

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

---

## **AWARENESS, PERCEPTION AND ATTITUDES OF UNDERGRADUATE PRE-SERVICE TEACHERS' ON THE USE OF MOBILE LEARNING TECHNOLOGIES FOR LEARNING PURPOSES IN NIGER STATE**

**HAMZAT, NASIRU AMOTO AND A, ANIAH (PhD)**

*Department of Education Technology, School of Science and Technology  
Education, Federal University of Technology, Minna, Nigeria.*

---

### **ABSTRACT**

*The aim of the study is to investigate undergraduate pre-service teachers' awareness, perception, and attitude on the use of mobile learning technologies for learning purposes in tertiary institutions. The study adopted a descriptive survey design carried out on 300 randomly sampled undergraduate pre-service teachers drawn from a population of 2,713 pre-service teachers in tertiary institutions in Niger state, using the Krejice and Morgan (1970) sample size determination table. Six research questions and three hypotheses were formulated to guide this study. Data was collected using a researcher-designed questionnaire structured in four sections A, B, C, and D containing 30 items. Section A was used to collect demographic data of the respondent, while section B, C, and D containing 10 items each was used to collect data on awareness, perception, and attitude respectively. The questionnaire was content and face validated by experts to determine the instrument's suitability. The reliability of the instrument was determined after been pilot tested and a reliability coefficients 0.85, 0.82, and 0.79 were obtained for awareness, perception, and attitude respectively using Cronbach Alpha, which indicated that the instrument was reliable for data collection. Mean and standard deviation score were used to answer the research questions. The formulated hypotheses were analyzed using t-test analysis. Findings from the study revealed that undergraduate pre-service teachers' awareness, perception and attitude on the use of mobile learning technologies for learning was positive. The analysis of the hypotheses revealed that there is no gender significance in the awareness, and perception of undergraduate pre-service teachers on the use of mobile learning technologies for learning. However, the analysis revealed that there is a gender significance in their attitude as male tends to exhibit significantly more positive*

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

---

*attitude towards the use of mobile learning technologies for learning than female. Based on these findings, it was recommended that undergraduate pre-service teachers should be encouraged to adopt mobile learning technologies in order to enhance their independent learning ability and helps build self confidence. Also, governments and schools should ensure continuous sensitization of students on mobile learning technologies as it provides easy access to online learning materials and easy flow of information between teachers and students.*

**Keywords:** *Attitude, Awareness, Mobile Learning, Perception, Pre-service Teachers, Technology, Undergraduate.*

---

## **Introduction**

Education is influenced by socio-economic development of a nation and the changes taking place within it. The education system that was developed and implemented a few centuries ago differs from the one existing today such as the current innovation of E-learning platforms. Our societies are experiencing many challenges as a result of the changes in classroom instructions, these challenges are attributed to the breakthrough and advancement in modern Information and Communication Technologies (ICT) which played major role in shaping education sector (Besio, 2005).

The advancement of Information and Communication Technologies (ICT) and proliferation of electronic knowledge has reshaped the way knowledge in schools and universities is delivered and managed. In other words, new forms of education systems are evolving resulting in emerging novel learning and teaching methods which differ significantly from the traditional approaches. For instance, the way teachers and students interact is not just based in face-to-face traditional classroom settings. Instead, modern Information and Communication Technologies enable students and teachers to interact freely anytime in disperse location. Teaching and learning has become flexible and possible through the use of mobile technologies. The provision of learning services through mobile devices is commonly called Mobile Learning (m-learning) (Salmon, 2009).

In the recent years, mobile learning (m-learning) has moved from being a theory, academic exploration and technology idea, into a real and valuable contribution to learning environment and during the past decade every area of education has

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

---

been affected by the introduction and use of these technologies. Mobile technology provides a new form of learning for people of all ages anywhere and anytime. Besides, m-learning provides many advantages including: Freedom to study with flexibility, low cost, timely application (Alzaza & Zulkifli, 2007), improvement experiential, authentic and reliable learning situations, enhanced availability of guidance, ease of use, support in learning situations (Seppala et al., 2002), fast production of digital learning materials and copyright issues, flexibility of learning (Sharples et al., 2002). However, use of m-learning is growing rapidly in the higher education environments. The focus is on learning materials resources and administrative services (Georgieva et al., 2005). Regardless of the fact that e-learning has not reached the explosive growth figures which were commonly predicted in the mid-1990s, scholars and industry representatives are now turning their attention towards the m-learning (Feng et al., 2006).

Mobile learning implementation depends on the availability of m-learning technologies, user's awareness and perception of such technologies. In other words, availability of m-learning technologies is a pre-condition for achieving better educational outcome in the adoption of such technologies for teaching and learning processes which makes it possible for all category of learners (slow, moderate and fast learners) to be carried along (Bradley, 2010). The Horizon report by Adams, et al., (2015), lay emphasis on the need of educationists to review educational scenarios, making them more flexible and adapting them to digital technologies by adopting technology acceptance model.

Technology Acceptance Model (TAM) by Davis (1989), is one of the commonly used framework in studies that predicts and explained the use of technologies and technology application in education settings. The TAM affirms that the adoption of technology is pre-determine by the user's awareness and perception and intention to use such technology, which is been influenced by his/her attitude towards that technology. The attitudinal and behavioral construct of a user towards a particular technological tool, depends greatly on the user's awareness and perception of that tool which can be traced to the user's perceived usefulness (PU) and perceived ease of use (PEU) of the technological tool (Davis, 1989).

Perceived Usefulness (PU) is described as the extent to which the users of a technology perceived that the technology will augment and improve their

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

---

learning process (Oldham & Da Silva, 2015). The TAM also assumes that the adoption and use of a particular technology is motivated by the behavioral intention. Nonetheless, the behavioral intention is motivated by user's attitude towards the use of the technology, and the user's attitude is pre-influenced by the user's awareness and perception of such technology.

Perceived Ease of Use (PEU) is described as the level to which a user considered the use of a particular technology to be easy to operate (Davis, 1989). The concept of PEU accounts for the level at which a user accepts the fact that a particular technology would not be difficult to handle.

The nature of Higher Education has changed due to the rapid development of mobile computing devices and internet capabilities\connectivity (Liaw, et al., 2010). A survey by the (Educause Center for Applied Research [ECAR] 2012) on the use of mobile technology in higher education environments indicated that students are currently leading the implementation of mobile technological devices into their classrooms. Moreover, 67% of the surveyed students expressed that mobile technologies are very essential in their academic achievements and activities. Gikas and Grant (2013) have indicated that mobile technology has become an integral part of the educational process at the higher educational institutions as it brings many opportunities and challenges to both students and academics.

There are several studies about attitudes of higher education students towards mobile learning which consider it as a significant factor to understand what makes end users accept or resist mobile learning. Some international studies reveal that university students generally have a positive attitude towards the use of mobile devices in education and mobile learning (Baya'a & Daher, 2009; Hwang & Chang, 2011; Al-Fahad, 2009; Ozdamli & Uzunboylu, 2015; Liaw & Huang, 2015; Yang, 2012). Studies conducted in Turkey also indicate a positive attitude towards mobile learning (e.g. Kukul, et al., 2015).

## **Statement of Problem**

Teaching techniques are expected to shift from Teachers-centered to Learners-centered. Most developed countries have taken advantage of the available educational technology tools to transform their teaching-learning process to learner-centered e.g. Use of Computers, Smartphones, Digital Versatile Disc (DVD), Projectors, Interactive softwares, Mobile Phones and many more. These

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

---

tools make the whole Education process more efficient and effective.

For instance, the period of Covid-19 pandemic have shown how important the adoption of mobile learning in education is. During the pandemic, movement was restricted and schools shot down thereby forcing teaching and learning process to shift from the Conventional classroom method to online classes. While schools activity were completely halt in most under-developed countries, the developed countries took advantages of the available ICTs like: smartphones, tablets, interactive softwares, computers, and many more to ensure the continuity of teaching and learning in order to avoid total suspension of academic activities.

One of the main reasons that are attributed to the poor usage of m-learning technology is the lack of sufficient studies that explore the factors that influence m-learning acceptance in the higher education institutions. Unfortunately, schools in Nigeria are yet to extensively exploit the technological tools for teaching-learning process. Majority of schools in Nigeria still use the conventional (talk and board method of teaching). This conventional method of teaching keeps learner passive in the classroom, thus affecting their academic performance, and obviously not preparing them for the information age and globalization.

The popularity of mobile devices has increasingly becomes significant as many learners are using mobile technology in their learning environment. Lecturing is still the most widespread form of classroom instruction in higher Education. Lecture with a large audience provides a problematic situation since only one or at most a few students are able to interact with the lecturer at a given moment. The current way of lecturing is only at specific place and time; students can not easily access lecture materials, assignments and sample quizzes from wherever they are and whenever they want. A fundamental problem in conventional learning is; it requires about 1 to 2 hours of continuous attention of the students, but usually the attention span of the learners is only about 20 to 30 minutes. M-learning technologies are the current technologies that can be used to resolve the above challenges of instruction in the education system. A better understanding of the students' requirements will help the decision maker to adopt m-learning successfully. Thus, leads to carrying out this study on awareness, perception, and attitude of undergraduate pre-service teachers' on the use mobile technologies for learning purposes in Niger State.

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

---

## **Research Question**

Some of the research questions that guided this study include:

1. What is the awareness of undergraduate pre-service teachers on the use of mobile learning technologies for learning purposes?
2. What is the perception of undergraduate pre-service teachers on the use of mobile learning technologies for learning purposes?
3. What is the attitude of undergraduate pre-service teachers on the use of mobile learning technologies for learning purposes?

## **Research Hypotheses**

The following null hypotheses were formulated to guide the study and they are tested at 0.05 alpha level of significance:

- Ho<sub>1</sub> There is no significance difference between male and female pre-service teachers' awareness towards mobile learning technologies.
- Ho<sub>2</sub> There is no significance difference between male and female pre-service teachers' perception towards mobile learning technologies.
- Ho<sub>3</sub> There is no significance difference between male and female pre-service teachers' attitude towards mobile learning technologies.

## **Methodology**

The research design that was adopted for this study is a descriptive survey design. Descriptive survey research is a research where groups of people or items are studied through collecting and analyzing data from their representatives. The descriptive survey design is selected because of its high degree of representativeness and the ease in which the researcher could obtain the participants' opinion (Polit & Beck, 2004). This methodology involves the use of questionnaire to obtain the needed data from respondents. The population of this study comprise of 2,713 students offering education from institutions of higher learning in Niger state. The institutions include; Niger State College of Education Minna, Ibrahim Badamasi Babangida University, Lapai, and Federal University of Technology, Minna. The reason for selecting these institutions is because they are the only institutions that offer education courses in Niger State. Students' in the Faculty/school of Education of all these institutions will constitute the target population. The sample of the study consisted of 300 (year two and above) students from the faculty of education in the three selected higher institutions of

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

---

higher learning in Niger State. The sample is in accordance with Krejcie and Morgan (1970) sample size determination table. The higher institutions, the faculty, and the level of students were selected purposively, but the students that constitute the sample of the study were selected randomly in order that every student have equal opportunity of being picked for the study. The research instrument used in this study to collect the needed data from the respondents is a researcher-designed questionnaire on awareness, perception, and attitude of undergraduate pre-service teachers' on the use mobile learning of technologies for learning purposes in Niger State (QAPAUPUMTTL). The questionnaire is a close-ended questionnaire and it consist of 30 items made up of four sections; A, B, C and D. Section A was used to collect demographic data of the respondents, Section B consists of 10 items, and was used to collect data on the awareness of the respondents on the use mobile technologies for education purposes, Section C consist of 10 items that was used to collect data on the perception of the respondents on the use of mobile technology for teaching and learning, and Section D also consist of 10 items was used to collect data from the respondents on their attitude on the use of mobile technologies for teaching and learning. Section B, C, and D was presented using a 5-point Likert scale in which Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), and Strongly Disagree (SD) will be awarded 5, 4, 3, 2, and 1 point(s) respectively. Response within the scores of 3.0 and above was regarded as agreement while the response scores below 3.0 was regard as disagreement. To ensure the validity of the instrument, the researcher-designed questionnaire (QAPAUPUMTTL) was validated by three educational experts from the department of educational technology and Science Education, Federal University of Technology, Minna. They critically looked at the face and content validity to determine the instruments' suitability as regarding the targeted population in terms of clarity, depth and language. Their inputs led to further modification of the instrument. The reliability of this research instrument was determined after a pilot study on 30 pre-service teachers from Niger State College of Education, Minna, who are part of the population, but not part of the sample for the study since they share related characteristics. The questionnaires was distributed to the pre-service teachers and retrieved by the researcher upon completion. The scores obtained was computed using Cronbach's Alpha formula and reliability coefficient index of 0.85, 0.82, and 0.79 were obtained from the variables, (awareness, Perception, and Attitude)

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

respectively. Based on the coefficient obtained, the instrument was considered reliable. The data collected from the sampled respondents was analyzed using descriptive and inferential statistics. The research questions were answered using descriptive statistics; Mean and Standard Deviation. T-test statistics was used to test the three (3) null hypotheses; the significant difference would be ascertained at alpha level of 0.05. The Statistical Package for Social Science (SPSS Version 23) was used for the analysis.

## Results

Results of the study are presented according to research questions and hypotheses:

Research Question One: What is the awareness of undergraduate pre-service teachers on the use of mobile learning technologies for educational purposes?

Table 1: Mean and standard deviation of undergraduate pre-service teachers on their awareness on the use of mobile learning technologies for education purposes

S/N	Items	N	Mean	Std. Dev	Decision
1.	I am aware of the various mobile learning technologies available for educational purposes.	300	4.38	0.66110	Positive
2.	I am aware of the fact that mobile learning technologies help facilitates communication between the students' within and outside of classroom.	300	4.37	0.68897	Positive
3.	I am aware that students can write tests and examinations online using mobile learning technologies.	300	4.39	0.78738	Positive
4.	I am aware that lectures can be delivered to students without meetings in the classroom through the use of mobile learning technologies.	300	4.20	0.91805	Positive



# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

5.	I am aware that students can organize themselves in groups for sharing of information and instructions using mobile technologies.	300	4.43	0.57113	Positive
6.	I am aware that learning materials from various educational sites can be downloaded using mobile learning technologies,	300	4.26	0.67373	Positive
7.	Am aware that it is possible to teach students from the comfort of their house with the use mobile learning technologies.	300	4.17	0.87387	Positive
8.	I am aware that mobile learning technologies have a major important role in modern day education process.	300	4.37	0.71751	Positive
9.	Am aware that mobile learning technologies do not instigates laziness among students.	300	3.55	1.08231	Positive
10.	I am aware of the fact that assignments can be done and submitted to the lecturer using mobile learning technologies.	300	3.97	0.95506	Positive
	Grand Mean		4.21		

Decision Mean = 3.0

Table 1 shows the calculated mean and standard deviation scores of undergraduate pre-service teachers' response on their awareness to use mobile learning technologies for learning purposes. From the table, the mean scores recorded for items 1-10 ranges between 3.55 and 4.43, and the grand mean is 4.21. The grand mean 4.21 is above the decision mean 3.0. This is a clear indication that undergraduate pre-service teachers' have positive awareness on the use of mobile learning technologies for learning purposes. The standard deviation for the items 1-10 from table 1 above, ranges between 0.57113 and

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications  
International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June,  
2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

1.08231, and the grand standard deviation for the items 1-10 is 0.79290.

Research Question Two: What is the perception of undergraduate pre-service teachers on the use of mobile learning technologies for educational purposes?

Table 2: Mean and standard deviation of undergraduate pre-service teachers on their perception on the use of mobile learning technologies for education purposes

S/N	Items	N	Mean	Std. Dev	Decision
1	Mobile learning technologies are easier to use and they enhances better understanding.	300	4.11	0.74818	Positive
2	The use of mobile technologies for educational purposes is innovative.	300	4.26	0.71702	Positive
3	Mobile learning technologies at all times provide learning opportunities.	300	4.12	0.66865	Positive
4	Mobile learning technologies allow students' to practice and gain real experience on abstract concepts.	300	4.16	0.84663	Positive
5	The use of mobile learning technologies in education process makes learning faster.	300	4.35	0.65493	Positive
6	Mobile learning technologies tend to motivate students' interest in learning than the traditional learning practice.	300	4.16	0.67522	Positive
7	Mobile learning technologies increases students' productivity and self reliance.	300	3.99	0.72916	Positive
8	Mobile learning technologies provide access to new and updated educational information, thus making them a reliable tool.	300	4.30	0.78233	Positive
9	Mobile learning technologies at all	300	4.13	0.82180	Positive

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

	time provides learners with unlimited access to online learning materials.				
10	The use of mobile learning technologies for learning, keep students focused than the conventional classroom method.	300	4.17	0.75032	Positive
	Grand Mean		4.18		

Decision Mean = 3.0

Table 2 shows the calculated mean and standard deviation scores of undergraduate pre-service teachers' response on their perception to use mobile learning technologies for learning purposes. From the table, the mean scores recorded for items 1-10 ranges between 3.99 and 4.35, and the grand mean is 4.18. The grand mean 4.18 is above the decision mean 3.0. This is a clear indication that undergraduate pre-service teachers' have positive perception on the use of mobile learning technologies for learning purposes. The standard deviation for the items 1-10 from table 2 above, ranges between 0.65493 and 0.84663, and the grand standard deviation for the items 1-10 is 0.79340.

Research Question Three: What is the attitude of undergraduate pre-service teachers on the use of mobile learning technologies for educational purposes?

Table 3: Mean and standard deviation of undergraduate pre-service teachers on their attitude on the use of mobile learning technologies for education purposes

S/N	Items	N	Mean	Std. Dev	Decision
1.	Mobile learning technologies will positively influence learners' learning ability.	300	4.31	0.70396	Positive
2.	Mobile learning technologies will increase the degree of freedom and reduces anxiety among students performing educational task.	300	4.23	0.76652	Positive
3.	I enjoy using mobile learning technologies for educational	300	4.37	0.78432	Positive

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

---

	purposes.					
4.	Teaching and learning with mobile tools is a skill needed for both teachers and learners to progress in their profession.	300	4.34	0.71140	Positive	
5.	Everyone can easily operate and understand mobile learning technologies.	300	3.70	0.99665	Positive	
6.	Mobile learning technologies will improve students' engagement in educational activities by offering a more relaxed and comfortable setting for learning.	300	4.19	0.70395	Positive	
7.	Mobile learning technologies will provide learners with more and sufficient detailed information on an abstract concept.	300	4.21	0.74008	Positive	
8.	Mobile learning technologies enable students to assimilate faster and wide within a short period of time.	300	4.29	0.71245	Positive	
9.	Mobile learning technologies allows students to actively participate in educational activities, thereby making it hard for students to be distracted.	300	3.91	0.90810	Positive	
10.	Mobile learning technologies should be adopted at all level of education	300	3.99	0.93424	Positive	
			4.15			

Grand Mean

---

Decision Mean = 3.0

Table 3 shows the calculated mean and standard deviation scores of undergraduate pre-service teachers' response on their attitude to use mobile

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

learning technologies for learning purposes. From the table, the mean scores recorded for items 1-10 ranges between 3.70 and 4.37, and the grand mean is 4.15. The grand mean 4.15 is above the decision mean 3.0. This is a clear indication that undergraduate pre-service teachers' have positive attitude on the use of mobile learning technologies for learning purposes. The standard deviation for the items 1-10 from table 2 above, ranges between 0.71140 and 0.99665, and the grand standard deviation for the items 1-10 is 0.79620.

Hypothesis One (Ho<sub>1</sub>): there is no significance difference between male and female undergraduate pre-service teachers' awareness towards the use of mobile learning technologies for learning purposes.

Table 4: t-test result of male and female undergraduate pre-service teachers' awareness on the use of mobile learning technologies for education purposes.

Gender	N	Df	Mean	Std. Dev	t-value	p-value
Male	150	298	41.98	4.11491	0.443 <sup>ns</sup>	0.658
Female	150		42.20	4.48712		

NS: Not Significant at 0.05 Level

Table 4 shows the t-test result of male and female undergraduate pre-service teachers' response on their awareness on the use of mobile learning technologies for learning purposes. The calculated mean scores for male and female are 41.98 and 42.20 respectively, with a t-value of 0.443<sup>ns</sup>, and the p-value is 0.658. The calculated p-value 0.658 is greater than 0.05 alpha level of significance and therefore, null hypothesis one is accepted. This indicates that there is no significance difference between the response of male and female undergraduate pre-service teachers' awareness on the use of mobile learning technologies for learning.

Hypothesis Two (Ho<sub>2</sub>): there is no significance difference between male and female undergraduate pre-service teachers' perception towards the use of mobile learning technologies for learning purposes.

Table 5: t-test result of male and female undergraduate pre-service teachers' perception on the use of mobile learning technologies for education purposes.

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

Gender	N	Df	Mean	Std. Dev	t-value	p-value
Male	150	298	42.18	3.58234	1.677 <sup>ns</sup>	0.095
Female	150		41.32	5.16093		

NS: Not Significant at 0.05 Level

Table 5 above shows the t-test result of male and female undergraduate pre-service teachers' response based on their perception on the use of mobile learning technologies for learning purposes. The calculated mean scores for male and female are 42.18 and 41.32 respectively, with a t-value of 1.677<sup>ns</sup>, and the p-value calculated is 0.095. The calculated p-value 0.095 is greater than 0.05 alpha level of significance and therefore, null hypothesis two is accepted. This indicates that there is no significance difference between the response of male and female undergraduate pre-service teachers' perception on the use of mobile learning technologies for learning.

Hypothesis Three (H<sub>03</sub>): there is no significance difference between male and female undergraduate pre-service teachers' attitude towards the use of mobile learning technologies for learning purposes.

Table 6: t-test result of male and female undergraduate pre-service teachers' attitude on the use of mobile learning technologies for education purposes.

Gender	N	Df	Mean	Std. Dev	t-value	p-value
Male	150	298	42.14	3.52180	2.307 <sup>ns</sup>	0.022
Female	150		40.94	5.30699		

NS: Not Significant at 0.05 Level

Table 6 shows the t-test result of male and female undergraduate pre-service teachers' response based on their attitude on the use of mobile learning technologies for learning purposes. The calculated mean scores for male and female are 42.14 and 40.94 respectively, with a t-value of 2.307<sup>ns</sup>, and the p-value calculated is 0.022. The calculated p-value 0.022 is less than 0.05 alpha level of significance and therefore, null hypothesis three is rejected. This indicates that there is significance difference between the response of male and female

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications  
International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June,  
2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

---

undergraduate pre-service teachers' attitude on the use of mobile learning technologies for learning.

## **Discussion of findings**

Findings of this study revealed that undergraduate pre-service teachers' in Niger state are aware of the use of mobile learning technologies for learning purposes. This finding is in accordance with the finding of Alagu and Thanuskodi (2018) who discovered that students' have positive awareness of ICTs for learning.

Findings from this study shows that Niger state undergraduate pre-service teachers' have positive perception on the use of mobile learning technologies for learning purposes. This is in accordance with the findings of John and Irene (2017). The finding of their study reveals that students in colleges of education in Nigeria have positive perception of mobile learning technologies.

Findings of this study revealed that undergraduate pre-service teachers' in Niger state have a positive attitude towards the use of mobile learning technologies for learning purposes. This result in line with that of Al Emran and Shalloum (2017) the finding of their study shows that students' attitude were positive towards the use of mobile technologies.

Finding of this study shows that there is no significance difference between male and female undergraduate pre-service teachers' awareness on the use of mobile learning technologies for learning purposes in Niger state. This finding is in agreement with the finding of Gboyega, et al (2018) who discovered that there is no significance difference between male and female awareness of mobile technologies.

The finding of this study shows that there is no significance difference between male and female undergraduate pre-service teachers' perception on the use of mobile learning technologies for learning purposes in Niger state. This finding is in line with the finding of Hayati, et al (2009).

Finding of this study shows that there is a significance difference between the of male and female undergraduate pre-service teachers' attitude towards the use of mobile learning technologies for learning purposes in Niger state. This is in accordance with the finding of Mustafa and Mustafa (2018) who discovered that male exhibited significantly more positive attitude towards e-assessment than female. This in turn is in disagreement with Gboyega, et al (2018).

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

---

## **Conclusion**

Finding of this study indicated that undergraduate pre-service teachers' in Niger state have positive awareness on the use of mobile learning technologies for learning purposes, and that there is no significance difference between the male and female undergraduate pre-service teachers' awareness. The study also revealed that undergraduate pre-service teachers' have positive perception on the use of mobile learning technologies for learning purposes in the state, and that there is no significance difference between male and female perception. Furthermore, this study revealed that the undergraduate pre-service teachers' in Niger state have positive attitude towards the use of mobile learning technologies for learning purposes, but however, the study indicated that there is significance difference between male and female undergraduate pre-service teachers' attitude.

## **Recommendation**

The following recommendations were made as a result of the findings that come from this study:

1. Undergraduate pre-service teachers' should be encouraged to adopt mobile learning technologies for learning purposes. This will enhance their learning ability and help them build self confidence.
2. Tertiary institutions should provide necessary facilities that will aid the undergraduate pre-service teachers' to have easy and unlimited access to online learning materials at all time.
3. Governments and institutions should make provisions that will ensure adequate power supplies, and continuous sensitization for the undergraduate pre-service teachers' on the use of mobile learning technologies.

## **References**

- Alagu, A., and Thamusodi, S. (2018). Awareness and use of Information Communication Technology among undergraduate students of rural area in Dindigul. *Library and Practice (e-journal)*. 2084. <http://digitalcommons.unl.edu/liphi/prac/2084>.
- Al-Emran, M., & Shaalan, K. (2017). Academics' Awareness Towards Mobile Learning in Oman. *International Journal of Comunication, Digital System*,



# 2021-UNILORIN

The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.

---

- 6(1).
- Besio, S. (2005). *Technology Access for the disabled*. Lecce: Pensa Multimedia.
- Educause Centre for Applied Research [ECAR]. (2012). *ECAR study of undergraduates students and information technology*. Louisville: CO: Educause Center for Applied Research. Retrieved April 6, 2018. <http://net.educause.edu/ir/library/pdf/ERS1208/ERS1208.pdf>.
- Gboyega, Ayodeji Aladesusi., Idris, Ahmad Isah., Olotun, Florence Daramola., & Grace, Mfon Udoh (2018). Assessment of undergraduate attitude to and utilization of mobile technologies for learning in Lagos state. *International journal of innovative technology integration in education 2 (1)*, 41-48, 2018
- Gikas, J., & Grant, M. M. (2013). Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones & social media. *Internet and Higher Education*, 19, 18-26.
- Hwang, G. J., & Chang, H. F. (2011). A formative assessment-based mobile learning approach to improving the learning attitudes and achievements of students. *Computers & Education*, 56(4), 1023-1031. <https://doi.org/10.1016/j.compedu.2010.12.002>
- John, Gyang, Chaka., and Irene, Govender. (2017). Students perception and readiness towards mobile learning in colleges of education: a Nigerian perspective. *South African Journal of Education*, 37(1), February, 2017.
- Krejice, R. V. & Morgan, D. W. (1970). *Sample size determination table*. Retrieved on 19<sup>th</sup> July, 2018 from <http://www.kenpro.org/sample-size-determination-using-krejice-and-morgan-table>.
- Kukul, V., Gokcearslan S., & Karademir, T. (2015). Pre-service Teacher's Attitude on Mobile Learning. In *proceedings of Teaching and Education Conference , Amsterdam. International Institute of Social and Economic Sciences*, 119-127 No. 2404091.
- Liaw, S. S., Hatala, M., Huang, H. M. (2010). Investigating acceptance toward mobile learning to assist individual knowledge management: based on activity theory approach. *Computers and Education*, 54(2), 446-454.
- Mustafa, Bahar and Mustafa, Asil (2018). Attitude towards e-assessment: influence of gender, computer usage and level of education. *The journal of open, distance and e-Learning* 33 (3), 221-237, 2018.
- Ozdamli, F., & Uzunboylu, H. (2015). M-learning adequacy and perceptions of students and teachers in secondary schools. *British Journal of Educational Technology*, 46 (1), 159-172.
- Salmon, G. (2009). The future for (second) life and learning. *British Journal of Educational Technology*, 40(3), 526-538.
- Seppala, P., J. Sariola and H. Kynaslahti. (2002). Mobile Learning in Personnel Training of University Teachers. *Proceeding of the IEEE International*

# 2021-UNILORIN

*The Academic Conference Proceedings of Mediterranean Research and Publications International on the Sub-Sahara growth in the Millenium Era, Vol. 19 No. 1, 29th June, 2021- University of Ilorin, Ilorin, Kwara State, Nigeria.*

---

*Workshop on Wireless and Mobile Technologies in Education, Aug. 29-30, IEEE Xplore Press, Växjö, Sweden, 136-139.*

Sharples, M., D. Corlett and O. Westmancott, 2002. *The design and implementation of a mobile learning resource.* Personal Ubiquitous Comput., 6; 220-234.  
DOI: 10.1007/s007790200021.