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Ease and Level of use of Smartphone for Learning Amongst Pre-Service Teachers Colleges of Education in North-West, Nigeria

Abdullahi Abubakar Ismaila[1], Abdullahi Kadage Tukur[2], Isiaka Amoson Gambari[3]

[1]Department of Curriculum Studies, Faculty of Education, Sokoto State University, Nigeria
[2]Department of Educational Foundations and Curriculum Studies, Faculty of Education and Extension Service, Usman Danfodiyo University, Nigeria
[3]Department of Educational Technology, Federal University of Technology, Minna, Nigeria
E-mail: abdullahi.ismailabubakar@ssu.edu.ng

Abstract

This study "ease and level of use of smartphone for learning amongst pre-service teachers colleges of education in North-West, Nigeria" was guided by two objectives, two research questions. The researchers used descriptive survey research design in the study. The researchers used mixed method (quantitative and qualitative) for data collection. The population of the study was 113,030. Random sampling technique was employed to select the sample. The total population of the sample is 32,300. The entire sample that was chosen is 371 for quantitative which is in line with Raosoft sample size and 6 for qualitative. The instruments used for data collection were adopted questionnaire prediction of user acceptance and adoption of smartphone for learning with technology acceptance model questionnaire (PUAASLTAMQ) by Sek, et al, (2010) and data-blank. The frequency and percentage were employed to analyze the respondents' demographic information. To answer research question one (1), descriptive statistics (frequencies and percentages) were used. To answer research question two t-test was used. The summary of the major findings indicated that smartphone is very easy to use for learning by the pre-service teachers in Colleges of Education in North-West, Nigeria and male pre-service teachers in Colleges of Education in North-West, Nigeria use smartphone for learning more than their female counterpart. The research shows that smartphone may be accepted as instructional tool in future, because the mode of smartphone operation is not difficult.

Keywords: Smartphone; Learning; Education.

INTRODUCTION

No doubt technology becomes part and parcel of all human endeavor, in Administration, Finance, Military, Business, Education, just to mention but a few. The North-West, Nigeria States has been contributing to the development of Education in the country through its various Colleges of Education. The proactive effort of North-West States government on pre-service teachers' education is in line with the assertion contains in the National Policy on Education (2013), which is considered as an instrument for national development. However, with the contemporary technological advancement, there is need to emphasize on students' skills and competence in various tertiary institutions in the country (NPE, 2013).

Technological advancement makes open revolution in education and new technology emerged in teaching and learning, where e-learning, blended learning and collaborated learning becomes an integral part of technology in education in its all aspect by merely future. The use of technology is globally recognized due to its contributions to human existence and socio-economic development. Wireless communication has emerged as one of the fastest diffusing media on the planet, fuelling an emergent "mobile youth culture" (Kingsley, 2013). For many years, researchers have been interested in identifying the conditions or factors that facilitated technology integration into businesses. Over time, models were developed and tested to predict technology acceptance. Among these models, the Technology

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Acceptance Model (TAM) is arguably the most popular (Teo, 2008). Undoubtedly, the wireless technology can be used for leisure as well as for academic purposes. Indeed, mobile phones such as smartphone have been useful for learning purposes in the recent.

Onwards mobile learning (m-learning) describes new form of learning that merge e-learning with mobility. However, mobile learning is the new dimension of e-learning, for example, Falade and Alimi, 2014, explained e-learning as learning supported by digital tools and media. It is also explained that mobile learning as e-learning that uses mobile devices and wireless transmission. According to this, many similarities can be found when comparing mobile with e-learning. It is obvious that both applications came to support and enhance the learning experience by utilizing technology. On one hand, both applications further provide common services such as the delivery of the learning content, support learners and provide quizzes and assessments. On the other hand, there are some differences between the two learning forms. Mobile learning is more flexible than e-learning; Mobile learning supports the learner's mobility by providing access to the learning content anywhere and anytime while in e-learning the mobility is constrained to the weight and the size of desktop or laptop computers. Furthermore, transport mobile device have some capabilities that can be delivered with greater ease than any other electronic devices (Falade et al*,* 2014). Indeed, smartphone are parts of devices useful for both mobile learning and e-learning.

A smartphone is a device that combined the normal function of phone of sending and receiving telephone calls with other functions that are computer related. It is mobile phone with more advanced computer capability and connectivity than regular phone. The first smartphone combined the functions of a personal digital assistant (PDA) with a mobile phone. Later models added the functionality of portable media players, low-end compact digital cameras; pocket video cameras, just to mention but a few. Many modern smart phones also include higher resolution touch screens and web browsers that display standard web pages as well as mobile-optimized site. High speed data access is provided by Wi-Fi and broadband (Ibrahim & Ibrahim, 2015).

Bisen, S., & Deshpande, Y. (2016), in their study, they found that male students are more prone to smartphone addict compare to female students. Female students also equally posing risk increasing in utilization of smartphone in near future. Male students are more interested in using cell phones in their studies, Muhanna, W. N., & Abu-Al-Sha'r, A. M. (2009). Jena, (2014) there is no relation between smartphone usage and gender of the students.

Banda (2011) and Ho (2014) suggested that perceived ease of use has a direct effect on positive attitude. But Hassan, M., Kouser, R., Abbas S. S., & Azeem, M. (2014), argue that there is no direct relationship between PEOU and behavioral intention, whereas easy use of technology might be influential to users' perceived usefulness and affecting users' adoption intention indirectly.

Pre-service teachers may find smartphone very difficult to use for learning which may or not make them lose interest to utilize it. And female pre-service teachers' in colleges of education may use smartphone for learning more than male.

The Pre-service Teachers of Colleges of Education in North-West, Nigeria may not accept smartphone as tool that would help them to achieve their academic purposes, if they have this belief they could not use the technology for learning. Some pre-service teachers hardly use smartphone because of its mode of operation. Such pre-service teachers usually find it very difficult to operate and use such devices for academic activities, for instance, accessing network, installation of Apps, browsing, downloading file become quite tasking for them, and it could not be possible to used smartphone without knowing how to operate it, as such they may not used it for academic activities.

It seems female Pre-service Teachers in Colleges of Education in North-West, Nigeria engage their time with smartphone more productively for academic or other purposes than their male counterparts. In most cases, they use it to interact with their peers for social media apps such as facebook, whatsapp, 2go to mention but a few. This is telling us even if they used the smartphone more than male, there is a problem because of how they used the technology. More so, there is no sufficient academic research on the "ease and level of use between male and female pre-service teachers' adoption of smartphone for learning in Colleges of Education in North-West, Nigeria".

Therefore, there are two underlining factors, i.e. perceived ease of use and level of use with regard to the adoption of smartphone for learning among pre-service teachers' in North-West, Nigeria.

The objectives of this study are to examine the extent to which pre-service teachers in Colleges of Education in North-West, Nigeria find smartphone easy to use for academic purposes and find out how the use of smartphone differs between male and female pre-service teachers in Colleges of Education in North-West, Nigeria.

METHOD

Descriptive survey research design was used in this study, the selection of this design allowed the researcher to collect sample from a large group based on the opinion and perception of people and subject the data to analysis. The researchers used mixed method research through the use of quantitative and qualitative mode of data collection; as such research became more interesting and qualitative. More so, the researcher used convergent mixed method approach. This enabled the researcher to collect data separately (both quantitative and qualitative data), later compares them and see the result if the findings is the same or not.

The target population of the study is the pre-service teachers of fourteen Colleges of Education in North-West, Nigeria. A total of One hundred and seventeen thousand, one hundred and forty (113,030) pre-service teachers are studying in the fourteen colleges of education in North-Western, Nigeria. The details about the names of institutions and population of the pre-service teachers' are presented in Table 3.1.

Random sampling technique was employed to select the sample from the colleges of education selected. The researcher relied on every member of the population likely to be selected to participate as representative of the whole. The Colleges of Education that were selected as per the population were Federal College of Education, Zaria, Kaduna State, Shehu Shagari College of Education, Sokoto, Sokoto State and Zamfara State College of Education, Maru, Zamfara State. The population of each institution listed above is: 14,221, 12,244, and 5,835 respectively. However, the total population of the sampled colleges is 32,300. Hence, the sample that was drawn from the FCE, Zaria was as follows:

$$\frac{375\times14{,}221}{32{,}300}=165,\ \text{SSCOES was}\ \frac{373\times12{,}244}{32{,}300}=141\ \text{while ZSCEM was}\ \frac{361\times5{,}835}{32{,}300}=65$$

Table 3.1: Name of Colleges and their respective pre-service teachers' population:

S/N	Name of the College	Population
1	Jigawa College of Education, Gumel, Jigawa state.	8,582
2	Federal College of Education, Zaria, Kaduna State.	14,221
3	Kaduna State College of Education, Gidan-Waya, Kafanchan, Kaduna State.	7,324
4	Federal College of Education, Kano, Kano State.	15,235
5	Federal College of Education (Technical), Bichi, Kano State.	9,983
6	Sa'adatu Rimi College of Education, Kumbotso, Kano State.	8,123
7	Federal College of Education, Katsina, Katsina State.	10,151
8	Imam Sa'idu College of Education, Funtua, Katsina State.	1,105
9	Isa Kaita College of Education, Dutsin-Ma, Katsina State.	7,896
10	Adamu Augie College of Education, Argungu, Kebbi State.	7,101
11	Biga College of Education, Arkilla, Sokoto, Sokoto State.	2,80
12	Shehu Shagari College of Education, Sokoto State.	12,244
13	Federal Girls College of Education (Technical), Gusau, Zamfara State.	4,950
14	Zamfara State College of Education, Maru, Zamfara State.	5,835
	Total	**113,030**

Source: Academic Office of the Colleges of Education in North-West, Nigeria.

The entire sample that was chosen is 371 for quantitative, which is in line with Raosoft sample size. Raosoft is a software programmed to give a researcher readymade and correct sample of given population. Once you enter your population, it will give you the sample population. According to Raosoft 5% is a common choice for margin of error that can be accepted, 95% was selected as confidence level. The name of institutions, population and sample size were presented in Table 3.2.

Table 3.2: Name of institutions, population and sample size for quantitative:

S/N	College of Education	Population	Sample Size
1.	Federal College of Education, Zaria, Kaduna State.	14,221	$\frac{375\times14,221}{32,300}$ =165
2.	Shehu Shagari College of Education, Sokoto State.	12,244	$\frac{373\times12,244}{32,300}$ =141
3.	Zamfara State College of Education, Maru, Zamfara State.	5,835	$\frac{361\times5,835}{32,300}$ =65
	Total	**32,300**	**371**

The qualitative sample is smaller than that of quantitative. The entire population that was chosen is 6, 2 from each school i.e. 1 male and 1 female (See Table: 3.3). The data for qualitative sample will be smaller than that of the quantitative. This is because the intent of using qualitative method is to locate and obtain information from a small sample and to gather extensive information from the sample; whereas, in quantitative research, a large number is needed in order to conduct meaningful statistics analysis (Creswell, 2014 and Bian, 2017).

Table 3.3: Name of institutions, population and sample size for qualitative:

S/N	College of Education	Population	Sample Size
1.	Federal College of Education, Zaria, Kaduna State.	14,221	2
2.	Shehu Shagari College of Education, Sokoto State.	12,244	2
3.	Zamfara State College of Education, Maru, Zamfara State.	5,835	2
	Total	**32,300**	**6**

The reason behind the selection of FCE Zaria, SSCOE Sokoto and Zamfara SCEM were due to the time factor, financial constraint and logistics problem.

Structured questionnaire was used to collect data. The questionnaire by Sek, Lau, Teoh, Law & Parumos (2010), Prediction of user acceptance and adoption of smartphone for learning with technology acceptance model questionnaire (PUAASLTAMQ) was adopted in this study. The questionnaire adopted has two parts; part A and B, these two parts make one single instrument. Part A is for demographic information of the respondents with 7 items, while part B contains 6 items based on ease of use, which were developed through Sek et al, (2010), (PUAASLTAMQ) questionnaire. In Part A, the respondents' tick (√) appropriate answer in the spaces provided. In Part B, the respondents tick (√) the appropriate option, the abbreviation in the columns: SD, D, N, A, SA; stand for: S.D. = Strongly Disagree, D= Disagree, N= Neutral, A= Agree, S.A. = Strongly Agree which were answered based on five Rensis Likert scale 1-5. The responds told us the accurate personal opinion of the respondents.

Individual Interview

The three institutions (College A, College B, and College C) were used for collection of data from the respondents through data-blank. 6 pre-service teachers were selected, two from each college (one male and one female).

The responses were analyzed one after the other, summarizing the key points of the elucidation by the respondents which make the researcher to arrive at the right decision/interpretation.

Procedure for Data Collection

An introductory letter was presented to the concerned authorities at tertiary institutions where the data was collected. The researcher also explained the purpose of the study to the various authorities.

Procedure for Data Analysis

Data was analyzed in two stages which are: demographic information and the level of use between male and female pre-service teachers for academic activities was analyzed using part A of the instrument, while part B of the instrument used to analyzed how pre-service teachers' find smartphone easy to use for academic purposes.

The research quantitative data collected was analyzed using Statistical Package for Social Science (SPSS) version 16:0; the study used frequency count and simple percentage to elucidate the demographic data of the respondents. To answer research questions one (1), descriptive statistics (frequencies and percentages) were used. To answer research questions two (2) t-test was used. While, the qualitative data collected from individual interview were interpreted and right decision were made. There are two ways of analyzing qualitative data. One of the approaches is to examine your findings with a pre-defined framework, which reflects your objectives. This approach is relatively easy and is closely aligned with policy and programmatic research which has pre-determined interests. This approach allows you to focus on particular answers and abandon the rest. We refer to this approach as 'framework analyses' (Celano, nd).

RESULT AND DISCUSSION

Descriptive statistics was used to analyze research question 1, while research question 2 t-test was used. Individual interview was analyzed through interpretation of data collected via data blank.

Research Question One: To what extent do pre-service teachers in colleges of education in North-Western Nigeria find smartphone easy to use for learning purpose? This research question is answered using frequency and percentage. Summary of the analysis presented in Table 4.5.

Table 4.5 confirmed that, the sampled respondents 256 (69%) agreed that learning through the use of smartphone was easy for them; 84 (22.7%) disagreed with the statement while only 31 (8.4%) were neutral with the statement.

It was perceived by the majority of the respondents 242 (65.3%) that they agreed that they find it easy to get smartphone what they want to do. However, 97 (26.1%) disagreed with this while 32 (8.6%) maintained neutrality with the statement.

Table 4.5: The Extent by which Pre-Service Teachers find Smartphone easy to us for Learning Purpose

S/N	Items	Disagree	Neutral	Agree
1.	Learning using Smartphone for learning would be easier for me.	84 (22.7%)	31 (8.4%)	256 (69%)
2.	I would find it easy to get a Smartphone to do what I want it to do.	97 (26.1%)	32 (13.7%)	242 (65.3%)
3.	My interaction with a Smartphone would be clear and understandable.	83 (22.4%)	47 (12.7%)	241 (65%)
4.	I would Smartphone to be flexible to interact with.	93 (25.1%)	49 (13.2%)	229 (61.7%)
5.	It would be easy for me to become skillful at using Smartphone.	92 (24.8%)	59 (15.9%)	220 (59.3%)
6.	I would find Smartphone easy to use.	71 (19.1%)	36 (9.7%)	264 (71.2%)
	Cumulative Percentage	**23.36%**	**12.26%**	**65.25%**

Moreover, the respondents (241 or 65%) agreed that their interaction with smartphone would be clear and understandable 83 (22.4%) disagreed on this while 47 (12.7%) were neural.

In addition, the majority of the respondents 229 (61.7%) agreed that they would find smartphone to be flexible to interact with 93 (25.1%) disagreed with the statement while 49 (13.2%) were neutral in this regard.

The sampled respondents 171 (59.3%) agreed that they are skillful at using smartphone 92 (24.8%) disagreed with the statement while 59 (15.9%) maintained neutrality.

The respondents 233 (71.2%) agreed that they find smartphone easy to use 20 (20%); 71 (19.1%) disagreed with this while 36 (9.7%) were neutral with this. Pre-service teachers in colleges of education in North-Western Nigeria find smartphone very easy to use for learning purposes; this is so because the percentage of 65.25% is greater than 23.36% and 12.26%.

Research Question Two: How does the use of smartphone for learning differ between male and female pre-service teachers in colleges of education in North-Western Nigeria?

This research question is answered using t-test. Summary of the analysis presented in Table 4.6.

Table 4.6: The use of smartphone for learning differ between male and female Pre-Service Teachers in colleges of education in North-Western Nigeria.

	Gender	N	Mean	Std. Deviation
Use of Smartphone	Male	186	21.4409	5.41162
	Female	185	21.0541	6.25780

The result revealed that, there was significant difference in score for males (M=21.44; SD=5.42) and females (M=21.05; SD=6.25; t (369) =0.63, p=.11 two-tailed). The magnitude of the differences in the means (means difference=.38' 95% CI=-1.80-1.58). Table 4.6 shows the use of smartphone for learning differs between male and female pre-service teachers in Colleges of Education in North-West, Nigeria.

Analysis of Individual Interview

Quantitative and qualitative instruments were used in this study to improve the quality of research findings in order to make good elucidation on the quantitative data. Individual interview was held with six pre-service teachers selected at random from three institutions. The institutions are: FCE, Zaria (A), SSCOE, Sokoto (B) and ZCOE, Maru (C). Several elements of an interview report are: themes and contents; methodology and methods (from designing to interviewing, transcription and analysis); result (the data analysis, interpretation and verification); and discussion (Alshenqeeti, 2014). Reporting is not just of what has been said, it has to include discussing and justifying the information and answers given (Alshenqeeti, 2014).

As your aim is to condense all of the information to key themes and topics that can shed light on your research question, you need to start coding the material. A code is a word or a short phrase that descriptively captures the essence of elements of your material (e.g. a quotation) and is the first step in your data reduction and interpretation (Celano, nd). Below are responses that were sampled of some respondents.

Respondent A1 (male)

"Smartphone is easy for me to use smartphone without any assistance. Smartphone will be the key instructional tool for teaching and learning".

Respondent A 2 (female)

"To use smartphone is not easy because of the network problems. Smartphone will be use for storing learning materials".

Respondent B 1 (male)

"Is not difficult for me to use smartphone, is very easy".

Respondent B 2 (female)

"I cannot use smartphone alone, but if someone assists me then I can use it".

Respondent C 1 (male)

"Smartphone is easy to use but I seek for assistance in case of new applications".

Respondent C 2 (female)

"Smartphone is easy to use; sometimes I seek for assistance from other people. For me smartphone will be good for learning in future".

With regard to qualitative research 6 pre-service teachers were interviewed, 2 each (1 male and 1 female) from College A, College B and College C. Base on the qualitative research findings: The pre-service teachers' find smartphone very easy to use for their learning, but few of them need to be guided incase of new application (they need someone to assist them). If they are guided then they can use smartphone without any difficulty.

CONCLUSION

In conclusion, smartphone is very easy to use for learning by the pre-service teachers in Colleges of Education in North-West, Nigeria and male pre-service teachers in Colleges of Education in North-West, Nigeria used smartphone for learning more than their female counterpart. The outcome of this research also showed us that in future smartphone may be accepted by the pre-service teachers' and their instructors as instructional tool.

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