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The goal of the board of Institute Journal of Studies in Education (IJSE) is to advance a wide range of theories and empirical researches in education and related fields.

We present for your reading and research pleasure, Volume 8, No. 1, 2018 edition of IJSE. This is an empirical edition containing scientific and educative articles from reputable scholars.

Happy reading!

Prof. Lasiele A. YAHAYA

Editor-in-Chief,

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UPPER BASIC STUDENTS' ATTITUDE TOWARDS UTILISATION OF A MOBILE APPLICATION FOR LEARNING AMONG BASIC TECHNOLOGY STUDENTS IN NIGERIA

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Abstract

In spite of the advancements in technological growth, learners are still subjected to physical classroom conditions characterized by rigidity. However, learners can leverage on mobile technologies to receive curriculum-based instructions irrespective of distance and time. Hence, this study developed a mobile application for learning selected basic technology concepts in Nigerian Upper Basic Schools using the conceptualized ASDDURE (Analysis, Statement of Objectives, Design, Development, Utilization, Response and Evaluation) Model. The objectives of the study therefore were to: (i) examine the attitude of upper basic school students to utilization of the mobile application and (ii) examine the difference in male and female students' attitude to utilization of the mobile application. The study was conducted using descriptive research of the survey type. The study population comprises of all Nigerian upper basic school specifically upper basic school two students. 27 students in upper basic school two were purposively selected based on access to smartphones. A research-designed questionnaire was used to elicit data from respondents. The research instrument as tested for reliability using Cronbach alpha with value 0.83. Mean and t-test were used for data analysis of research questions and hypothesis with 2.5 as benchmark mean. Research hypothesis was tested at 0.05 level of significance. The findings of the study indicated that, students had positive attitude towards utilization of the mobile app with a grand mean of 3.31, there was no significant difference in the attitude of male and female basic technology students towards utilization of the developed mobile application ($t = 0.26$, $p > 0.05$). The study concluded that students have positive attitude on the use of educational mobile application for learning. Hence, the study recommended learning contents should be deployed via mobile applications in order to encourage learning of basic technology.

Keywords: Mobile –application, Attitude, Utilization, Basic –Technology, Learning

Introduction

Information and Communication Technology (ICT) is an electronic means of capturing processing, storing and disseminating information. In the use of ICT, mobile application is seen to encompass the use of a wide range of technologies having interfaces on several categories of

mobile technology especially smartphones with android, apple Operating Systems among others. According to Learning Portal (2021) Information and Communications Technology (ICT) can impact student learning when teachers are digitally literate and understand how to integrate it into curriculum. ICT has been helpful in the delivery of instruction in formal school setting and learning at a distance (Asabere & Enguah, 2012). These dynamic developments indicate that the world has developed into a global village where digital technology has permeated every facet of human life including health, commerce, industry, security and education.

Similarly, Anyaogu (2012) has also stated that every facet of education has been affected by ICT including formal, informal or semi-formal setting. Mobility of instruction is very paramount in the 21st century education as it goes a long way in achieving the transition from teachers-centred mode to learners-centred mode. Schools use a diverse set of ICT tools to communicate, create, disseminate, store and manage information (Karanga, 2018).

Behaviourists view visible and noticeable behavior as a vital subject matter in living organism. However, cognitivism reacts to the theory of behaviourism that people are not “programmed animals” they simply respond to environmental stimuli because they are rational beings that call for active involvement in learning and whose actions are consequences of thinking (Clark & Harrelson, 2002). Changes in behavior are observed, but only as a sign of what is occurring in the learner’s head. Cognitivism uses the image of mind as computer, information comes in, processes it and leads to certain outcomes.

Basic Technology includes prevocational topics like woodwork, metal work, basic electricity and electronics, technical drawing, automobile work, building technology, food technology and introduction to computer studies. The National Education Research and Development Council (NERDC) in 2007 stated the purposes of teaching the subject at the upper basic school in Nigeria. Some of these include to inculcate technology literacy; expose students to the world of work to match talents and interests of learners for vocational choice and to inculcate positive attitude towards work as a source of human identity, livelihood and power with the integration of technological resources (NERDC, 2007).

Kazt (2011) presumed a dramatic change in educational environment when many educational institutions support the use of mobile devices in classroom due to easy access and instant delivery from instructors and learners, assist with class attendance issues, rearrange meetings, retrieve schedule, fix assignment date, discuss assignments, coordinate study groups and seek help with academic and life problems. All these boils down on the readiness to accept these tremendous advancements in technology especially as it affects education. The use of mobile devices can be achieved through the website addresses and mobile applications.

Technophobia (2019) defined mobile applications (mobile apps) as application software designed to run on a mobile device such as smartphone or tablet computer. They provide users with similar services to those accessed on PCs. The reason for the use of mobile applications is that, it performs actions much quicker than a mobile website as it stores data locally on mobile devices in contrast to website that generally use web servers. For this reason, data retrieval happens swiftly on mobile apps. So mobile websites are technically slower. Nitin (2019) argued that mobile users today are greater than desktop users as it allows for treating users with personalised experience. Mobile applications can let users set up their preferences at the start, based on which users can be served with customised contents. It allows for the use of multimedia contents like text, picture, animation and video. The mobile application interface affords the

designer the opportunity to design the user interface and create specific content. Also, with the use of programming language for development, it allows for more advanced learning objects.

Mobile applications produced for educational purpose can have several pedagogical properties such as course, evaluation, tutorial and so on. The output is a user-supplied URL displayed in the browser as read-only HTML or as hyperlink (Glaser, 2019). Basically, there are two common operating systems on smartphones, first, is the operating system used for mobile devices manufactured by Apple known as iPhone Operating System (iOS) and the other is the Android which is made by Google (there are a few others, like Windows and Blackberry, but iOS/Android) Rouse (2019). In the same vein, Farooq, Schaler, Rosson and Carroll (2002) posited that using mobile technologies for education make the classroom a part of the mobile community. However, it has been widely recognised that learning through mobile technologies is not just about using portable devices but also learning across curriculum-based contents with better communication and collaboration among learners which is a vision in the 21st century.

In Nigeria, students use mobile devices to listen to music, watch movies, send text messages and live chats (text, image and video) to friends and relatives, others use it to surf the Internet for information. The Federal Republic of Nigeria in the National Policy for Information Technology (IT) which was tagged 'USE IT' summarised that Information Technology (IT) is the bedrock for National survival and development in a rapidly changing global environment, and challenges to devise bold and courageous initiatives to address a host of vital socio-economic issues such as reliable infrastructure, skilled human resources, open government and other essential issues of capacity building among which is the educational sector. In line with this, the need to use ICTs in education has been underpinned as a crucial step for achieving sustainable development among nations (Anasi, 2005). Information Technology (IT) is recognised as the engine for sustainable development and global competitiveness especially in the Information Society. Thereby, using IT for educational purposes, creation of wealth, eradication of poverty, creation of job and ability to compete in the global world is germane (FRN, 2000).

Wenger and Snyder (2015), Fardon and Ludewig (2016) and Kolb (2017) stated that educationists across the world are already using mobile applications especially on android operating systems for teaching. The study revealed varieties of ways on how teachers, instructors and educators can take advantage of these mobile applications for educational purposes precisely giving instructions to learners on specific tasks. Some of this wealth of opportunities include seeking to create digital forms of lessons which can take many forms like audio, visuals and audio-visuals and file sizes depending on the quality of the instruction (content knowledge). All these can then be embedded in mobile apps for learning at one's own pace and assessed in different forms like oral quizzes.

This is corroborated by Kirkpatrick's concept which stated that effectiveness in training can only be achieved relation at level and reactions of learners. Corroborating this, Clark (2009) also stated that learners' attitude, knowledge and skills are important elements that bring about desired behaviours. The model has four levels which acknowledge the measure of training field because of its openness and its capacity to facilitate learning through mobile apps (Rouse, 2019). Several evaluation models are relevant to the teaching and learning, but the Kirkpatrick first two level which involves learning and reaction are germane to the current study. Hence, Kirkpatrick evaluation model shall be involved to judge the development of the mobile app on workshop accident and materials and processing in basic technology in Nigerian upper basic schools. Also,

assessment on the effectiveness of training programmes requires the use of Kirkpatrick model evaluation developed by Donald L. Kirkpatrick in 1954.

Bamidele and Olayinka (2012) emphasised that learners in this century have to be at their best and in conformity with latest learning technologies in using mobile devices and varieties of apps provided. Abdulrahman and Soetan (2015) investigated the perceived ease of use of mobile devices for teaching by university lecturers. The study revealed that lecturers perceived mobile devices easy to use for teaching. This is supported by Russell (2018) which explained that mobile devices have other messaging capabilities such as transfer of textual, audio, visual, audio-visual and multimedia messages. In order to achieve these, users are required to download and install mobile applications especially those with android operating.

Gambari, Falode, Fagbemi and Idris (2012) posited that simulation as a computer-generated version affords learners real-world objects or processes ranging from computer renderings of 2-dimensional and 3-dimensional. The study further described this phenomenon of exploring and manipulating computer-generated 3-dimensional multimedia environment to achieving specific tasks as computer-assisted instructions. Another could be in the graphic interchange format (GIF) which support both animated and static images. As mobile phones become more prevalent in education, students' (male and female) familiarity with technology has enabled the development of more mobile applications as learning tools (Kew, Jong, Kim, Park & Ryu, 2013). **Yu-Chang and Yu-Hui (2013) designed a Mobile App for Teaching and Learning** as educators experienced Online Graduate Courses using Moodle. The study suggested that attention should be placed on the context and learning environment as these factors have significant effect on learners' performance-based attributes of gender, age group, area of study among others.

Chukwuemeka (2010) described gender as a range of characteristics used to distinguish between male and female, based on the masculine and feminine attributes which affects every aspect of human endeavor. The study affirmed that this male and female reactions to the existence and discoveries of newer technologies aimed at improving-teaching and learning processes. Some studies have shown very significant differences in the use of ICT with regard to gender.

Several studies like Kolb (2017), Ireogbu (2013), Ogunlade (2009), Chukwuemeka (2010) among others stated that there are differences in the manner in which male and female interact with these tools specifically in terms of attitude, utilisation and competency. Ogunlade (2009) submitted that females are underrepresented in school computer courses, computer clubs and in computer science-based careers and do not spend as much time at home using computers as males do. This is also buttressed by Chukwuemeka (2010) that female students have inadequate proficiency skills in using Internet as an ICT tool for teaching and learning processes. The author added that female treat computers as a device to complete tasks like communication, text messaging, chatting and surfing the Internet while male consider computers as recreational devices which indicate that male use technology for fun. Also, male generally achieve better in computer and hold more positive attitude towards computer than their female counterparts but concern more on cost of mobile devices than female do. Michaud (2009) indicated that there is significant difference across gender in technology adoption practices, as well as a gender difference in technology preferences. The study revealed that female have a lower rate of use for audio and video creation and multi-user gaming than their male counterparts, to the extent that male use video creation and multi-user gaming two times as female.

In contrary, Gambari et.al (2012) in a study that examined the influence of virtual laboratory strategy on the achievement of secondary school students in physics practical in Minna, Nigeria; revealed that there was no significant different between the mean achievement scores of male and female students taught physics practical using virtual laboratory strategy. Also, Bolaji, (2016) revealed that gender did not influence usability measure and performance of students after being exposed to the mobile app for learning.

Statement of the Problem

The importance of and need for mobile learning has prompted the advent of mobile applications. Universal Basic Schools administrators need data on students' attitude to support their decision-making regarding integration of mobile learning applications. This had been observed based on the previous studies consulted by the researcher including Amosa (2015); Falode (2014); Mathur (2011); Sowunmi and Aladejana (2013); Gambari, et al. (2012) and Oyelekan and Olorundare (2009). This study provided data that may help to understand students' attitude as predictors towards the use of mobile applications in learning curriculum-based contents. This study is unique and timely because mobile application is among the new technology students' have access to. Most college students own some type of mobile device, they expect access to their course information whenever and wherever they want. Teachers need to understand the students' attitude towards the use of mobile application to assist their decision making in providing students with necessary guidance that will be required to learn successfully. Most of the previous consulted focused on design, development and perception, therefore making it imperial for the current to focus on students' attitude towards the use of mobile application for learning.

Purpose of the Study

The main purpose of this study was to examine upper basic students' attitude towards utilization of mobile application for learning selected basic technology concepts in Nigeria. Specifically, this study:

1. examined upper basic school students' attitude towards utilisation of the developed mobile application for learning;
2. examined the difference in male and female students' attitude towards utilisation of the developed mobile application for learning.

Research Questions

The study provided answers to the following research questions:

1. What is the attitude of upper basic school students' attitude towards utilisation of the developed mobile application for learning?
2. Is there any difference in male and female students' attitude towards utilisation of the developed mobile application for learning?

Research Hypotheses

The following hypothesis was tested at 0.05 level of significance.

- Ho₁ There is no significant difference in the attitude of male and female basic technology students towards utilisation of the developed mobile application for learning workshop safety and materials and processing.

Methodology

Research Design

This study was descriptive research of the survey type. A researcher-designed questionnaire was used to elicit information on students' attitude on the use of mobile application for learning. The population was all upper basic school students while target population was upper basic school two. The reliability of research instrument tested using Cronbach alpha with reliability coefficient of 0.83. Upper basic two (JSS2) was purposively selected for the study based on equivalence (basic technology workshop, equipment and teachers) and gender composition (mixed school). Also, based on the fact that they had pre-knowledge of basic technology and the topic had been selected from basic technology curriculum. The pilot testing of the research instrument was conducted in a Universal Basic Education School outside the geographical scope of the current study. The sampled school was located in the North Central Geopolitical Zone, Nigeria. Also, students were already exposed to the use of mobile devices in the school or home. In addition, students in the named school were purposively selected based on the following criteria: The school has been offering basic technology for the past ten years. Parents are mostly federal government staff whom the researcher assumed can afford at least a smart android phone. Also, 25 upper basic school students having access to a functional smartphone like Android were purposively selected.

Results

Research Question One:

What is the attitude of upper basic school students towards the utilisation of the developed mobile app for learning Basic technology?

To answer research question one, the data collected was analysed with mean. A benchmark of 2.50 was employed, indicating that a value less than 2.50 was regarded as negative, while value higher than 2.50 was regarded as positive. Results of the analysis is shown on Table 11 and interpreted as thus:

Table 1: Students' Attitude towards the Utilisation of the Developed Mobile Application for Learning Basic Technology

S/N	Items	Mean
1.	Learning using mobile app motivates and catches my attention	3.52
2.	Every expectation I have for this lesson has been achieved	3.50
3.	I am eager to take more subjects through the use of mobile apps	3.20
4.	I find the content of this lesson interesting	3.44
5.	The mobile app gives me enormous opportunity for learning	3.52
6.	The content in the lesson had met the standards compared to textbooks	3.28
7.	Mobile learning app makes learning more meaningful to me	3.36
8.	As a participant in the activity, I found that I want to do more	3.42
9.	Mobile app has helped me in learning for its interactivity	3.12
10.	Mobile has influenced my academic performance in basic Technology	3.28
11.	The mobile app provides varieties of contents that help in concentration and long-time retention	3.12
12.	I have better understanding using mobile app	3.12
13.	I feel comfortable using the mobile learning app because of the flexibility and mobility	3.48
14.	The mobile learning app assist me to learn and progress at my own pace	3.20
15.	I feel more comfortable using the mobile app for learning	3.20
Grand Mean		3.31

Table 1 revealed the upper basic school students' attitude towards utilisation of the developed mobile application for learning. Based on the benchmark, all the items have mean values greater than the benchmark. This indicated that students agreed to all the items. Significantly, students claimed that the mobile application gives them enormous opportunity for learning; learning using mobile application motivates and catches their attention; they feel comfortable using the mobile learning application because of the flexibility and mobility; they find the content of the lesson interesting; among others. Summarily, the grand mean of 3.31 > 2.50 indicated that upper basic school students have a positive attitude towards the utilisation of the developed mobile application for learning.

Hypotheses Testing

The results of hypotheses tested in this study are presented in subsequent tables. All hypotheses were tested at significant level of 0.05.

Hypothesis One

H₀₁: *There is no significant difference in the attitude of male and female basic technology students towards utilisation of the developed mobile application for learning workshop safety and materials and processing*

Table 2: Independent Sample t-test Analysis of Gender Difference in the Attitude of Basic Technology Students in Learning Using the Developed Application

Gender	N	$\bar{X}$	SD	df	t	Sig. (2-tailed)	Remarks
Male	14	3.22	.33	23	-1.08	0.29	Accepted
Female	11	3.42	.57				

From Table 2, it can be deduced that there was no significant difference in the attitude of male and female basic technology students towards utilization of the developed mobile application for learning workshop safety and materials and processing. This is reflected in the findings of the hypothesis tested df (23), $t = -1.08$, $p > 0.05$. Thus, the hypothesis which states that “there is no significant difference in the attitude of male and female basic technology students towards utilization of the developed mobile application for learning workshop safety and materials and processing” is accepted.

Discussions

The findings of this study are discussed under the following headings.

1. Basic technology students’ attitude towards utilization the developed mobile application for learning;
2. Difference in male and female students’ attitude towards utilization of the developed mobile application for learning.

Basic Technology students’ attitude towards utilization of developed mobile application for learning

Generally, students’ attitude towards utilization of the mobile application for learning workshop safety and materials and processing in basic technology were positive. Significantly, students claimed that the mobile application gives them enormous opportunity for learning; learning using mobile application motivates and catches their attention; they feel comfortable using the mobile learning application because of the flexibility and mobility; they find the content of the lesson interesting; among others The finding is in line with the outcome of Ogunlade, Joshua and Olumori (2016) which revealed that both male and female had positive attitude towards utilization e-tutoring tools for learning. This is because ubiquitous handheld technologies together with wireless networks have several opportunities in facilitating, supporting, enhancing and extending learning irrespective of time and distance. The position by UNESCO (2014) was that, these technologies have promoted ability to learning new skills, social mobility (interacting

with peers and tutors) by way of personalized learning and flexibility also support the findings of this study.

The influence of gender on students' academic performance on utilization of the developed mobile application for learning

The objective was to determine the influence of gender on students' performance when exposed to the mobile application for learning workshop safety and materials and processing. This was achieved in hypothesis two. The finding of hypothesis two H_{o2} was accepted. This implies that academic performance of male and female basic technology students exposed to the use of basic technology learning application had no significant difference. The findings agree with the studies of Amosa (2013) which stated that female students are as brilliant as that of their male counterparts. Also, the finding agrees with Badmus (2013) who reported that no significant difference exists in the performance of male and female students exposed to Web Quest on Educational Technology concepts. Similarly, Bolaji (2016) finding which revealed no significant difference in academic performance of students after utilizing a ubiquitous collaborative mobile learning model for teaching mole concept in chemistry based on gender lend credence to the current finding.

The influence of gender on students' attitude towards utilisation of the developed mobile application for learning

The objective was to determine the interactive effects of gender on students' reaction (attitude) when exposed to the use of mobile application for learning. This was answered in hypothesis three H_{o3} . The finding shows the hypothesis was accepted. This implies that students' attitude towards utilisation of mobile application for learning was not influence by gender. This is in line with the studies of Russell and Newton (2008), Michaud (2009), Ogunlade, Joshua and Olumorin (2016) who revealed that there was no significant difference between male and female stakeholders in the use e-tutoring. The finding is also in-line with the findings of Gambari et. al. (2012) which revealed that there was no significant difference between the mean achievement scores of male and female students taught physics practical using virtual laboratory strategy. Lastly, the findings of the study agree with that of Bolaji (2016) which revealed that gender did not influence usability measure and performance of students after being exposed to the mobile learning application.

However, the findings of the current study go against that of Ogunlade (2009) and Chukwuemeka (2010) which found that females are underrepresented in school computer courses, computer clubs and in computer science-based careers and do not spend as much time at home using computers as males do. Thereby making male students achieve better in computer and hold more positive attitude than their female counterparts. These findings may be due to the difference in the time of conducting the studies. This is because, as at these time people especially the females are finding their fit in the utilisation of ICTs.

Conclusion

The use the mobile application had shown a significant difference in the academic performance of learners. However, there was no significant difference in the performances of male and female students and attitude having utilised the mobile application for learning.

Recommendations

Based on the findings and conclusions in this study, the following recommendations were made:

1. The mobile application is an important package for learning. Thus, basic technology teachers should incorporate the use mobile application for learning at Nigerian upper basic schools.
2. Basic technology teachers should continue to focus attention on learning strategies that can sustain positive attitude in learners irrespective of gender such as the deployment of technological tools.

References

- Abdulrahman M. R. & Soetan A. K. (2015) Lecturers' perceived ease of use of mobile devices for teaching undergraduates, Kwara State, Nigeria. *International Journal for Innovative Technology Integration in Education*, 1 (1), 1 – 14.
- Amosa, A. A. (2013). Effect of community resources on Junior Secondary Schools' performance in Basic Technology in Ilorin. *Journal of Education in Developing Areas*, 21(1), 214 – 221. <http://jeda-uniport.com/pdf/jedavol21march2013.pdf>
- Amosa, A. A. (2015). *Evaluation of a developed interactive video-based instructional package for teaching pottery in basic technology in Nigerian schools*. Ph.D. Thesis, University of Ilorin, Department of Educational Technology, Nigeria
- Anasi, S. N. (2005). The potentials of ICT application to increased relevance and sustainability of university library service in Nigeria. *The Information Technologist*, 2 (2), 56 – 70.
- Anyaogu, R. (2012). ICT instructional packages for tertiary education in Nigeria: The challenges and Prospects. *Journal of Educational Media and Technology*, 16 (1), 1-5.
- Asabere, N., & Enguah, S., (2012). Use of Information & Communication Technology (ICT) in tertiary education in Ghana: A case study of electronic learning (E-Learning). *International Journal of Information and Communication Technology Research*, 2(1), 62-68
- Badmus, A. M. (2013). Development and Evaluation of a WebQuest application on Educational Technology Concepts for Undergraduate Students in Nigeria. Ph.D Thesis, University of Ilorin, Department of Science Education, Nigeria.
- Bamidele, E. M. & Olayinka, T. A. (2012). *Teachers' perception of integrating the use of mobile phones into teaching in public senior secondary schools of Oyo and Lagos State, Nigeria*. NAEMT International conference proceeding 159 – 171.
- Bolaji, H. O. (2016). *Evaluation of a ubiquitous collaborative mobile learning model for teaching mole concept in chemistry in Nigerian secondary schools*. Unpublished Ph.D. Thesis, University of Ilorin, Department of Educational Technology, Nigeria.
- Chukwuemeka, C. R. (2010). *Awareness and attitude of secondary school teachers toward the use of internet in teaching and learning in Minna, Nigeria*. Ph.D. thesis, University of Technology, Minna, Niger State, Nigeria.
- Clark, R. & Harrelson, G. L. (2002). *Designing Instruction that supports cognitive learning process*. Retrieved from, www.ncbi.nlm.nih.gov
- Falode, O. C. (2014). *Evaluation of a virtual laboratory package on selected physics concepts for Nigerian secondary schools*. Unpublished Ph.D. Thesis, University of Ilorin, Department of Educational Technology, Nigeria.

- Farooq, U., Schafer, W., Rosson, M. B. & Carroll, J. M. (2002). M-Education: Bridging the gap of mobile and desktop computing. Centre for Human-computer Interaction and Department of computer science. Virginia Polytechnic and State University, pp. 1-2.
- Federal Republic of Nigeria. (FRN, 2014). *National Policy on Education (4th Ed.)* Yaba, Lagos: NERDC Press.
- Franzoni, A. L., Ceballos, C. P. & Rubio, E. (2014). *The interactive video enhanced learning-teaching process for digital native students*. Retrieved from http://ieeexplore.ieee.org/xpls/abs_all.jsp%3Farnumber%3D6601927
- Gambari, A. I., Falode, O. C., Fagbemi, P. O. & Idris, B. (2012). *Effect of virtual laboratory strategy on the achievement of secondary school students in Nigeria*. Proceedings of the 33rd Annual Convention and National Conference of Nigeria Association for Educational Media and Technology (NAEMT) held at Emmanuel Alayande College of Education, Oyo, Oyo State. October, 8-13
- Glaser J. D. (2019). *How to design and code secure mobile apps: Introduction to mobile security development*. Retrieved from https://books.google.com.ng/books?id=6u2sBAAAQBAJ&pg=PA7&dq=mobile+applications++outputs&hl=en&sa=X&ved=0ahUKEwj36bPc_rXiAhVwThUIHQWLBtkQ6AEICjAA#v=onepage&q=mobile%20applications%20-%20outputs&f=false pg 1-14
- Hammond, J., Cherret, T., Waterson, B. (2014). *Making in-class skills training more effective: The scope for interactive videos to complement the delivery of practical pedestrian training*. Retrieved from Doi:101111/bjet.12205
- Instructional Design & Technology (2011). *Comparison: ADDIE and Dick & Carey*. Retrieved from, <http://deovetail.blog.com/2011/03/09/comparison-addie-and-dick-carey/>
- Ireogbu, M. N. (2013). Effect of test anxiety, gender and perceived self-concept on academic performance of Nigerian students. *International Journal of Psychology and Counselling*. 5(7), 143-146
- Karanja, M. (2018) Role of ICT in Dissemination of Information in Secondary Schools in Kenya: A Literature Based Review <https://stratfordjournals.org/journals/index.php/Journal-of-Information-and-Techn/article/view/156> *Journal of Information and Technology*, 2(1)
- Kazt, E. J. (2011). *Mobile phones in Education settings*. New Brunswick, Nj; Transaction Publishers
- Kew, C. S., Jong, S. P., Kim, J. H., Park, Y. C. & Ryu, H. I. (2013). Application of virtual reality technology in biology education. *Journal of Biological Education*, 37, (2), 71-73.
- Kolb, L. (2017). *Using cell phones as teaching and learning tools*. Retrieved from <http://www.literacyprice.Hmtl>. on 4/7/ 2018.
- Learning portal (2021) *Information and Communication Technology in Education* <https://learningportal.iiep.unesco.org/en/issue-briefs/improve-learning/information-and-communication-technology-ict-in-education>
- Michaud, D. (2009). *Will student devices transform classroom activities?* Retrieved from <http://www.edutech.cti./510wiki/technology>. on 21/8/2013.
- Nigeria Educational research and development council (NERDC, 2007). *A Philosophy of Nigeria Education*. Abuja: NERDC Press
- Nitin, D. (2019). *Mobile apps are better than mobile websites*. Retrieved from <https://vwo.com/blog/10-reasons-mobile-apps-are-better/>

- Ogunlade, O. O. (2009). Gender impact in information technology. *International Journal of Gender and Development*, 9 (1) 72-85
- Ogunlade, O. O., Joshua, E., & Olumorin, C. O. (2016) University stakeholders' attitude toward utilizing e-tutoring for distance learning in South-West, Nigeria. *Ankara University, Journal of Faculty of Educational Sciences*, 49 (2), 283-298.
- Olumorin, C. O. (2010). Addie Model of ISD for Instructional Courseware Development: Theoretical and Hands on Experience. *A paper presented during ODL workshop for lecturers in University of Ilorin, Ilorin, Nigeria*
- Oyelekan, S. O. & Olorundare, S. O. (2009). Development of a computer instructional package on electrochemistry for secondary schools in Nigeria. *International Journal of Education and Development Using ICT*, 5 (2), 1 - 21.
- Rouse M. (2019). *Defining mobile operating system*. Retrieved from <https://searchmobilecomputing.techtarget.com/definition/mobile-operating-system>
- Rouse M. (2019). Defining ICT (information and communications technology, or technologies). <https://searchcio.techtarget.com/definition/ICT-information-and-communications-technology-or-technologies>
- Russell, J. W., Kozma, R. B., Jones, T., Wykoff, J., Marx, N., & Davis, J. (1997). Use of simultaneous-synchronized macroscopic, microscopic, and symbolic representations to enhance the teaching and learning of chemical concepts. *Journal of Chemical Education*, 74: 330-334.
- Russell, J. (October 18th, 2018). Retrieved 12 06, 2013, from <http://thenextweb.com/apps/2013/10/18/best-mobile-messaging-apps>
- Schare, B. L., Dunn, S. C., Clark, H. M., Sled S. W. & Gilman, B. R. (1991). *The effects of interactive video on cognitive achievement and attitude towards learning*. Retrieved from, <http://www.ncbi.nlm.nih.gov/pubmed/1850789>
- Sowunmi, O. & Aladejana, F. (2013). Effect of simulation games and computer assisted instruction on performance in primary science in Lagos state, Nigeria. *West East Journal of Social Sciences*, 2 (2), 117 - 121
- Technophobia (2019). *Mobile application (mobile app)* <https://www.techopedia.com/definition/2953/mobile-application-mobile-app>
- Tzanis, J. (2002). *Online course development process*. Retrieved from, <http://www.tzanis.org/Courses/ADDIE/Design.html>.
- United Nations Educational, S. a. (2013). *UNESCO*. Retrieved September 13, 2013, from UNESCO website: ictineducation@unesco.org
- UNESCO, (2014). *Information and communication technology in education in Asia: A comparative analysis of ICT integration and e-readiness in schools across Asia*. Montreal: UNESCO Institute for Statistics. Retrieved April 18, 2018, from www.uis.unesco.org/communication/documents/ICT-asia-en.pdf
- Wenger, C. & Synder, P. (2015). *Advantages and disadvantages of m-learning*. Retrieved from [http:// www.mlearning/ehow.23tg.com](http://www.mlearning/ehow.23tg.com) on 11/5/ 2017