Effects of Two ICT Tools on Learners' Attitude in Adult Literacy Programmes in Ibadan Metropolis, Oyo State

By

O. O. Adelore

Abstract

This study examined the attitude of learners to the use oftwo ICT tools in adult literacy programmes in Ibadan Metropolis. The study was hinged on the constructivist theory of learning. Though the study was experimental in nature but adapted descriptive survey design. The sample of the study comprised 20 adult learners selected from two adult literacy programmes. The survey instrument used was validated and its reliability (0.75) was ascertained using Cronbach. The data collected were analysed using simple percentages for the demographic variable and descriptive statistics used for the research questions. The study revealed that adult learners have a positive attitude towards learning after being exposed to ICT instructional tools (Weighted Average (WA) = 3.19) and there was a statistically significant difference in attitudes between the mean scores of learners exposed to mobile instruction and those exposed to laptop computer instruction towards learning(t=2.75; df=18; P<0.005). Therefore, it was recommended that literacy organisers and facilitators should be sensitised on the importance and need to use these ICT tools so as to make up for the weaknesses inherent in the traditional mode of instruction in adult literacy programmes.

Background to the Study

Literacy has been identified as an important machinery through which human capital development of a country can be attained and no nation can develop beyond its intellectual capacity. Decades ago, literacy only meant basic competency in "3R's": reading, writing and arithmetic (Gerkens and Major, 2008). The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2006) observed that while there are different dimensions on the concept of literacy as it often emphasizes the ability to understand and communicate through a written text, there is no universally acceptable definition that captures all its facets. The literacy definition used in the Education For All (EFA) 2000 Assessment as quoted in UNESCO (2004) stated that literacy is "the ability to read and write with an understanding of a simple statement related to one's daily life. It involves a continuum of reading and writing skills, and often includes basic arithmetic skills (numeracy)."

In contemporary times, the scope of literacy has been expanded beyond the '3R's. Demonstrating this view, UNESCO (2003) defines literacy as "the ability to identify, understand interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society". In essence, to be literate in the 18th century means something far different from what it means to be literate in the 21st century (Langille, 2004).

In spite of the world's commitment towards eradicating illiteracy, it was observed by UNESCO that Nigeria is still estimated to have over 62 million illiterates out of whom over 35 million are adults, and it would take Nigeria 58 years to banish illiteracy (*The Sun* Nov. 17, 2015; *Vanguard* Sept 11, 2013). The National Bureau of Statistics in 2010 stated that overall adult literacy rate was 71.6%, and only 57.9% of the adult

population was literate in English. Nigeria is placed in the 'E9' group which is a group of nine most populous countries with the highest number of illiterates. According to E-9 Country Reports (2010), as cited in the 8th E-9 Ministerial Review meeting on Education for All (2010), Nigeria is ranked 7th out of the 9 countries that make up the group. In other words, Nigeria is the 3rd poorest among the E-9 countries in terms of literacy and the only member in sub-Saharan Africa. Based on the country's comparison index of literacy level by country in 2012, out of 184 countries, Nigeria was ranked 161 with 66% literacy rate. (Ogunbiyi 2015; Ozoemena 2012).

Unless a drastic measure is taken to tackle the problems bedevilling literacy promotion efforts in the country, a vast majority of the illiterates will spend their lives stalled in economic uncertainty, with the unequal number living below poverty level, and they will be incapable to have access to essential health care. It was further observed that illiterate adults are majorly a product of an intergenerational cycle of illiteracy, and unless a literacy programme with appropriate content delivery and methodology that can elicit and sustain their interest in the programme is designed for them and they are encouraged to participate, they are likely to transfer their poor literacy skills from one generation to another thereby making it a cyclical problem that can hinder the development of the nation (Gerkens and Major, 2008).

Interestingly, the advent of recent technologies, most especially Information and Communication Technologies (ICTs) has really transformed many areas of our lives, and literacy has continued to evolve with the changes in how people communicate (Ge. Ruan,and Lu, 2012; Langille, 2004). The impact of ICT is quite evident from the educational perspective as it serves as the solution to the problems posed by space and time for learning and has also transformed the conventional learning settings into new learning environments. The conventional mode of teaching and learning is characterized by "memorization and reproduction of school texts whereby teachers dominate the interaction and students' activity is limited to answering questions formulated by the teacher". As a result of this, "learning tends to be passive, factual and knowledge-based, and often happens in isolated artificial contexts" (Author, 2010: International Society for Technology in Education 2002, Jonassen and Land 2000 cited in Ge, Ruan, and Lu, 2012).

Today, ICT has significantly extended the scope of learning and has been of immeasurable value to literacy promotion as it has been considered a dynamic force for widening access and participation of adults in literacy programmes; it serves as an essential tool for lifelong learning activities. It provides a "multi-sensory stimulation and allows learners to pursue knowledge in multi-path, nonlinear progression, and this place emphases on collaborative work, information exchange and learning that is active, exploratory and inquiry-based". This in turn improves the learner's ability to engage in critical thinking, informed decision-making, and proactive action in authentic and real word context (ISTE 2002 cited in Ge, et.al. 2012; Gorard, Selwyn, and Madden, 2003, Mason, 2006 cited in Jimoyiannis, and Gravani, 2011).

Andrews (2004) observed that ICT and literacy are connected in two ways. Firstly, "new technologies are conceived by new literacies as much as the other way round" and secondly, both ICT and literacy "affect, impact, and influence the other, so they both change". In actual practice, the ability to use ICT is directly connected to literacy skills which are essential to the development of ICT literacy (Statistics Canada and OECD

2005). It was further noted that ICT skills may rely on the adeptness of technology use to a certain degree but may require "cognitive skills, such as those underlying literacy, numeracy and problem-solving skills which are critical for using ICTs effectively" (international ICT Literacy Panel, 2000, as cited in Statistics Canada and OECD, 2005).

Specifically, UNESCO (2006) outlined major roles that ICT can play in promoting literacy. These roles include enhancing learning, broadening access to literacy education, creating local content, helping in professional development of literacy facilitators and having the capability to cultivate a learner-friendly environment for literacy teaching and learning. It is believed that ICT has the capability to make learning more real to life and interesting, to eliminate barriers posed by geographical location, thereby helping to 'include the excluded'. Again, it is observed to be more cost-effective, especially in the area of providing appropriate learning contents that are indigenous to learners, exposes facilitators to best literacy practices obtained elsewhere in the world and provides access to written materials which ultimately promote the developments of literacy skills.

Though there are a lot of ICT tools that can be used to enhance literacy teachings, the use of mobile phones and personal computers in this 21st century is far extending their reach and offer a high value with respect of literacy teaching and learning. Empirical evidence across the world confirms the use of these technologies to support the acquisition and further development of reading, writing and numeracy skills, and this form of learning constitutes part of broader blended learning strategies. The conventional classroom approaches are complemented by self-directed learning where learners can practise and progress at their individual pace, time and in different places. This strategy also makes it possible for learners to interact with one another and share experiences from different places (Wagner and Kozma, 2005).

It has been observed that out of all the technologies used for educational purposes, none has made much impact on the educational process like the computer because it has the capability of activating the senses of sight, hearing and the touch of the user (Author, 2010). Specifically, the use of computers for literacy teaching and learning has the capability to augment the uptake of literacy skills, and this is as a result of the fact it can provide real-time feedback to learners, and it can as well be fun to use for adults who have never used it before. Furthermore, a well-designed educational computer programme with appropriate content can be very exciting to use, and this goes a long way to motivate learners, especially when literacy facilitators have the technical know-how on integrating computers into literacy teaching (UNESCO, 2006).

A study carried out by Chudgar in 2014 on "The Promise and Challenges of using Mobile Phones for Adult Literacy Training: Data from one Indian State" indicates that there are mixed promises for using mobile phones to alleviate adult literacy. Also, results from the Alphabétisation de Base par Cellulaire (ABC): Mobiles 4 Literacy in Niger in which adult learners learned how to use simple mobile phones as part of a literacy and numeracy programme implemented by Catholic Relief Services/Niger, and in collaboration with Tufts and Oxford Universities, show that students' scores before and immediately after the first year of the programme (ABC and non-ABC) improved considerably as a result of the literacy programme. Students in the ABC (Mobile Phone) villages had higher test scores than their non-ABC counterparts, among others. Furthermore, Author (2010) examined the use of Short

Message Service (SMS) application as a learning support tool in a university-sponsored literacy programme; findings showed that the experience of the participants in the use of the application helped to ease learning and made it meaningful. The results from the above studies testify to the potentials of a mobile phone to improving learning outcomes in adult literacy programmes.

Based on this backdrop, it thus becomes imperative to have empirical evidence of the learners' attitude to the use of these ICT tools (Mobile Phone and Lap-top) for instruction delivery in adult literacy programmes. Specifically, it is necessary to identify which of these has more good on learners' attitude in adult literacy as these tools have proved to be effective in enhancing teaching and learning processes and provide learners with the opportunity to learn with no time and space restrictions. Also, the two ICT tools are fast becoming part of our daily life and have the capability to bring solutions to various problems hampering the effective operation and active participation of adult learners in literacy programmes. These problems range from rigid class schedules, inadequacy of instructional materials, and inflexibility in the delivery of content. The problems do not make adult learners to learn at their own pace, but the problems can be addressed using these ICT tools.

Research Questions

To achieve the objective of the study, the following questions serve as a guide to the study:

1. What is the attitude of learners to the use of ICT tools in adult literacy programmes?
2. What is the difference in attitude of the learners exposed to mobile phone learning and those exposed to laptop in adult literacy programme?

Theoretical Framework

This study is based on the Constructivist Theory, which holds that learners create knowledge and meaning from an interaction between their experiences and their ideas. Constructivists, such as Dewey (1916), Vygotsky (1978) and Bruner (1996), believed that learners could learn actively and construct new knowledge based on prior experiences, and as a result, the instructor's role is to facilitate the learning process (Huang, 2002). According to Merriam, Caffarella, and Baumgartner (2007), as quoted by Collins (2008), constructivism "is a process of constructing meaning; it is how people make sense of their experience".

In the constructivist approach, an emphasis is placed on the development of learners' ability and skills to bring about a solution to their real life problems, and as such, there is a merge of problem-solving and free-discovery skills. In essence, the process of knowledge acquisition is dynamic and built around the process of discovery (Dewey, 1916, as cited by Huang, 2002). The major thrust of constructivism is centered on learning; as such, it advocates a learner-centred learning environment instead of teacher-centred environment. In a learner-centred environment, learners are at the center of the learning experience, and this can be aided in a multiplicity of ways. It has been observed that the primary key to constructing new knowledge is by engaging learners in an experienced-based learning and based on this, developing a learning experience that has the capacity to yield maximum benefits to learners requires the facilitator to be cognizant of learner's needs (Collins, 2008).

With the use of ICT tools for learning, learners are encouraged to actively construct knowledge because it positions them in a realistic context, as well as offering access to supporting

tools (Naismith, Lonsdale, Vavoula and Sharples, 2004; Craig and Van Lom). The advantages of constructivism over other learning theories in the implementation of ICT for learning include the following: it emphasizes an independent learning style; it makes learners learn more when they explore and experiment and whatever knowledge constructed can be used in the real world settings; as such, the learning acquired becomes permanent (Craig et.al). Also, this theory seems to take into consideration the characteristics of adult learners who are believed to be self-directed, having a wealth of experience, problem-centred in their learning and are intrinsically motivated and these characteristics provide a unique base on which they can construct new meanings (Garmston,1996; Spigner-Littles & Anderson, 1999, as cited by Collins, 2008).

Methodology

The study is a quasi-experimental research conducted as a pilot study of an experimental research work aimed at examining the effects of mobile phone and laptop on learners' learning outcomes in adult literacy programmes. This present study, for the purpose of understanding learners' attitude to the use of mobile phone and laptop, adopted a descriptive survey design to elicit information. The questionnaire used to elicit information was developed and validated by two adult education experts: an educational technologist and an educational evaluator, all in the University of Ibadan. A pilot test of the questionnaire was done in a different adult literacy programme, and 0.75 was obtained using cronbach alfa. The questionnaire has two sections. Section A was on the demographic characteristics of the participants, while section B was structured on a 4-point rating scale of "Strongly Agree" (SA), "Agree" (A), "Disagree" (D), and "Strongly Disagree" (SD).

Non-probability purposive sampling technique was used in selecting 20 participants (10 each) in an advanced literacy class from a model literacy centre of the University of Ibadan and Oyo State Agency for Adult and Non-formal Education (Oyo ANFE) Organized Literacy Centre located at Eleyele Police Barrack. They were the participants that formed the population of mobile phone and laptop mediated learning intervention.

An intervention was organized to expose adult learners to technology mediated learning that can serve as a motivational factor to better participation in adult literacy programmes considering the inherent problems associated with the traditional method of learning in the literacy programme that often lead to high-drop rates due to rigid class schedules. In order to allow learners to learn at their own convenience anywhere and anytime using ICT tools, the intervention was initiated. The intervention programme made use of Social Studies learning content based on the curriculum of advanced literacy class according to the scheme of Oyo State Adult and Non-Formal Education (ANFE) and was delivered via a Mobile Learning Platform (MLP) hosted on www.cltdpa.com.

After the intervention, the questionnaire was administered to the respondents to ascertain their attitude to the use of the tools in adult literacy programmes and compare the attitude of the two groups (mobile phone and laptop). The data collected were analyzed using descriptive statistics and t-test, while qualitative data were content analysed.

Findings

Demographic data

The study revealed that 20 adult learners were involved in the study, out of which

30.0% were between 15 and 30 years of age; 50.0% were between 31 and 50 years and 20.0% were already above 50 years. Therefore, the study involved young, young-adult and older learners. It also shows that 23.0% of the adult learners are males, and 77.0% are females. Therefore, both male and female adult learners were involved in the study.

It further showed that 27.0% of the adult learners were single, while 73.0% were married. Also, 67.0% of the participants involved in the study were traders; 3.3% were clergymen, and 30.0% of the learners belong to the other category. Lastly, it was revealed that 50.0% of the adult learners were Yoruba; 20.0% were of Igbo origin, and 6.7% were Hausa, while 23.3% of the learners belonged to the other category.

PART B: Answers to the Research Questions

Research Question 1: What is the attitude of learners to the use of ICT tools in adult literacy programmes?

Table 4.1: Attitude of Learners to the use of ICT tools

S/N	Items	4	3	2	1	Mean	Std. D
1	I feel confident and enjoy using ICT to learn	13 (65.0)	7 (35.0)	-	-	3.65	.49
2	It is interesting using ICT for literacy class	12 (60.0)	7 (35.0)	-	-	3.45	.95
3	I increase my participation in literacy classes because of the use of ICT	10 (50.0)	9 (45.0)	1 (5.0)	-	3.45	.60
4	I feel disadvantage having to use ICT in the literacy programme	2 (10.0)	2 (10.0)	6 (30.0)	9 (45.0)	3.00	1.21
5	I find it difficult to transfer understanding from ICT tools screen to my head	-	3 (15.0)	10 (50.0)	6 (30.0)	3.00	.97
6	The use of ICT helps me to link knowledge e.g. association	9 (45.0)	11 (55.0)	-	-	3.45	.51
7	I think ICT is not useful for learning	1 (5.0)	2 (10.0)	6 (30.0)	11 (55.0)	3.35	.88
8	I feel supported in my use of ICT for learning	10 (50.0)	10 (50.0)	-	-	3.50	.51
9	The challenge of using ICT for learning is exciting	10 (50.0)	6 (30.0)	-	3 (15.0)	3.05	1.28
10	Using ICT to learn is very frustrating	1 (5.0)	3 (15.0)	8 (40.0)	8 (40.0)	3.15	.88
11	The use of ICT for learning consumes a lot of time	4 (20.0	5 (25.0)	7 (35.0)	3 (15.0)	2.40	1.14
12	I think ICT usage in literacy class will cause social rupture between facilitators and learners	4 (20.0)	4 (20.0)	7 (35.0)	2 (10.0)	2.05	1.28
13	The practice of using ICT for learning is an easy process	11 (55.0)	8 (40.0)	1 (5.0)	-	3.50	.61
14	I think learning through the use of ICT tools will be easier to retain compared to other modes of learning	9 (45.0)	8 (40.0)	3 (15.0)	-	3.30	.73
15	Learning through the use of ICT is a more flexible method of learning as it can be done anywhere, anytime.	12 (60.0)	8 (40.0)	-	-	3.60	.50
	Weighted Average	**3.19 (79.8%)**					

Table 4.1 revealed that the adult learners had positive attitude to the use of mobile phone and laptop in adult literacy programmes (Weighted Average (WA) = 3.19). For instance, the learners agreed with the following items: that they were confident and enjoyed using ICT to learn (mean=3.65); that it was interesting using ICT for literacy classes (mean= 3.45); that the use of ICT helped them to link knowledge, such as, association (mean=3.45); that the practice of using ICT for learning was an easy process (mean=3.5) and that learning through the use of ICT was a more flexible method of learning as it could be done anywhere, anytime (mean=3.6).

Research Question 2: What is the difference in attitude of the learners

exposed to mobile phone learning and those exposed to laptop in adult literacy programme?

Table 4.2: T. Test Summary Showing Attitudinal Mean Score of the Learners Exposed To Mobile Phone and Those Exposed To Laptop

Variable	N	Mean	Std. D	T	df	Sig.	Remark
ATTITUDE							
Laptop	10	51.10	4.8				
				2.751	18	.013	Significant
Mobile phone.	10	44.70	5.58				

Table 4.2 shows that there is a significant difference in attitude between the mean scores of learners exposed to mobile phone instruction and those exposed to laptop instruction (t=2.75; df=18; P<0.005). The mean scores reveal that those exposed to laptop had higher attitudinal mean score (51.10) than those exposed to mobile instruction (44.70). This means that adult learners exposed to laptop instruction had a higher attitude compared to those exposed to mobile phone instruction.

Discussion of Findings

The study reveals that adult learners have a positive attitude to the use of ICT tools in adult literacy programmes as shown in Table 4.1. This implies that the use of ICTs for adult literacy programmes has a significant positive effect on their attitude towards learning. This affirms the application of constructivism as a learning theory in an ICT mediated teaching and learning process as it provides opportunities for learners to "explore, experiment, construct, converse and reflect" (Wang, Teo, and Woo,2009), "articulate ideas, negotiate meaning and collaboratively construct shared knowledge" (Papastergiou, 2006) and engage learners in "peer interactions, group reflection and discussion (Santally, Rajabalee, and Cooshna-Naik, 2012). All these tend to have influence on learners' attitude especially adult learners who have their own distinct characteristics as espoused by Knowles (1980).

At the initial level of introducing the tools to the learners, they were reluctant in using the mobile phone and laptop for learning as they were not conscious of the inherent benefit of these tools as a learning aids. Those exposed to mobile phone never believed they could use their phone to access the internet and learn at their own pace, anywhere and anytime. Adult learners exposed to laptop were extremely happy as they never thought that they would have the opportunity to interact with a laptop talk less of using it to surf the internet for learning activities. After the exposure to mobile phone and laptop for six weeks, they displayed positive attitudes towards learning after they realized that the tools encourage them to feel confident, enable them to link knowledge and ultimately introduce flexibility into the teaching and learning process especially in the acquisition of literacy skills. This is in line with the submission of Garcia, Pearson, Taylor, Bauer, & Stabl, (2011) that ICT allows learners to create knowledge at their own pace and enables literacy facilitators to make class schedules more flexible so as to accommodate individual differences in the teaching and learning process.

This result is also consistent with other findings from similar research (Longe, Boating, Longe and Olatubosun, 2010; Yusuf and Balogun 2011; Mahmoudi, Samad and Abdul Razak 2012; Gonzalez, Ramirez and Viadel 2015.

It was also revealed that there is a significant difference in attitude between the mean scores of learners exposed to laptop instruction and mobile

instruction. Those who were exposed to laptop instruction had higher attitude mean score than those exposed to mobile instruction. It was observed in the course of the study that adult learners exposed to the laptop were more anxious; they came to the class with a lot of questions and were always ready to participate.

This result attests to UNESCO's(2006) position that computers make learning more interactive, allow learners to work independently, and more importantly, it can be fun for people who had never used them before. This greatly influences their level of participation in literacy programme. Also, Kozma (2009) opined that computers have a relatively higher capability compared to the mobile phone. Computer has a multimedia capacity that allows presentation of learning contents in a variety of forms and provides real-time interaction which is very essential when it comes to learning. The use of computers for literacy teaching can help to change the teaching and learning pattern from the traditional rote learning to a more engaging and problem-solving pattern needed.

Conclusion

This study examined the attitude of learners to the use of mobile phone and laptop in selected adult literacy programmes in Ibadan. The study reveals that learners have a positive attitude to the use of these ICT tools in adult literacy programmes. It also reveals significant difference in attitudes between learners exposed to mobile phone instruction and those exposed to laptop instruction.

Consequently, the use of these tools should go together with changes in the mode of teaching, contents planning, professional training of the facilitators and a favourable and appropriate government policy to strengthen it for adult literacy programmes.

Recommendations

Based on the findings, the following recommendations were made:

1. Literacy organizers and facilitators should be sensitized on the importance and need to use these ICT tools so as to make up for the weaknesses inherent in the traditional mode of instruction in adult literacy programmes
2. ICT tools should be seen as a viable instrument upon which basic and post-literacy programmes can be delivered to the learners in order to prevent them from relapsing into illiteracy and to ensure a lifelong learning.
3. Further studies on assessing the attitudes of learners to the use of ICT tools in adult literacy programmes should involve a larger number of participants across cultural boundaries for better generalization

References

Abdulkarim, I., and Ali, M. (2012). Adult Learners Dropout from Literacy Programmes in Gombe State, Nigeria: Implications for Achievement of MDGs and EFA Goals in Nigeria. *Developing Country Studies, Vol 2,* (No.9). Retrieved December 8, 2015, from http:// www.iiste.org/Journals/index.php/DCS/article/viewFile/2963/3005.

Adedoja, O., Omotunde, C. and Adelore, O. (2010). Short Message Service (SMS) application as a learning tool in a university-sponsored literacy programme. *International Journal of Literacy Education,7*(2).

Aker, J.C., Ksoll, C. and Lybbert, T.J. (2011). ABC, 123: The Impact of a Mobile Phone Literacy Program on Educational Outcomes. *SSRN Electronic Journal*. Retrieved December 18, 2015.

Akintolu, M. (2015). Effect of mobile technology on adult learners' achievement in literacy programmes in Ibadan, Nigeria (Unpublished master's thesis). University of Ibadan.

Andrews, R. (Ed.) (2004). *The impact of ICT on literacy education*. London: Routledge Falmer.

Balogun, W. (2015, November 17). UNESCO: Over 62m Nigerians are Illiterate .Says, Nigeria needs 58 years to banish illiteracy. Retrieved December 10, 2015, from http:// sunnewsonline.com/new/unesco-over-62m-nigerians-are-illiterate/

Chudgar, A. (2014). The promise and challenges of using mobile phones for adult literacy training: Data from one Indian state. *International Journal of Educational Development,* 34, 20-29. Retrieved November 30, 2015.

Collins, S.R. (2008, November). Enhanced Student Learning Through Applied Constructivist Theory. Retrieved May, 2016, from http://www.kpu.ca/sites/default/files/Teaching_and_Learning/TD.2.2_Collins_Applied_Constructivist_Theory.pdf

Craig, T., and Van Lom, M. (2015). Impact of Constructivist Learning Theory and Mobile Technology Integration - Theories of Educational Technology. Retrieved December 13, 2015, from https://sites.google.com/a/boisestate.edu/edtechtheories/craig_and_vanlom

Dighe, A. (2008). Use of ICTs in Literacy and Lifelong Learning. Retrieved December 14, 2015, from http://www.unesco.org/education/aladin/paldin/pdf/course01/unit_14.pdf

García, G.E., Pearson, P.D., Taylor, B. M., Bauer, E.B. and Stahl, K.A. (2011). Socio-Constructivist and Political Views on Teachers' Implementation of Two Types of Reading Comprehension Approaches in Low-Income Schools. *Theory Into Practice,50*(2), 149-156. Retrieved February 10, 2016.

Ge, X., Ruan, J. and Lu, X. (2012). Information and Communication Technologies for Literacy Education in China. *Perspectives on Teaching and Learning Chinese Literacy in China Multilingual Education,* 183-198. Retrieved November 30, 2015.

Gerkens, S. and Major, H.D. (2008). Virginia's Not-so-hidden Secret: The Adult Literacy Crisis. Retrieved November 21, 2015, from http:// www.via.vt.edu/summer08/feature2.pdf.

González, A., Ramírez, M. P. and Viadel, V. (2015). ICT Learning by Older Adults and Their Attitudes toward Computer Use. *Current Gerontology and Geriatrics Research,2015*, 1-7. Retrieved December 20, 2015.

Hedberg, J. (2003). Ensuring quality E-Learning: Creating engaging tasks. *Educational Media International,40*(3-4), 175-186. Retrieved November 31, 2015.

Huang, H. (2002). Toward constructivism for adult learners in online learning environments. Retrieved April, 2016, from http://umsl.edu/~wilmarthp/modla-links-2011/Toward-a-constructivism-for-adult-learners--in-online-learning-environments.pdf.

Jimoyiannis, A. and Gravani, M. (2011). Exploring Adult Digital Literacy Using Learners' and Educators' Perceptions and Experiences: The Case of the Second Chance Schools in Greece. *Educational Technology and Society*, *14* (1), 217–227.

Knowles, M. S. (1980). *The modern practice of adult education: From pedagogy to andragogy*. Wilton, CT: Association Press.

Kozma, R. (2009). Computers are More Capable than Mobile Phones. Retrieved January 10, 2016, from https://edutechdebate.org/mobile-phones-and-computers/computers-

are-more-capable-than-mobile-phones/

Langille, L.M. (2005). *Adult literacy educators' perceptions of technology integration* (Unpublished master's thesis). Acadia University.

Literacy Foundation. Consequences of illiteracy. Retrieved November 8, 2015, from https://www.fondationalphabetisation.org/en/foundation/causes-of-illiteracy/consequences-of-illiteracy/

Longe, O., Boateng, R., Longe, F. and Olatubosun, K. (2010). Information and Communication Technology Adoption among Adults in South Western Nigeria: An Assessment of Usage-Phobia Factors. *Journal of Information Technology Impact,* 10(1), 65-86. Retrieved January 18, 2016, from http://www.jiti.net/v10/jiti.v10n2.065-086.pdf.

Mahmoudia, E., Samadb, A.B. and Abdul Razak, N. Z. (2012). Attitude and Students' Performance in Computer Assisted English Language Learning (CAELL) for Learning Vocabulary. Retrieved December 22, 2016, from https://www.researchgate.net/publication/257717995_Attitude_and_Students'_Performance_in_Computer_Assisted_English_Language_Learning_CAELL_for_Learning_Vocabulary

Naismith, L., Lonsdale, P., Vavoula, G. and Sharples, M. (2004). *Literature Review in Mobile Technologies and Learning* (Futurelab Series Report 11). Bristol: Futurelab. Retrieved December 12 2015 from http://www.nfer.ac.uk/publications/FUTL15

Ogunbiyi, T. (2015, September 03). Combating illiteracy in Nigeria. Retrieved December 10, 2015, from http://thenationonlineng.net/combating-illiteracy-in-nigeria

Ozoemena, P.O. (2012). Manpower Development and Utilization in Adult Literacy Education in Nigeria. Retrieved November 18, 2015, from https://www.scribd.com/doc/100114978/Manpower-Development-and-Utilization-in-Adult-Literacy-Education-in-Nigeria

Papastergiou, M. (2006). Course management systems as tools for the creation of online learning environments: Evaluation for a social constructivist perspective and implications for their design. Retrieved January 10, 2016, from http://www.academia.edu/2252665/Papastergiou_M._2006_._Course_Management_Systems_as_tools_for_the_creation_of_online_learning_environments_Evaluation_from_a_social_constructivist_perspective_and_implications_for_their_design._International_Journal_on_E-Learning_5_4_593-622

Pearce, C. (2009). From Closed Books to Open Doors – West Africa's Literacy Challenge. Retrieved December 18, 2015, from https://www.oxfam.org/sites/www.oxfam.org/files/bp_closed_books_west_africa.pdf.

Qudah, K.Y., Hussain, J.A. and Matari, R.A. (2013). Students' Attitudes in Colleges of Education at the Jordanian Universities towards Mobile Phone Usage in University Education. *International Journal of Interactive Mobile Technologies (iJIM), 7*(2).

Santally, M.I., Rajabalee, Y. and Cooshna-Naik, D. (2012). Learning Design Implementation for Distance e-Learning: Blending Rapid e-Learning Techniques with Activity-based Pedagogies to Design and Implement a Socio-constructivist Environment. Retrieved January 10, 2016, from http://www.eurodl.org/?p=archives

Statistics Canada and OECD. (2005). "Learning a Living: First Results of the Adult Literacy and Life Skills Survey. Retrieved December 8, 2015, fromhttp://www.oecd.org/

education/innovation-education/34867438.pdf.

Terryn, B. Measuring Literacy in Developing Countries from an International Perspective. Retrieved January 18, 2016, from https://www.stat.auckland.ac.nz/~iase/publications/3/TerrynI68.pdf.

UNESCO Bangkok. (n.d.). Literacy. Retrieved December 18, 2015, from http://www.unescobkk.org/education/efa/efa-goals/literacy/

UNESCO Institute for Lifelong Learning (2014). Harnessing the Potential of ICTs for Literacy Teaching and Learning Effective Literacy and Numeracy Programmes Using Radio, TV, Mobile Phones, Tablets, and Computers. Retrieved December 18, 2015, from http://unesdoc.unesco.org/images/0022/002295/229517E.pdf.

UNESCO Institute for Statistics. (2013, September). Adult and Youth Literacy. Retrieved December 8, 2016, from http://www.uis.unesco.org/literacy/Documents/fs26-2013-literacy-en.pdf.

UNESCO Institute for Statistics. (2014). International Literacy Data 2014. Retrieved November 18, 2015, from http://www.uis.unesco.org/literacy/Pages/literacy-data-release-2014.aspx

UNESCO Institute of Lifelong Learning. (2013). 2nd Global Report on Adult Learning and Education: Rethinking Literacy. Retrieved January 10, 2016, from http://unesdoc.unesco.org/images/0022/002224/222407E.pdf

UNESCO. (2004). The Plurality of Literacy and Its Implications for Policies and Programmes. Retrieved November 18, 2015, from http://unesdoc.unesco.org/images/0013/001362/136246e.pdf

UNESCO. (2006). Using ICT to Develop Literacy. Retrieved December 8, 2015, from http://www unescobkk.org/index.php?id=4348

UNESCOPRESS. (2015). UNESCO Literacy Prizes go to organizations in Chile, Madagascar, Mozambique, Slovakia and Sri Lanka|United Nations Educational, Scientific and Cultural Organization. Retrieved December 20, 2015, from http://www.unesco.org/new/en/media-services/single-view/news/2015_unesco_literacy_prizes_go_to_organizations_in_chile_madagascar_mozambique_slovakia_and_sri_lanka/#.Vsn5J4-cHIU.

Wagner, D.A. (2015). Is literacy the key to achieving the SDGs? Retrieved January 10, 2016, from http://www.weforum.org/agenda/2015/10/is-literacy-the-key-to-achieving-the-sdgs

Wagner, D.A. and Kozma, R. (2005). New Technologies for Literacy and Adult Education: A Global Perspective. Retrieved February 21, 2015, from http://www.literacy.org/sites/literacy.org/files/publications/Wagner_Lit-ICT_UNESCO_05.pdf.

Wang, Q. (2009). Designing a web-based constructivist learning environment. *Interactive Learning Environments,17*(1), 1-13. Retrieved January 10, 2016.

What the research says about ICT and motivation. Retrieved January 8, 2016, from http://dera.ioe.ac.uk/14707/

Yusuf, M.O. and Balogun, M.R. (2011). Student-Teachers' Competence and Attitude towards Information and Communication Technology: A Case Study in a Nigerian University. *Contemporary Educational Technology, 2*(1), 18-36. Retrieved December 8, 2015, from https://unilorin.edu.ng/publications/yusufmo/Publication36.pdf