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## Mobile Learning Technology for National Development: Enhancing Blended Learning among Engaged Pre-Service Teachers in Osun State

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### Abstract

*The advent of mobile technology in the 21<sup>st</sup> century has led humans to carry devices such as laptops, mobile phones, among others around and enabled them to learn anytime and anywhere. The large amount of computing power and portability combined with the wireless communication and context sensitivity tools that mobile technology is characterized with has made it a veritable learning tool of great potential in both formal and informal education. It is based on this notion, that this study focused on how pre-service teachers who are serving teachers in Osun state senior schools were allowed access to knowledge tablet to facilitate blended learning. The major research question for this study was: could mobile learning technology (knowledge tablet) be well employed to the benefit of teachers for national development? A mixed method research design was adopted in this study. The target population consisted of engaged pre-service teachers who were afforded the use of Knowledge Tablet in their teaching. A multistage sampling technique was used to sample 300 participants from the target population. The instrument of study was a researcher-designed-questionnaire tagged "Knowledge Tablet Access for Blended Learning Facilitation (KTABLF)". Data analysis was conducted using a mixed method approach. Findings from the analysis utilized both the descriptive (mean) and inferential (t-test) statistics to answer the research questions and test the formulated hypothesis. A qualitative approach of content analysis was employed to provide complementary results to the raised research questions. This study revealed that the knowledge tablet provided by the Osun state government was not well utilized by teachers. It is thus recommended that mobile learning technologies (knowledge tablet) used by the teachers should be well monitored.*

**Keywords:** Mobile Learning Technologies, Blended Learning, Knowledge Tablet, Engaged Pre-service Teachers

## INTRODUCTION

The role of education in the development of a nation is evident, and its justification as a veritable tool to catalyze socio-economic development does not require long argument and intellectual discourse or debate. Thus, nations across the world are necessitated to enact several educational policies in order to harness the immense positive attributes that education is characterized with, as well as contributing conscious effort at devoting their resources to acquiring qualitative education, this is targeted towards achieving better economic growth and development, among others (Balogun, 2010; Akindutire & Ekundayo, 2012). In order to achieve better national development and fulfill the Nigeria's Vision 2020, the educational system has to be transformed and driven by Information and Communication Technology (ICT).

Emphatically, The National Policy on Education (Federal Republic of Nigeria, 2013) posited the need for the adoption of ICT at all levels of education. Therefore, the contemporary Nigerian education is characterized with the use of ICT, so as to serve as a catalyst to achieving national development. The development in ICT has vastly transformed every sphere of life and permeated all human actions and endeavors. In respect to this, Shehu, Urefhe, and Promise (2015) claimed that ICT has increasingly become the critical determinant of educational success in the 21<sup>st</sup> century. AbdulRaheem (2018) corroborated to the claim of Shehu et al., (2015) that due to the interactive and ubiquitous nature of ICT networks which are accessed through various mechanisms, especially mobile technology has given credence to the increasing usage of ICT in human daily lives without gender biasness.

Equally, Issa, Daramola, Aladesusi, and Udoh (2017) stressed that mobile technology is being widely used in developed countries not just to complement established education practices, but to also develop new ways of learning such as online education and mobile learning. Issa, et. al., (2017) further stressed that mobile technology provides opportunity to individuals in remote locations to have access to both formal and informal education. Corroboratively, Crede and Mansell (1998) as supported by Issa et al., (2017) affirmed that mobile technology is crucially important for the achievement of sustainable national development, most especially in developing countries.

Aderogba and Abanikannda (2009) opined that the ubiquitous nature of ICT has created channels that have led to the increased interest in the use of electronic network to support distance and electronic learning globally. Ajani (2018) believed that ICT has assisted collaborative learning, and also provided access to electronic libraries and multimedia education through the changing nature of ICTs which has brought about mobile technology. Newhouse, Williams, and Pearson (2006) asserted that the past two decades have experienced the ushering of mobile technology to the extent that it has become universal in every human endeavor including education. Correspondingly, Aderoju and Kolawole (2017) posited that the use of ICT is not strange to the average Nigerian academic environment and both male and female are employing it in their daily endeavors. The researchers provided that the world is experiencing a wave of social and technological transformation as the society is becoming more oriented to the use of ICT, most

especially with the ubiquitous nature of the internet and mobile technology. Bakare(2018), posited that with the mobility and portability nature of mobile technology, users especially tertiary institution students are endeared to its use.

Yao-Ting, Kuo-En, and Tzu-Chien (2016) claimed that mobile technology has made most learners to own small computers that contain exceptional computing power, such as laptops, PDAs, tablet personal computers (PCs), mobile phones, among others. The researchers posited further that the great amount of portability, combined with the wireless communication and high sensitivity tools has made mobile technology a learning tool of great potential in both traditional classrooms and other learning avenues. Peters (2007) stated that mobile technologies can significantly reduce people's dependence on fixed locations, and thus, have the potential to revolutionize the way people work and learn. According to Suki and Suki (2009), mobile technology are educationally interesting because they offer several communications channels on one device, cheaper, have comparable functionality with desktops or laptops, and also provide wireless access to educational materials. The ubiquitous feature of mobile technology which distinguishes them from other learning tools has created a niche for mobile learning to be increasingly recognized in educational institutions.

The significant growth of mobile technology in relation to education has created a paradigm shift in the delivery of knowledge through the digital learning space from the distance learning (dLearning) to electronic learning (e-Learning) and now, to the mobile learning (m-Learning) phase. Thus, it is imperative to make a shift from conventional knowledge delivery pattern to suit the experience and abilities of current generation of learners that are called by different names: The Net Generation (Tapscott, 1999); Digital Natives' (Prensky, 2001); The Gamer Generation (Carstens & Beck, 2005); Generation M (Rideout, Roberts & Foehr, 2005).; New Millennium Learners (Pedró, 2006). The diverse nature of research on m-learning has generated a divergent definition to define the concept. However, the unanimous characterized definition observed include: mobility; access; immediacy; ubiquity; convenience; and contextual.

Mobile learning has brought about a great added value to learning by bridging the environmental gap in respect to extending classroom interaction to other locations via communication networks. Newhouse et al., (2006) posited that the advancement in the nature of mobile technology such as imbedded cameras, sensors, detectors, geolocation, web access, social networks, among others have produced the potential to foster learning and engagement across multiple and different physical, social, and conceptual spaces. Similarly, Martin and Ertzberger (2013) posited that as part of the characteristics of mobile technology to facilitate education, portability and mobility have already made mobile technology an attractive tool. For this reason, the developments of several others enhanced-mobile technology packages such as geospatial technologies, search capabilities, image and video capture, and context awareness have further increased their versatility by promoting situated learning experiences and allowing exploration within authentic settings, particularly supporting inquiry-based learning. Consequently, they have achieved the primary goal of blended learning.

Blended learning is a combination of online knowledge delivery approach with features such as of face-to-face online interaction and the traditional classroom interaction in order to achieve personalization and individualization of instruction. Amosa, Ogunlade, Obielodan, and Nasiru (2017) described blended learning as an instructional delivery approach that combines both online and conventional educational delivery methods to facilitate meaningful and productive teaching and learning process. The researchers posited that blended learning instructional strategy encourages the creation of appropriate learning situation, interactivity, individualized learning approach and teaching learning from teacher-centered to student-centered.

Learning through blended learning with mobile technologies simply denotes the acquisition of knowledge through the use of mobile technology as an interactive, cognitive, and engaging tool to construct a constructivism learning environment. Ayonote-Yusuf (2012) clearly concluded that the utilization of mobile technology to encourage blended learning can play an influential role in stimulating learners interest, motivating learners, and ultimately, improving the performance learners. It was based on this understanding that the Government of the State Osun introduced mobile technology tablets to the secondary education. The Government in her effort to introduce blended learning in secondary schools across the State, launched Knowledge tablet popularly known as “Opon Imo”. The Knowledge tablet was designed in form of a regular tablet device, and distributed to senior secondary school students and teachers free-of-charge (Ajani, 2018).

Previous studies such as Cushing (2011) have identified teachers’ accessibility and usability of mobile technology in the classroom as a challenge. The researcher claimed that if blended learning is to be successfully implemented, all pre-service and in-service teachers must have access to mobile technology as part of their classroom tools. Conversely, in a study of Husbye and Elsener, (2013), the researchers posited that teacher educators noted that mobile technology should be provided to pre-service teachers to ensure digital equity. The researchers equally suggested that mobile technologies need to be used as tools for enhancing learners’ classroom experiences, not as an add-on incorporating technology for its own sake, and it should also be gender-friendly. Now, that the Government of State of Osun has introduced mobile technology into the educational system, at least at the secondary education level, it is thus, imperative to conduct a study to investigate how pre-service teachers who are serving teachers in Osun state senior schools (Engaged Pre-service Teachers) were allowed access to knowledge tablet to facilitate blended learning.

Based on the aforementioned purpose, this study therefore intended to provide answers to the following questions: could mobile learning technology (Knowledge tablet) be well employed to facilitate blended learning for the benefit of teachers towards achieving national development? and do gender influence engaged pre-service teachers’ assessment of mobile learning technology (Knowledge tablet) in facilitating blended learning towards achieving national development? Hypothetically, the second question raised would be answered through a generated hypothetical statement since there is no significant difference between male and female engaged pre-service

teachers' assessment of mobile learning technology (Knowledge tablet) in facilitating blended learning towards achieving national development.

## METHODOLOGY

A mixed method research design was adopted in this study. The target population consisted of engaged pre-service teachers who were afforded the use of Knowledge Tablet in their teaching. Multistage sampling technique was employed to select the sample for the study: purposive sampling procedure was used to sample 12 government-owned modern schools from the 3 senatorial districts of the State of Osun, Nigeria; and simple random sampling technique was employed to sample 300 teachers across the 12 modern schools.

A validated researcher-designed questionnaire tagged “Knowledge Tablet Access for Blended Learning Facilitation (KTABLF)” was adopted to investigate how pre-service teachers who are serving teachers in Osun state senior schools (Engaged Pre-service Teachers) were allowed access to knowledge tablet to facilitate blended learning for achieving national development. The questionnaire contained two sections (A and B). Section A of the questionnaire was to elicit information on the personal characteristics of respondents such as gender and tertiary institution of engagement. Section B contained 10 items to investigate how mobile learning technology (Knowledge tablet) was employed to facilitate blended learning for the benefit of teachers towards achieving national development. The section B adopted a modified Likert scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) in order to obtain the decisions of respondents. Section C was open-ended questions which complemented the items in section B of the research instrument.

In order to validate the research instrument “KTABLF”, two mobile learning specialists, and two educational technology experts critically examined it for both the face and content validity. Following the validation reports, some items in the questionnaire were modified while some were expunged. To test the reliability of the research instruments, a pilot test including a test-retest procedure was conducted on 20 engaged pre-service teachers from one of the community that was different from the ones used for the main study. The KTABLF was re-administered on the same set of engaged pre-service teachers three weeks after. The reliability value obtained was found to be 0.79 after being analyzed using Pearson product moment correlation. Since the reliability coefficients was greater and above 0.5, the instrument was found useable for the study. The quantitative data obtained were analyzed using descriptive (mean) and inferential (*t*-test) statistics, while the qualitative data were analyzed using a content analysis approach.

## RESULTS

### Demographic Characteristics

The demographic information of engaged pre-service teachers that were actively involved in the study includes gender of respondents which is presented as follows:

Table 1

*Distribution of Engaged Pre-Service Teachers According to their Gender*

| Gender       | Frequency  | Percentage (%) |
|--------------|------------|----------------|
| Male         | 165        | 55.0           |
| Female       | 135        | 45.0           |
| <b>Total</b> | <b>300</b> | <b>100</b>     |

Table 1 reveals the distribution of engaged pre-service teachers according to their gender. The table indicated that majority of the respondents were male, revealing a percentage of 55.0, compare to their female counterparts of 45.5%.

### Engaged Pre-Service Teachers' Assessment of Mobile Learning Technologies to Facilitate Blended Learning towards Achieving National Development in Osun State

The study sought to evaluate mobile learning technology for national development in terms of enhancing blended learning among engaged pre-service teachers in Osun state. In response to this objective, the mean of engaged pre-service teacher assessment of mobile learning technologies to facilitate blended learning towards achieving national development was considered.

Mean of Engaged Pre-Service Teachers' Assessment of Mobile Learning Technologies to Facilitate Blended Learning towards Achieving National Development was determined (See Table 2). Based on a modified Likert scale of 2.50 as a benchmark, the engaged pre-service teachers generally agreed to all the items stated in the Section B of the instrument. They claimed that the integration of mobile learning technology into classroom teaching-learning process is a great approach to improving educational standard, thus, achieving national development is made visible; they posited that with the use of mobile learning technology in their school, they source for relevant lesson contents anywhere and anytime; they averred that teaching with mobile learning technology transforms their teaching by providing avenues for their students to learn at their respective pace; among others.

Equally, a critical content analysis of the result indicated that despite the positive response supplied by the engaged pre-service teachers, a geometrical mean score lesser than 3.0 could be



observed in the mean score of items 3, 4, 5, 6, 7, 8, and 9, this reveals that the use of mobile learning technology is not well utilized. However, the grand mean of 2.98 indicated that mobile learning technology (Knowledge tablet) could be well employed to facilitate blended learning for the benefit of teachers towards achieving national development.

Table 2

*Mean of Engaged Pre-Service Teachers' Assessment of Mobile Learning Technologies to Facilitate Blended Learning towards Achieving National Development*

| S/N | Assessment of Mobile Learning Technologies to Facilitate Blended Learning towards Achieving National Development  | Mean        |
|-----|---|-------------|
| 1.  | Integration of mobile learning technology into classroom teaching-learning process is a great approach to improving educational standard, thus, achieving national development is made visible. | 3.16        |
| 2.  | With the use of mobile learning technology in my school, I source for relevant lesson contents anywhere and anytime.  | 3.51        |
| 3.  | Teaching with mobile learning technology transforms my teaching by providing avenues for my students to learn at their respective pace.   | 2.83        |
| 4.  | I am more motivated to go to the classroom since I started using mobile learning technology for my lessons.   | 2.55        |
| 5.  | The use of mobile learning technology for teaching and learning stimulates my interest in the instructional contents, and I look forward to subsequent class.                                   | 2.60        |
| 6.  | I prefer sharing lesson contents with my students through the mobile learning technology provided prior to meeting in the classroom.  | 2.88        |
| 7.  | I teach better when I do not limit myself to the textbooks provided in my school only but combine with related material sourced from the internet through mobile learning technology.           | 2.70        |
| 8.  | With the use of mobile learning technology, my students now concentrate on their studies, and perform better than previous years without mobile technology.                                     | 2.73        |
| 9.  | The effective integration of mobile learning technology to my classroom has increased my students' academic commitment.   | 2.58        |
| 10. | As an engaged pre-service teacher, I would appreciate if mobile learning technology is extended to other educational level and not limit it to senior classes.                                  | 3.37        |
|     | <b>Total</b>  | <b>2.98</b> |

### **Association Between Male and Female Engaged Pre-service Teachers' Assessment of Mobile Learning Technology in Facilitating Blended Learning**

**H<sub>01</sub>:** There is no significant difference between male and female engaged pre-service teachers' assessment of mobile learning technology (Knowledge tablet) in facilitating blended learning towards achieving national development.

The study examined the association between male and female engaged pre-service teachers' assessment of mobile learning technology (Knowledge tablet) in facilitating blended learning towards achieving national development. Table 3 shows paired sample t-test results.

Table 3

*T-test Analysis of Gender Influence on Engaged Pre-service Teachers' Assessment of Mobile Learning Technology in Facilitating Blended Learning towards Achieving National Development*

| Gender | N   | X    | SD  | df  | t     | Sig. (2-tailed) | Remark   |
|--------|-----|------|-----|-----|-------|-----------------|----------|
| Male   | 165 | 2.86 | .48 | 298 | -.588 | .557            | Accepted |
| Female | 135 | 2.90 | .49 |     |       |                 |          |

It can be deduced that there was no significant difference between male and female engaged pre-service teachers' assessment of mobile learning technology (Knowledge tablet) in facilitating blended learning towards achieving national development. This is reflected in the findings of the hypothesis tested  $t(298) = -.588, p > .557$ . Thus, the hypothesis which states that "there is no significant difference between male and female engaged pre-service teachers' assessment of mobile learning technology (Knowledge tablet) in facilitating blended learning towards achieving national development" is accepted. Thus, the gender of the engaged pre-service teacher does not influence their assessment of mobile learning technology (Knowledge tablet) in facilitating blended learning towards achieving national development.

## DISCUSSION

The study indicated that the engaged pre-service teachers believed that the integration of mobile learning technology into classroom teaching-learning process is a positive approach to inculcate and promote blended learning instructional strategy in order to improve educational standards, which will ultimately transform to achieving national development. The finding is in accordance with the study of Ajani (2018) and Ayonote-Yusuf (2012), the researchers posited that the utilization of mobile learning technology to encourage blended learning can play an influential role in stimulating learners interest, motivating learners, and ultimately, improving the learners' performance. However, a critical outlook into the response of the engaged pre-service teachers denotes that mobile learning technology were not well utilized as expected, even though they have a positive assessment of mobile learning technology.

The study also revealed there was no significant difference between male and female engaged pre-service teachers' assessment of mobile learning technology (Knowledge tablet) in facilitating blended learning towards achieving national development. This finding is in line with the assertions of Shehu, Urefhu, and Promise (2015) and AbdulRaheem (2018) who asserted that the interactive and ubiquitous nature of ICT networks such as mobile learning technology which had experienced an increasing usage among human without gender biasness. Summarily, the result obtained indicated that mobile learning technology (Knowledge tablet) could be well employed to facilitate blended learning for the benefit of teachers towards achieving national development



(2.98 based on 2.50 benchmark) and gender of engaged pre-service teachers' does not influence their assessment of mobile learning technology (Knowledge tablet) in facilitating blended learning towards achieving national development.

## CONCLUSION

The study concluded that there was no significant difference between male and female engaged pre-service teachers' assessment of mobile learning technology in facilitating blended learning towards achieving national development. While mobile learning technology is not characterized with gender sensitivity among engaged pre-service teachers, it also has the ability to improve the use of blended learning for achieving national development. Therefore, its' utilization must be prioritized in order to achieve its specific classroom purpose, and ultimately enhance the achievement of national development.

Based on the conclusion of this study, the study therefore recommends that the positive attribute of blended learning instructional strategy is evident across studies that have been conducted in relation to mobile learning technology, thus, Government and stakeholders should embrace, monitor, and provide adequate needed supports that teachers need in order to encourage the creation of appropriate learning situation, interactivity, individualized learning, and promote the teaching and learning process from the teacher-centered to student-centered.

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