information Technology*, 30(2): 231-240.

Brown, J. S. & Adler, R. (2008). Minds on fire: Open education, the long tail and Learning 2.0. *Educause Review, 43,* 17-32.

Couros, G. (2010). The power of working together. *The principal of change: stories of learning and leading.* Retrieved February 25, 2015 from http://www.georgecouros

Davis, F. D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology *MIS Quarterly,* 13 (3), 319-340

Downes, S. (2007). *An introduction to connective knowledge*. Presented at the International Conference on Media, Knowledge & Education-Exploring New Spaces, Relations and Dynamics in Digital Media Ecologies retrieved March 15, 2013 from http://www.downes.ca

Fallows, D. (2005). *How women and men use the internet*. Pew Internet and American Life Project, retrieved August 16, 2009, from http://www.pewinternet.org/Reports/2005/How-Women-and-Men-Use-the-Internet.aspx

Faulkner, W. (2001). The technology question in feminism: A view from feminist technology studies. *Women's Studies International Forum*, *24*(1), 79-95.

Freedman, K., Heinjnin, E., Kallio-Tavin, M., Karpati, A. & Papp, L. (nd). Visual culture learning communities: How and what students come to know in informal art groups. *Studies in Art Education*, 53 (2), 71-83.

Gauntlett, D. (2011). Making is connecting*:* The social meaning of creativity, from DIY and knitting to YouTube and Web 2.0. Polity retrieved August 23, 2016 from http://www.makingisconnecting.org

Gerber, B. L., & Guay, D. (2006). Reaching and teaching students with special needs. Reston, VA: *National Art Education Association*. 11

Hafkin, N. (2000). Convergence of Concepts: Gender and ICTs in Africa. In E. Rathgeber and E. O. Adera (Eds.). *Gender and the information revolution in Africa* Ottawa: IDRC. Retrieved August 25, 2016, from http://www.idrc.ca

Hafkin, N., & Huyer, S. (2007). Women and Gender in ICT Statistics and Indicators for Development. *Information Technologies and International Development*, Special issue on Women's Empowerment and the Information Society, *4*(2), 25-41.

Hargittai, E., & Shafer, S. (2006). Differences in Actual and Perceived Online Skills: The Role of Gender. *Social Science Quarterly*, *87*(2), 432-448.,

Hilbert, M. (2011). Digital gender divide or technologically empowered women in developing countries? A typical case of lies, damned lies, and statistics. *Women's Studies International Forum*, *34*(6), 479-489.

Isabel, Z. (2005). *Virtual community building and networking*. In Ng, Cecilia and Mitter, Swasti (Eds.) Gender and the DIGITAL economy: Perspectives from the developing world. New Delhi: Sage.

Jenkins, H., Purushotma, R., Clinton, K., Weigel, M. & Robison, A. (2009). Confronting the Challenge of Participatory Culture: Media Education for the 21st Century. Occasional Paper. Boston: MIT/MacArthur Foundation.

Lam, P. & Tong, A. (2012). "Digital Devices in Classroom – Hesitations of Teachers-to-be". *The Electronic Journal of e-Learning*. 10 (4), 387-395

Lemley, J., Schumacher, G., & Vesey, W. (2014). What learning environments best address 21st-century students' perceived needs at the secondary level of instruction? *NASSP Bulletin*.

Lu, J., Lu C., Yu C. S., & Yao, J. E., (2014). Exploring factors associated with wireless internet via mobile technology acceptance in Mainland China. *Communications of the IIMA*, 3(1), 9-23.

Maiers, A., & Sandvold, A. (2010). Achievement gap or passion gap? *The passion-driven classroom: a framework for teaching and learning.* Abingdon, Oxon: Routledge.

Maldonado, U. P. T., Khan, G. F., Moon, J. & Rho, J. J. (2011). e-Learning motivation and educational portal acceptance in developing countries. *Online Information Review,* 35(1), 66-85.

NTIA (National Telecommunications and Information Administration). (1999). *Falling through the Net: Defining the Digital Divide. A Report on the Telecommunications and Information Technology Gap in America. Revised.* U.S. Government Printing Office, Superintendent of Documents.

Odora, R. J. & Matoti, S.N. (2015). The digital technology: changing roles of lecturers at a University of Technology in South Africa. *Journal of Social Science*, 42(1&2), 165-173.

Olanrewaju, O. S., Kareem, I. A. & Adeshina, O. K. (2015). Development of Colour-Exploration in Learning Management System to Teach Students of Secondary Education in Creative Arts, Southwest, Nigeria *Journal of Educational Media and Technology (NAEMT) 19(1) 120 -127*

Olanrewaju, O. S., Adeshina, O. K. & Kareem, I. A. (2016). Cloud Computing Facebook Utilization of National Teachers' Institute Undergraduates, Ilorin Study Centre, Kwara State, Nigeria *Journal of Educational Media and Technology, 20, 132-139*

Olasedidun, O. K. (2014). *Relationship among lecturers perceived usefulness, ease of use, attitude and intention towards social media in South West Nigeria.* (Unpublished Ph.D. thesis) Department of Educational Technology, University of Ilorin, Nigeria

Peppler, K. (2010). Media arts: arts education for a digital technology. *Teachers College Record*, 112(8), 2118-2153

Peppler, K. & Kafai, Y. B. (2010). Gaming fluencies: Pathways into a participatory culture in a community design studio. *International Journal of Learning and Media,* 1(4), 1-14.

Richardson, W. (2012). Old school. W*hy school? How education must change when learning and information are everywhere (eBook)*. TED Conferences. Retrieved August 25, 2016 from http://www.amazon.ca

Ruth, E. (2006). Literacy and linguistic approaches to feminist narratology. Basingstoke: Palgrave Macmillan for discussion of storytelling in cross-cultural atmospheres.

Salter, D. & Lam, L. K. J. (2010) 'Approaches to teaching and technology use among international award winning university teachers', in Proceedings of *World Conference on Educational Multimedia, Hypermedia and Telecommunications 2010* (2565–2574), AACE, Chesapeake, VA.

Sharma, U. (2003). Women empowerment through Information Technology. Author.

Siemens, G. (2005). *Connectives: Learning as network-creation. E-learning space* retrieved August 25, 2016 from http://www.elearnspace.org

Thiele, A. K., Mai, J. A. & Post, S. (2014). The Student-Centred Classroom of the 21st Century: Integrating Web 2. 0 applications and other technology to actively engage students *Journal of Physical Therapy Education*, *28*(1), 95-110

Varank, I. (2007). Effectiveness of Quantitative Skills, Qualitative Skills, and Gender in Determining Computer Skills and Attitudes: A Causal Analysis. *The Clearing House*, *81*(2), 71-80.

Weller, M. & Anderson, T. (2013). Digital resilience in higher education. *European Journal of Open, Distance and e-Learning*, 16(1), 53

Zepke, N., & Leach, L. (2010). Improving student engagement: Ten proposals for action. *Active Learning in Higher Education. 11*(3), 167-177.