



Attitude of Science Education Students towards the Use of Mobile Learning in Nigeria

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ABSTRACT

This study investigates the Attitude of Science Education Students towards the Use of Mobile Learning. Students Attitude Mobile-Learning Questionnaire was the instrument used in data collection with a five-point Likert scale questionnaire. The reliability of the instrument was established $r = 0.89$ using Cronbach alpha at 0.05 level of significance. The questionnaire was administered to 511 students from the 4 units in the Science Education Department. The sample was selected using a simple random sampling method. Data were collected and analyzed using descriptive statistics of mean and standard deviations to answer the research questions while inferential statistics of two-way analysis of variance (ANOVA) statistics was used to test the two hypotheses stated at 0.05. The results showed no significant differences. The F-test calculated values were less than the F-critical values. Findings from the study indicated mobile-learning significantly improves students' interest in learning. Also, there was no significant difference in gender attitude towards the use of mobile learning. As a result of these positive results, students could study any course that involves the use of mobile learning. It is therefore recommended that mobile-learning should be encouraged in the teaching and learning process.

INTRODUCTION

Mobile-learning is the acquisition of any knowledge or skill through using mobile technology, anywhere, anytime (Geddes, 2004). Technology influences how people learn, and therefore what makes for effective learning and effective pedagogy (Beetham & Sharp, 2007). The learning experience crosses spatial, temporary and/or conceptual borders and involves interactions with fixed technologies as well as mobile devices. Weaving the interactions with mobile technology into the fabric of pedagogical interaction that develops around them becomes the focus of attention

(Kukulka-Hulme, Sharples, Milrad, Arnedillo-Sanchez & Vavoula, 2009).

According to Mole net, mobile-learning can be defined broadly as the exploitation of ubiquitous handheld technologies, together with wireless and mobile phone networks, to facilitate, support, enhance and extend the reach of teaching and learning. Mobile learning can take place in any location, at any time, including traditional learning environments such as classrooms as well as workplaces, at home, in the community locations and transit. Mobile technologies include mobile phones, smartphones, PDAs, MP3/MP4 players (e.g., iPod), handheld gaming devices

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(e.g., Sony PSP, Nintendo DS), ultramobile PCs (UMPCs), mini-notebooks (e.g., Asus EEE), handheld GPS or voting devices and specialist portable technologies used in science labs, engineering workshops or for environmental or agricultural study. Mobile learning involves connectivity for downloading, uploading and/or online working via wireless networks, mobile phone network or both and linking to institutional systems e.g., virtual learning environments (VLEs) and management information system (MIS). It should be noted that there is no agreed definition of mobile-learning, partly because the field is experiencing rapid evolution, and partly because of the ambiguity of mobile-does it relates to mobile technologies, or the more general notion of learning mobility.

A publication by Smidts, Hordijk & Huizenga (2008) highlight the potential for playful and creative use GPS (Global Positioning System) and mobile technology in education. The authors note that with the use of GPS, new possibilities emerge when a pupil starts learning with a mobile device that has a GPS functionality. The position of the pupils with devices can be received by the GPS through the satellites, on this basis, the pupils can receive specific information and locations on their devices. In this manner, a connection will be formed between the physical and the virtual worlds in which the pupils find themselves; several layers of information are accessible at the same time (Smidts, Hordijk & Huizenga, 2008).

Most mobile devices are useful in education as administration, organization and teaching aids for practitioners, and also as learning support tools for learners. Mobile learning helps access documents or document library, participate in lessons and tutorials, receives lectures archived or live broadcast, exhibit students' work among others. Mobile-learning increase students' motivational level as ownership of handheld

devices seems to increase commitment to using and learning from it (Masoud, Msoud, Vahid & Ali, 2011).

Interest increases student's success in learning. It is a preference for a particular type of activities which is the tendency to seek out and participate in learning the tasks (Ugbodun 2017). According to Adedeji (2007) cited in Tali and Peter (2019), states that interest in activities tends to increase the likelihood that individuals formulates goals relating to that activity and invest more effort to achieve. Interest is an essential variable that could enhance or decline learners' performance. A study carried out by Yukun, Tao, Zhongyi & Mboni, (2013) on "exploring gender differences on general self-efficacy in mobile learning adoption" revealed that there are no significant differences in specific interest on computer self-efficacy.

Kulik (2002) considered computer-based instruction as a learner-centred method that allows students to progress at their own pace as they learn individually or in the group. The use of ICT gargets in the teaching of science has been found by some studies not only to enhance student's achievement in various concepts but also to motivate them to learn, thereby aiding the development of their social skills and sustaining their understanding (Devi, Chinnaiya & Dhevkrishnan, 2012).

Attitude are psychological constructs theorized to be composed of emotional, cognitive and behavioural components (Zan & De Martino, 2007). Attitude is defined as the positive or negative degree of the effect associated with a certain subject or learned predisposition to respond positively or negatively to certain objects, situations, concepts or persons (Bohner & Wanke, 2009; Bramlett & Herron, 2000). Attitude consists of three component which is a response, beliefs regarding the subject, and behaviour related to the subject



(Adebule & Aborisade, 2013). Research on evaluating pre-service teachers' acceptance of mobile learning with regards to their age and gender shows that there are no gender and age differences regarding the purpose for using smart mobile devices for learning (Stamatios, 2018).

Gender is a contemporary variable for researchers because of its effect on science teaching, learning and interest. The issue of gender is significant in the interest of learning (Tali & Peter 2019). A study carried out by Olasunde (2013) revealed that there is no significant difference in the interaction effect of strategy and gender in interest using simulation game approach. Gender factor did not show a significant effect on intention towards mobile learning usage (Garry, Keng-Bon, Jia & Kongkiti, (2012) on the determinant of mobile learning adoption: an empirical analysis

The educational sector in Nigeria has been faced with a series of challenges in learning especially this face of the pandemic in which the country is faced with. As a result of this pandemic known as Covid-19, the federal government and the state government has to result in ensuring the closure of schools for certain periods. During this pandemic, Prince Abubakar Audu University management came up with the use of mobile learning for all students via google classroom, Microsoft team, and zoom among others. It is in line with these challenges that this study seeks to investigate the "Attitude of Science Education Students Towards the Use of Mobile-Learning in Prince Abubakar Audu University, Nigeria.

Research Questions

- 1 Is there any significant difference in students' interest in the use of mobile learning and their attitude towards it?

- 2 Is there any difference in the attitude of male and female students towards the use of mobile learning?

Null Hypotheses

- Ho1: There is no significant difference in students' interest in the use of mobile-learning and attitude towards the use of mobile learning.
- Ho2: There is no significant difference in the attitude of male and female students towards the use of mobile learning

METHODOLOGY

A survey method was used to conduct the study. The population of the study was a total of 1375 science education students from four units which were mathematics, physics, biology and chemistry. A simple random sampling technique was used to select 511 subjects for the study. The instrument used for this study was Students Attitude towards the use of Mobile-Learning Questionnaire (SATMLQ). This is adapted from the 5-point Likert attitude scale designed by (Morgan & Ferreira, 2018). The reliability and validity of the instrument were determined. The reliability of the instrument was found to be $r = 0.89$ using Cronbach alpha at 0.05 level of significance. Experts in the science education department ascertain both the face and content validity.

For data analysis, the attitude of students towards the use of mobile learning was determined, the students' score from SATMLQ were in form of frequency distributions table with the range of 83 to 227 scores and a class interval of 10 starting from 83. A mean score of 155.6 and a standard deviation of ± 28.5 was used to determine the positive, negative and neutral attitude of students. Students who score above half standard deviation added to the



mean 169.8 are regarded as having a positive attitude. Those who scored below half standard deviation subtracted from the mean 141.4 are regarded as having a negative attitude. Those whose scores are

between the two extreme scores are regarded as having a neutral attitude. Results from these analyses were used to test the hypotheses using a two-way analysis of variance (ANOVA).

RESULTS AND DISCUSSION

The result from testing the hypotheses are presented as follows:

Hypothesis One: There is no significant difference in students' interest in the use of mobile-learning and attitude towards the use of mobile learning.

Table 1: Two-way ANOVA for the difference in Students Attitude and Interest in the use of Mobile-Learning.

Source of Variance	Df	Sum of squares	Mean squares	F ratio	F crit	α – level	P-value
Between Groups	1	8066.67	8066.67	1.62	18.51	0.05	0.0000
Within Groups	2	9942.33	4971.17				
Total	3	18009					

From table 1 above, $F_{cal} < F_{crit}$, the null hypothesis is accepted. Therefore, there is no significant difference between the attitude and interest of students in the use of mobile learning of students.

Hypothesis Two: There is no significant difference in the attitude of male and female students towards the use of mobile learning

Table 2: Two-way ANOVA for the gender difference in attitude towards the use of mobile learning

Source of Variance	Df	Sum of squares	Mean squares	F ratio	F crit	α – level	P-value
Between Groups	1	12330.67	12330.67	13.43	18.51	0.05	0.0000
Within Groups	2	1836.33	918.17				
Total	3	14167					

From the above table 2, $F_{cal} < F_{crit}$ hence the null hypothesis is accepted. Therefore, there is no significant difference in the attitude of gender towards the use of mobile learning. The general attitude of the students towards the use of mobile-learning was determined to be positive from the mean of the frequency distribution which started between the range of 83 to 227

scores and at a class interval of 10. A mean score of 155.6 and a half standard deviation of 14.25 was used to conclude. The results from these analyses were used to test the two hypotheses stated using ANOVA.

The hypotheses tested showed that there is no significant difference between the mobile learning attitude of students in terms of interest and gender. Hypothesis



one showed that interest in the use of mobile learning does not determine one's attitude towards it (Ugbodun 2017). According to Adedeji (2007), states that interest in activities tends to increase the likelihood that individuals formulates goals relating to that activity and invest more effort to achieve. Interest is an essential variable that could enhance or decline learners' performance. This is also supported by Masoud, Msoud, Vahid & Ali, (2011) on their study on mobile-learning increase students' motivational level as ownership of handheld devices seems to increase commitment to using and learning from it.

In the case of hypothesis two, the attitude of students towards the use of mobile-learning remains the same irrespective of gender. This supported the findings of Olasunde (2013) revealed that there is no significant difference in the interaction effect of strategy and gender in interest using simulation game approach. Gender factor did not show a significant effect on intention towards mobile learning usage (Garry, Keng-Bon, Jia & Kongkiti, (2012) on the determinant of mobile learning adoption: an empirical analysis.

CONCLUSION

Science education students have a positive attitude towards the use of mobile learning. The two hypotheses tested have no significant difference in the attitude of students towards the use of mobile learning in terms of interest and gender. It is believed that mobile-learning could be an essential factor in involving students in learning where more traditional methods have failed. Mobile-learning could be said to have been so intriguing because it has an affinity with movement between indoors and outdoors, across formal and informal settings

RECOMMENDATIONS

Based on these findings, it is recommended that the use of mobile learning be encouraged among all tertiary institution students. It should also be recommended at both primary and secondary level.

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