

INVESTIGATING STUDENTS' PERSPECTIVES AND ATTITUDES TOWARDS MOBILE LEARNING AT A NIGERIAN UNIVERSITY

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Abstract

Mobile learning is a type of education that has significant potential and offers new opportunities for education and learning assessment. As such, it plays a critical role in the development of quality education in Nigeria, which aligns with the fourth Sustainable Development Goal. Despite its advantages as an emerging learning method and its adoption in education, research into its use in teacher education in developing contexts like Nigeria is still in its early stages. This paper discusses the use of mobile learning (m-learning) in teacher education in Nigeria. This study, therefore, investigates the perception and attitude of preservice teachers towards using m-learning for their teacher education course. The study uses a survey instrument with a 4-point Likert scale to collect responses from 54 preservice teachers registered in an ICT in education course at a university in Southwestern Nigeria. The responses are analyzed using descriptive and inferential statistics, as well as regression analysis. The results show that preservice teachers have a positive attitude towards using mobile apps and tools for learning, with females scoring higher than males. The study also found that perceived usefulness significantly influenced their attitude towards mobile learning. The results of this study indicate that preservice teachers who perceive the use of mobile apps/tools for learning as beneficial are more likely to have a positive attitude towards their use, as long as they receive the necessary educational training to improve their proficiency in utilizing such mobile learning tools/apps. As a result, it is recommended that teacher education programs implement effective technology-assisted training programs that will familiarize pre-service teachers with the pedagogical skills and experiences required to build their confidence in using mobile apps/tools in their teaching practices. Furthermore, teacher education programs should introduce preservice teachers to the ideas of mobile learning and provide learning opportunities that can foster their knowledge and effectiveness in utilizing mobile apps/tools for teaching and learning.

Keywords: *Attitudes, mobile learning, perceptions, preservice teachers, university students.*

1. Introduction

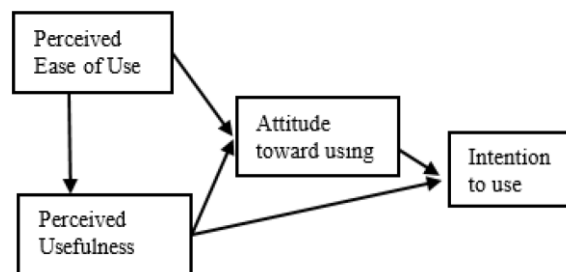
The use of mobile technologies has become increasingly widespread globally, with many people incorporating them into their daily lives, especially since the COVID-19 pandemic (Alaba et al., 2022; Al-Emran, 2016). As a result, mobile learning has become a significant aspect of education at all levels, including higher education. Mobile learning is a type of education that utilizes mobile technology such as smartphones, PDAs, netbooks, tablet PCs, and various applications/tools to facilitate learning. It has significant potential and offers new opportunities for education and learning assessment. Mobile learning allows learners to access relevant information/teaching materials, connect with others and systems, reduce cognitive load, and encourage asynchronous/synchronous communication between students and teachers (Chen et al., 2015; Campbell, 2018). As such, it plays a critical role in the development of quality education in Nigeria, which aligns with the fourth Sustainable Development Goal (Ajayi et al., 2019). Despite the high ownership of mobile devices, longitudinal data indicates that the use of mobile technology in learning is not as widespread as the devices themselves (Chen et al., 2015). Moreso, research indicates that students are not as adept at using mobile technology as the devices' popularity suggests (Chen et al., 2015). Despite the advantages of m-learning as an emerging learning method and its adoption in education, research into its use in teacher education in developing contexts like Nigeria is still in its early stages (Alaba et al., 2022). The study's focus, therefore, was to explore the perception and attitude of preservice teachers in Nigeria to utilize m-learning for their teacher education course. To achieve this goal, the following research questions were addressed:

- What are the perceptions and attitudes of preservice towards using mobile learning?
- Is there any significant difference between the perceptions and attitudes of preservice teachers towards using mobile learning by gender and age?

2. Conceptual framework

This study employs the Technology Acceptance Model (TAM) of Davis (1989) as a conceptual lens. TAM explains how people form attitudes and make decisions about using technology. According to the TAM model, a person's intention to use technology is determined by an evaluation of the trade-off between the perceived usefulness of the technology and the perceived ease of use of using it (Davis, 1989). Perceived ease of use refers to how easy a person thinks it is to use the technology, while perceived usefulness refers to how beneficial they think it is (Davis, 1989). The model suggests that the more a person perceives technology as easy to use and useful, the more likely they are to accept and use it. This implies that realizing the perceived usefulness (PU) and perceived ease of use (PEOU) of mobile technologies in education can positively impact the attitudes toward usage (ATU) of mobile technologies (Chen et al., 2011). Moreso, it is maintained that a user's positive attitude will lead to a greater intention to use technology for learning (Orgaz et al., 2018). The use of TAM in this study underlies the fact that the usefulness and desire of students to utilize mobile technology for educational purposes is not solely determined by their individual willingness or unwillingness to use the devices but rather by the technical limitations inherent in the devices themselves (Mugo et al., 2017). Hence, the use of TAM in this study was divided into four distinct components: perceived usefulness, perceived ease of use, attitude towards using the technology, and intention to use the technology, as depicted in Figure 1.

Figure 1. Conceptual Framework.



3. Method

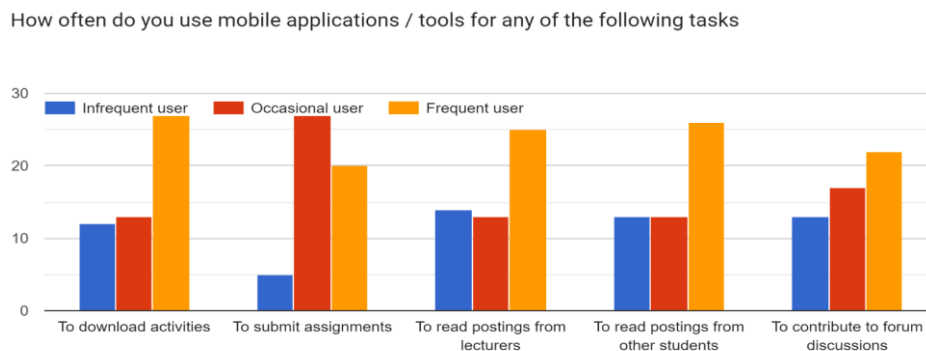
This study utilized survey research with a quantitative approach to elicit responses from 68 preservice teachers registered in an ICT in education course at a University in Southwestern Nigeria via a Google form. The TAM questionnaire was modified and then given to participants to complete. The questionnaire comprised 26 questions that required pre-service teachers to indicate their degree of agreement or disagreement on a four-point Likert-type scale, where 1 corresponds to 'Strongly disagree' and 4 to 'Strongly agree'. 7 dealt with attitudes towards m-learning; 6 with perceived usefulness; 6 perceived ease of use; 4 assessed intention; and 3 dealt with general biography (age, gender and subject discipline). However, the findings reported in this paper were focused on the perceptions and attitude scale utilized in this study. Three experts in the field of education were consulted to ensure that the content and face validity of the instrument were appropriate. A pilot study was also conducted with a small group of 10 pre-service teachers who had similar backgrounds to the target group to test the instrument's validity. The Cronbach alpha reliability coefficients for the three attributes were: m-learning attitude = 0.979, perceived ease of use = 0.961, perceived usefulness = 0.961, and Intention = 0.964. Responses from the survey instrument were analysed using descriptive statistics, independent t-test and regression analysis by using the statistical program SPSS (Statistical Package for Social Science v21). Permission to conduct the study was obtained from the Departmental head, and participants were provided with detailed information about the research to ensure they could make an informed decision about participating. The research sample was made of 54 preservice teachers consisting of Males (28.8%) and females (71.2%). Among the respondents, 53.8% were between the ages of 15, 28.8% were between 21 and 25 years old, and 17.4% were from 26 years and above.

4. Findings and discussion

Figure 2 illustrates that respondents frequently use mobile devices and apps for downloading activities, reading postings from lecturers, reading postings from other students and contributing to forum discussions. However, most of the respondents indicated that they occasionally use their mobile devices/apps for submitting assignments. These findings align with previous research, which shows that students recognize the potential of mobile devices to enhance collaboration, communication, and

information sharing in classroom settings (Ahmad, 2020). Students value the use of mobile devices as a means to increase interaction and engagement, and they prioritize its use for these purposes.

Figure 2. Mobile applications/tools use in different tasks.



Pre-service teachers’ attitudes and perceptions toward using m-learning.

Results of Likert-type statements dealing with pre-service teachers’ attitudes and perceptions towards the use of mobile learning are displayed in Tables 1,2 and 3. The calculation of the mean score results in a value of between 2.37 and 2.56. A score above the minimum of 2.5 points indicates positive perceptions and attitudes. The mean scores in Table 1 revealed that the majority of the preservice teachers agreed that they enjoyed using mobile apps/tools for assignments ($\bar{x}AT2 = 2.52$), considered it a good way to learn ($\bar{x}AT3 = 2.50$), found it made studying more interesting ($\bar{x}AT4 = 2.60$), considered studying with mobile apps/tools to be fun ($\bar{x}AT5 = 2.50$), liked studying with mobile apps/tools ($\bar{x}AT6 = 2.60$), and liked the idea of using mobile apps/tools for learning purposes ($\bar{x}AT1 = 2.50$). However, the majority of the participants expressed that using m-learning for lectures is not satisfying ($\bar{x}AT1 = 2.40$).

Table 1. Statements in the questionnaire on students’ attitudes towards using mobile learning.

Please indicate the extent to which you agree or disagree with each statement below.	Percentage (%)				Mean	Std. Deviation
	SD	D	A	SA		
I like lectures more when I use m-learning (A1).	21.2	28.8	38.5	11.5	2.40	0.955
I enjoy using mobile apps/tools for lectures (A2).	17.3	21.2	53.8	7.7	2.52	0.874
Using mobile apps/ tools in lectures is a good way to learn (A3).	19.2	19.2	53.8	7.7	2.50	0.897
Using mobile apps/ tools makes studying more interesting (A4).	19.2	15.4	51.9	13.5	2.60	0.955
Studying with mobile apps/ tools is fun (A5).	23.1	15.4	50.0	11.5	2.50	0.980
I like studying with mobile apps/tools (A6).	19.2	17.3	48.1	15.4	2.60	0.976
I like the idea of using mobile apps/tools for learning purposes (A7).	23.1	11.5	57.7	7.7	2.50	0.939
Overall attitude	24.2	11.1	55.5	9.3	2.54	0.887

Table 2. Statements in the questionnaire on students’ perceptions (perceived ease of use) towards using mobile learning.

Please indicate the extent to which you agree or disagree with each statement below.	Percentage (%)				Mean	Std. Deviation
	SD	D	A	SA		
Mobile learning apps/tools are easy to use (PEOU1).	23.1	13.5	42.3	21.2	2.62	1.069
Using mobile learning apps/tools makes it easy to access course material for my learning (PEOU2).	21.2	11.5	50.0	17.3	2.63	1.010
Mobile learning apps/tools are easy to operate (PEOU3).	19.2	19.2	38.5	23.1	2.65	1.046
My learning-related interactions with mobile technologies (accessing course content, submitting assignments, etc.) are clear and understandable (PEOU4).	19.2	17.3	40.4	23.1	2.67	1.043
Interacting with mobile apps/tools for learning purposes does not require a lot of mental effort (PEOU5).	15.4	25.0	46.2	13.5	2.58	0.915
Learning to use mobile apps/tools for learning purposes would be easy for me (PEOU6).	19.2	17.3	48.1	15.4	2.60	0.975
Overall Perceived Ease of Use	16.7	18.5	44.4	20.4	2.62	0.913

Table 3. Statements in the questionnaire on students' perceptions (perceived usefulness) towards using mobile learning.

Please indicate the extent to which you agree or disagree with each statement below.	Percentage (%)				Mean	Std. Deviation
	SD	D	A	SA		
Using mobile apps/tools improves my ability to learn (PU7).	21.2	13.5	44.2	21.2	2.65	1.046
Using mobile apps/tools helps me get my work done more quickly (PU8).	19.2	13.5	44.2	23.1	2.71	1.035
Using mobile apps/tools for learning purposes improves my performance in my classes (PU9).	25.0	9.6	50.0	15.4	2.56	1.037
Using mobile apps/tools for learning purposes increases my productivity (PU10).	17.3	15.4	50.0	17.3	2.67	1.964
Using mobile apps/tools in my studies enables me to accomplish learning tasks more quickly (PU11).	23.1	13.5	44.2	19.2	2.60	1.053
If I use mobile apps/tools for learning purposes, it will increase my chances of getting a higher grade (PU12).	19.2	21.2	46.2	13.5	2.54	0.959
Overall Perceived Usefulness	18.5	14.8	50.0	16.7	2.62	0.957

Tables 1, 2 and 3 show that the overall perception and attitude of the sampled preservice teachers towards mobile learning was positive. The overall percentage of sampled preservice teachers' positive attitudes towards mobile learning was 64.6% (Mean 42.54 ± 0.887 SD), while their perceptions in terms of perceived usefulness were (66.1%, Mean 2,62 ± 0.957 SD) and perceived ease of use was (64.8%, Mean 2,62 ± 0.913 SD). This could be explained by the nature of the compulsory computer courses that the University offers for the first two years of study (Orgaz et al., 2018). Nevertheless, research has argued that students still rely on institutions and instructors to provide them with opportunities and encouragement to use mobile devices for academic purposes, even when they acknowledge the potential of mobile devices for academic purposes (Chen et al., 2015). An Independent samples t-test was calculated to analyse differences in the attitudes of the respondents based on gender, as shown in Table 4.

Table 4. Independent Sample Test.

		Levene's Test for Equality of Variances		t-test for Equality of Means				95% Confidence Interval of the Difference		
		F	Sig.	t	df	Significance Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Attitude	Equal variances assumed	1.739	.193	-.256	50	.799	-.07001	.27362	-.61960	.47957
	Equal variances not assumed			-.233	21.658	.818	-.07001	.30081	-.69442	.55439
Perceptions	Equal variances assumed	.225	.637	-.220	50	.826	-.06411	.29089	-.64839	.52016
	Equal variances not assumed			-.212	23.936	.834	-.06411	.30291	-.68938	.56115

The findings in Table 4 show that Levene's Test for Equality of Variances is not statistically significant since the P value is greater than 0.05, which indicates that the variances between males and females are equal. The effect of assuming equal variances is evident in the last two rows in Table 4 where a slight reduction in the value of the t-statistic and a large reduction in the degrees of freedom (df) is observed. The t-test for equality of means was also used to check whether there is a difference between perceptions and attitudes towards using mobile learning for males and females. Findings for the t-test for Equality of Means in Table 4 show that the p-value (Sig.2-tailed) = 0.818 for attitude and 0.834 for perception, which is greater than 0.05. Thus, indicating that there is no significant difference between males and females when looking at their perceptions and attitudes towards the use of mobile technologies for learning, supporting the findings of Al-Emran (2016). However, the females (M = 2.54, SD = .831) scored significantly higher than the males (M = 2.47, SD = 1.04) on their attitude towards the use of mobile learning.

In addition, a multiple regression analysis was conducted to predict preservice teachers' perceptions and attitudes towards the use of mobile apps and tools for learning by gender and age. According to the results, attitudes of preservice teachers were not significantly associated with their age $F(1, 50) = 3.802, \beta = -.177, t = -1.950, p = .057, R^2 = .071$ and gender $b = .070, t = .256, p = .543, R^2 = .001$. However, pre-service teachers' attitude towards the use of mobile learning was found to be significantly influenced by their perceived usefulness (see Table 5). This supports the findings of Orgaz et al. (2018), which claims that student attitude toward technology influences their perception about technology.

Table 5. Multiple Regression Analysis.

Coefficients ^a						
Model	Unstandardized Coefficients			Standardized Coefficients	t	Sig.
	B	Std. Error	Beta			
1	(Constant)	.209	.118		1.778	.082
	PU	.706	.176	.774	4.019	<.001
	PEOU	.174	.184	.181	.942	.351

a. Dependent Variable: ATTITUDE

5. Conclusion and recommendation

The results of this study showed that preservice teachers who perceive the use of mobile apps/tools for learning as beneficial are more likely to have a positive attitude towards their use as long as they receive the necessary educational training to improve their proficiency in utilizing such mobile learning tools/apps. Moreover, findings reveal that pre-service teachers' perceptions and attitudes towards the use of mobile apps/tools for learning do not differ regarding age and gender. As a result, it is recommended that teacher education programs implement effective technology-assisted training programs that will familiarize pre-service teachers with the pedagogical skills and experiences required to build their confidence in using mobile apps/tools in their teaching practices. Furthermore, teacher education programs should introduce preservice teachers to the ideas of mobile learning and provide learning opportunities that can foster their knowledge and effectiveness in utilizing mobile apps/tools for teaching and learning.

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