

# Influence of M-learning on Pre-Service Teachers' Education in Tertiary Institutions

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## Abstract

The study investigated the influence of m-learning application on pre-service teachers' education in tertiary institutions. The population of the study consist of all academic staff of Alvan Ikoku Federal College of Education Owerri, Imo State, Nigeria, where a sample of 240 teacher educators was drawn through stratified random sampling technique. The descriptive survey research design was adopted in carrying out the study. The data required for the study was drawn using modified likert 4 point type questionnaire. The instrument had reliability coefficient of 0.83 determined using Pearson's Product Moment Correlation formula which gave a reliability coefficient (r) f 0.83. The data generated was analyzed using mean and standard deviation to answer research questions while chi-square ( $\chi^2$ ) and t-test statistical tools were used to test hypotheses at 0.05 level of significance. The result of the study revealed that teacher educators were of positive opinion on the effectiveness of m-learning application in teacher education. Based on the result, it was recommended that pre-service teachers should be encouraged to source learning materials from their mobile phones, ipads and other mobile gadgets.

**Keywords:** Influence, M-learning, Pre-service Teachers' Education

## 1. Introduction

The relevance of teachers in any educational programme cannot be overemphasized. They are loaded with the responsibility of implementing any educational process at any given stage. The teachers contribute immensely in the development of any nation and as such, require much attention. Lassa in Olaleye (2013) noted that education is the key to National development and only teachers hold the key to it through the performance of their primary functions in the school. The nature, quality and level of students' academic outcome is dependent on teachers competence, sensitivity and teacher motivation. Suleiman (2013) noted that, teachers are major players in any education setting, their place in the scheme of things in education sector cannot be under estimated.

National Council for Teacher Education (1998) defined teacher education as a programme of education, research and training of persons to teach from pre-primary to higher education level. Teacher education is a programme that is related to the development of teacher proficiency and competence that would enable and empower the teacher to meet the requirements of the profession and face the challenges therein. According to UNESCO (2005) teacher education addresses environmental, social and economic context to create locally relevant and culturally appropriate teacher education programmes for both pre-service and in-service teachers. Teacher education generally includes four elements: improving the general educational background of the trainee teachers; increasing their knowledge and understanding of the subjects they are to teach; pedagogy and understanding of children and learning, and the development of practical skills and competencies (Perraton, 2010). Teacher education refers to the policies and procedures designed to equip prospective teachers with the knowledge, attitude, behaviors and skills they require to perform their tasks effectively in the classroom, school and wider community (Suleiman, 2013).

The nation requires individual teachers who are well trained and have the skills and competencies to stir the economy and other sectors forward unfortunately, the caliber of teachers found in our public schools today are either not competent or skillful enough to carry on with teaching affairs. This has also reflected in the quality and outcome of students in our schools. The quality of any educational system depends to a great extent on the quality of teachers in terms of academic and professional qualifications and experience as well as their level of competency in and level of dedication to their primary functions( Olaleye, 2013). The quest for quality education in Nigeria is an indication that more measures are required to improve the quality of teachers who graduate from teacher training institutions. Supporting this, Olaleye (2013) noted that improving teachers' quality and teaching effectiveness are at the forefront of concern among education stakeholders and policy makers in recent time as parents are worried over the poor state of education at the primary and secondary school levels. This places technology application in teacher education at the forefront.

The advent of technology in education has liberalized the way students learn and teachers teach. According to Shaibu and Mike (2014), the application of computers and interactive learning technologies in education is a modern and effective method of disseminating knowledge. They further indicated that, recently, mobile and wireless equipment have been evolving rapidly to influence learning processes, mostly in higher education institutions and the use of mobile devices for learning purposes is one of the developing fields in the

education sector.

Mobile learning is the learning delivered or supported solely or mainly by handheld and mobile technologies such as personal data assistant (PDAs), smart phones, or wireless laptop PC (Traxler, 2007). M-learning is education via the internet or networking using personal mobile devices, such as tablets and smart phones to obtain learning materials through mobile apps, social interactions and online educational hubs. It is flexible, allowing students' access to education anywhere, anytime (Bugie, 2017). It can also be regarded as the ability to obtain or provide educational content on pocket devices such as PDAs, Smartphone and mobile phones. Shape, Taylor and Vavoula (2005) stating the features of mobile learning stated that, it is learning that takes place "on the move", that occurs in a variety of places and times and that capitalizes on ubiquitous nature of mobile technologies. Mishra (2015) noted that mobile learning or m-learning is part of a new learning landscape created by the availability of technologies and supporting an education which is flexible, accessible, and personalized. It was further noted that mobile learning can be viewed as a useful component of the flexible learning model, where the learner takes advantages of the learning opportunities offered by mobile technologies.

Schuck, Kearney, Aubusoma and Burden (2013) indicated advantages of mobile learning to include flexibility, convenience, user friendliness and enhanced ability to undertake complex tasks, enhanced communication, and collaboration among students, opportunities for group learning, and increased sharing and interactions with local and global communities. Mobile learning provides opportunity for pre-service teachers to learn at any given time and space provided they are within Network accessible area. M-learning provides opportunity for inquiry-based learning among pre-service teachers. It enables students to learn in their own context giving rise to collaborative and personalized learning outside the classroom. Mobile learning has a great potential to increase pre-teachers' learning by enabling access to current educational information, experiences and practices.

M-learning provides a way for educational institutions to deliver knowledge and educational content to students on any platform, anyplace and at the time of need. Students use mobile apps and tools to complete and upload assignments to teachers, download course instruction and work in online social groups to complete tasks (Vangie, 2017). M-learning in its nature provides materials and resources for learners to access at will and without barriers. Vangie (2017) also noted that m-learning gives freedom to the learner, it also increases the flexibility of teachers and instructors, who may create learning materials on the spot in response to specific needs or provide instant feedback and support. This approach to learning allows students to work collaboratively, share course materials, knowledge, ideas and new experiences without necessarily coming together with each other. Teachers through m-learning can direct students in any location to sources of education materials which they can merge with classroom knowledge. M-learning allows pre-service teachers to process information outside their original learning environment, and deepens students' knowledge on a particular concept since they can access the materials anytime anywhere.

## 2. Statement of Problem

The quality of the teaching personnel in most of our schools across the nation calls for worry. In virtually every state of the federation there have been complains of poor quality of teachers in our classrooms. Teaching involves wide body of knowledge about the subject being taught, and another set of knowledge about the most effective ways to teach that subject to different kinds of learners. It therefore requires the teachers to undertake a complex set of task every minute (Suleiman, 2013). The nation requires teachers who will change the dwindling nature of the education sector through a pragmatic approach, individual skills, and expertise in order to produce individuals who will improve the social, economic, scientific and technological development.

It is against this backdrop that this study was carried out to investigate the influence of mobile learning (m-learning) application on pre-service teacher education in tertiary institutions.

## 3. Purpose of the Study

The main purpose of this study is to investigate the influence of m-learning application on pre-service teachers' education. Specifically the study will determine whether:

1. M-learning application will influence pre-service teacher education in tertiary institutions.
2. Male and female teacher educators will differ in their opinion over influence of m-learning application on pre-service teacher education in tertiary institutions.
3. Experienced and inexperienced teacher educators will differ in their opinion over influence of m-learning application on pre-service teachers' education.

## 4. Research Questions

The following questions were drawn to guide the study:

1. What is influence of m-learning application on pre-service teachers' education in tertiary institutions?
2. What is the difference between the mean responses of male and female teacher educators on the

- influence of m-learning application on pre-service teacher education?
3. What is the difference between the mean responses of experienced and inexperienced teacher educators on the influence of m-learning on pre-service teachers' education in tertiary institutions?

### 5. Hypotheses

The following hypotheses were formulated for the study

- H<sub>01</sub>: There is no significant relationship between m-learning application and pre-service teachers' education in tertiary institutions.
- H<sub>02</sub>: There is no significant difference between the mean responses of male and female teacher educators on influence of m-learning on pre-service teacher education in tertiary institutions.
- H<sub>03</sub>: There is no significant difference between the mean responses of experienced and inexperienced teacher educators on influence of m-learning on pre-service teacher education in tertiary institutions.

### 6. Methodology

The descriptive survey research design was adopted in carrying out the study to determine the influence of m-learning application on pre-service teachers' education in tertiary institutions. The population of the study consists of the six hundred and thirty five (635) academic staff of Alvan Ikoku Federal College of Education, Owerri Imo State Nigeria. A sample of Two Hundred and Forty (240) teacher educators was drawn from 8 schools of the institution this was made up of 130 males and 110 females. The sample was further grouped into experienced (6years and above on the job) and inexperienced (1-5years on the job) teacher educators. The data required for the study was drawn from a modified 4-point likert type of questionnaire designed by the researchers. It was titled; "Influence of M-learning on Pre-service Teachers' Education (IMLPTE)" and divided into two parts. Part A dealt with information on bio-data of the teacher educators while Part B dealt with information related to the objectives of the study. The responses ranged as follows: Strongly Agree (SA) = 4 pts, Agree (A) = 3 pts, Disagree (D) = 2 pts, Strongly Disagree (SD) = 1 pt. The face and content validity of the instrument were determined by 3 experts in Measurement and Evaluation from the institution, their inputs guided the restructuring of the instrument. To determine the reliability of the instrument, the test, retest reliability approach was adopted. To carry out this, 30 copies of the instrument were administered to respondents outside the study group two times within two weeks. The data generated was analyzed using Pearson's Product Moment Correlation Coefficient which gave a reliability coefficient (r) of 0.83 which was acceptable for the study. The instrument was administered on face to face basis to the respondents and retrieved after 2 days and all the distributed instruments were retrieved. The generated data was analyzed using mean and standard deviation to answer research questions. To do this, any item mean within or greater than 2.50 was accepted while any below was rejected. While the hypotheses were tested using t-test and chi-square statistical tools at 0.05 level of significance.

### 7. Results

**Research Question 1:** What is the influence of m-learning application on pre-service teacher education in tertiary institutions?

Table 1: Summary of Teacher educators' responses

S/N	Influence of M-learning on pre-service teachers' education	Male		Female		Average mean	Average SD	Remark
		mean	SD	Mean	SD			
1.	M-learning enhances students access to learning materials	3.20	1.02	3.01	1.00	3.42	1.02	Accepted
2.	m-learning allows students to learn outside classroom environment	3.10	1.00	3.30	0.98	3.40	1.0	„
3.	It allows students to learn at their own pace.	3.24	1.21	3.15	1.09	3.20	1.15	„
4.	Students learn from multiple sources	2.90	1.31	3.01	1.02	2.95	1.16	„
5.	It allows students to learn from different locations	3.14	0.95	3.10	1.02	3.12	0.97	„
6.	It gives students opportunity to learn in any context	3.00	1.01	3.11	1.04	3.06	1.03	„
7.	It allows for lifelong learning	3.01	1.02	2.90	1.31	2.95	1.16	„
8.	Students have access to current pedagogical approaches	3.41	0.98	3.20	0.86	8.61	0.92	„
9.	It allows for collaborative learning among students.	3.62	0.84	3.45	1.00	3.53	0.92	„
10.	Students are involved in activity oriented learning	2.94	1.03	3.00	2.97	2.92	1.00	„
11.	m-learning facilitates alternative learning process	2.91	1.12	3.02	1.10	2.95	1.11	„
12.	It motivates students to learn	3.02	1.00	3.14	1.03	2.18	1.02	„
13.	M-learning improves students interest	2.91	1.21	2.96	1.13	2.94	1.17	„
14.	M-learning enhances students retention and knowledge	2.86	1.34	2.70	1.21	2.78	1.28	„
15.	With m-learning student learn anytime and anywhere	3.34	1.00	3.40	1.52	5.17	1.16	„
	<b>AVERAGE MEAN</b>	<b>3.12</b>	<b>1.07</b>	<b>3.08</b>	<b>1.06</b>	<b>3.10</b>	<b>1.10</b>	

Table 1 above shows that all the items listed were accepted as they had response mean above the instrument scale mean of 2.50. Also the average response mean 3.10 is also greater than the scale mean. This is an indication of positive influence of m-learning application on pre-service teacher education.

**Research Question 2:** What is the difference between the mean responses of male and female teacher educators on the influence of m-learning application on pre-service teachers' education in tertiary institutions?

Table 2: Summary of teacher educators responses

Group	N	Mean (X)	SD	Diff in mean
Male	130	3.12	1.07	0.04
Female	110	3.08	1.06	
Inexperienced educators	170	3.20	1.01	0.18
Experienced educators.	70	3.02	1.00	

Table 2 shows that male teacher educators had response mean of 3.12 while their female counterparts had 3.08 which gave a difference of 0.04 which is very minor indicating that both groups are of the same opinion on the influence of m-learning application on teacher education.

**Research Question 3:** What is the difference between experienced and inexperienced teacher educators mean responses on the influence of m-learning application on pre-service teacher education in tertiary institutions?

Table 2 shows that inexperienced teacher educators had response mean of 3.20 while experienced teacher educators had 3.02 which gave a difference of 0.18 in favour of less experienced teachers.

**H<sub>01</sub>:** There is no significant relationship between m-learning application and pre-service teachers' education in tertiary institutions.

Table 3: Summary of chi-square ( $\chi^2$ ) analysis

No of rows	No of column	df	X <sup>2</sup> -cal	X <sup>2</sup> <sub>-0.05</sub>	P-value	Decision
15	4	42	114.297	58.124	0.000	Sig

Table 3 shows that the calculated chi-square X<sup>2</sup> value (114.297) is greater than the table value (58.124) at degree of freedom 42 and 0.05 level of significance. Based on the result, the null hypothesis is rejected and the alternative accepted at 0,05 level of significance. This implies that, there is a significant relationship between of

m-learning application and pre-service teachers' education in tertiary institutions.

**H0<sub>2</sub>:** There is no significant difference between the mean responses of male and female teacher educators on the influence of m-learning on pre-service teachers' education in tertiary institutions.

**Table 4: Summary of t-test analysis**

Group	N	Mean (X)	SD	df	t <sub>cal</sub>	t <sub>0.05</sub>
Male	130	3.12	1.07	238	0.286	1.645
Female	110	3.08	1.06			
Inexperienced educators	170	3.20	1.01	238		1.645
Experienced educators	70	3.02	1.00		1.286	

Table 4 shows that t-calculated value (0.286) is less than the table value (1.645) at degree of freedom 238 and 0.05 level of significance. Based on the result, the null hypothesis is upheld.

**H0<sub>3</sub>:** There is no significant difference between the mean responses of experienced and inexperienced teacher educators on the influence of m-learning on pre-service teachers' education.

Table 4 shows that t-calculated value (1.286) is less than the table value (1.645) at degree of freedom 238 and 0.05 level of significance. Based on the result, the null hypothesis is upheld.

## 8. Discussion of Finding

The result of the study revealed that m-learning application influenced pre-service teachers' education in the positive direction in tertiary institutions. This was evident as all the items on the table were accepted since they had response mean greater than scale mean. The item include among others; learning at anytime and anywhere, having access to current pedagogical approaches, collaborative learning, alternative learning process, motivating students, increasing their interest, enhancing retention of knowledge, learning from different location. The statistical analysis indicated that m-learning application is effective in improving teacher education. This result is in agreement with Vangie (2017) and Schuk et al (2013) as earlier reviewed and Zahra, Amineh and Maryam (2014) which showed that there is a significant relationship between utilization of mobile learning devices such as mobile phone, laptop and tablet with teaching method.

The result of the study did not reveal any significant difference between the opinion of male and female educators on the influence of m-learning application on pre-service teachers' education in tertiary institutions. This result might be based on the fact that educators are already involved in m-learning practices through phones and ipads on regular basis. This finding is in tandem with Nwoke, Ikwuanusi and Ugo (2015), Sung (2005) and Keefe (2003) which indicated that students become willing to use technology if they are used to using it before its application in the educational setting.

Finally, the study indicated that teacher educators of different level of experience are of the same opinion with regards to the influence of m-learning application on pre-service teachers' education as there was no statistical significant difference in their response mean.

## 9. Conclusion

The result of the study revealed that application of m-learning influenced pre-service teachers' education in the positive direction in tertiary institutions. Teacher educators of different level of experience and gender were of the same view about the influence of m-learning application on pre-service teachers' education in tertiary institutions.

## 10. Recommendations

Based on the result, the following recommendations were made:

1. Pre-service teachers should be encouraged to access education materials through their mobile devices such as ipads, phones, laptops etc.
2. The government and non-governmental organizations (NGOs) should organize workshops, conferences to train teacher educators on innovative lecture delivery approaches and reap the academic benefits associated with it.
3. Curriculum planners should implement the use of m-learning in teacher education programme in tertiary institutions.

## References

- Keefe, T. (2003). Mobile learning a tool for inclusion: The learning citizen issue 6, 4 – 6. Retrieved from [http://mediala.beurope.org/researchedlibrary/strohecker\\_Everyday-2003.pdf](http://mediala.beurope.org/researchedlibrary/strohecker_Everyday-2003.pdf) on 3rd April 2017
- Mishra, S. K. (2015). *Quality education for children, youth and adults through mobile learning*. In J. Keengwe (ed) pedagogical applications and social effects of mobile technology integration. Hershay: PA:IG.Global

- Nwoke, B. I.; Ikwuanusi, E. U. & Ugo, C.(2016). Students' perceptions of use of e-learning in science education. *Journal of Research in National Development* **14**(1): 159 – 164
- Olaleye, F. O. (2013). Enhancing educational effectiveness in Nigeria through teachers' professional development. *European Scientific Journal* **9**(28): 422 – 431
- Schuck, S.; Kearney, M.; Aubusson, P. & Burden (2013). *Mobilizing teacher education: A study of a learning community Teacher Development*. **17**(1): 1 – 18
- Shaibu, A. S. & Mike, J. (2014). Barriers to m-learning in higher education institution in Nigeria proceedings of ICERI2014 conference 17<sup>th</sup> – 19<sup>th</sup> November 2014 Seville, Spain
- Shaples, M.; Taylor, J. & Vavoula, G. (2005). Towards a theory of mobile learning. In mobile technology: The future of learning in your hands, m-learning 2005, book of abstracts, 4<sup>th</sup> world conference on m-learning, ed. H Vander Merwe and T. Brown Cape Town
- Suleiman, N. (2013). Improved teacher education should be Nigeria's priority. NigeriaExchange News. Retrieved from [216.104.37.197/news/public/article.php?ArticleID=2402](http://216.104.37.197/news/public/article.php?ArticleID=2402) on 23/03/2017
- Sung, M. (2005). Mobile. IT education (MIT. EDU): M-learning application for classroom setting. *Journal of Computer Assisted Learning*, **21**, 229 – 237
- Traxler, J. (2007). Defining, discussing and evaluating mobile learning: The moving finger writer and having written. *The International Review of Research in Open and Distributed Learning* **8**(2), 8-14
- UNESCO (2012). Mobile learning for teachers' global themes. Retrieved from <http://unesdoc.unesco.org/images/0021/002164/21645zE.pdf> on 2<sup>nd</sup> April 2017
- Vangie, B. (2017). Mobile learning (m-learning). [www.webopedia.com](http://www.webopedia.com)>TERM>M 26/3/2017
- Zahra, T.; Amineh, A. & Maryam, M. (2014). The effect of m-learning on mathematics learning. *Proceed in social and behavioural sciences*. 171, 83 – 89