

UNDERGRADUATE USE OF MOBILE TECHNOLOGY IN BLENDED LEARNING IN KOGI STATE UNIVERSITY, ANYIGBA

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Abstract

In most tertiary institutions in Nigeria, mobile Phones are not officially allowed in the classroom session for teaching and learning. This paper therefore, investigated the use of mobile technology for learning by undergraduate students of Kogi State University, Anyigba. It was conceived as a result of the overcrowding situation in the Nigeria university system. Quasi-experimental research design was used to elicit responses from 235 undergraduate students of the university who were purposively selected from 300L to form both the control and experimental group. Two research questions and two hypotheses guided the study. A researchers made essay test was used with Instructional Mobile Technology Package (IMTP) to elicit responses from the students. Mean and standard deviation were used to answer research questions while ANCOVA was used to test the hypotheses at 0.05 level of significance. The findings of this study revealed that the use of mobile technology by undergraduate students enhances better performance and also help to solve some of the challenges of overcrowding in the classroom but this is not without its attendant challenges. Among the recommendations is that the use of mobile technology should be in cooperated into the undergraduate curriculum at all levels of the university system.

Keywords: *Mobile-Technology, Blended Learning, Synchronous learning.*

Introduction

Mobile technology is becoming more popular in our educational system with increase in the enrolment and population explosion in the university education. Mobile technology is used for cellular communication. It is a form of technology that mostly used in cellular communication. These include general packet services GSM, multimedia messaging MMS, Bluetooth, 3G wireless fidelity WIFI global positioning system GPS etc. it is the technology that is portable, it refers to any devices that you can carry with you to perform a wide variety of tasks.

Information and communication technology is a principal driver in our Information Society of which the immediate consequences for educational practice can be observed (Kozma, 2005). Following this evolution, several authors have mentioned the need to shift from the traditional classroom setting, where the student is seen as a passive consumer of educational knowledge, to a classroom in which learners are considered active participants and where collaboration and sharing information in a resource-rich environment is given precedence (Hill & Hannafin, 2001; Pelgrum, 2001; Figueiredo & Afonso, 2005). Fallon (2013), observed that to advance this shift and the necessary educational reform, hardware and software developers promote new technological tools, and more specifically tablet devices, as magic devices. These tablets are more narrowly defined by the New Media Consortium in 2012 as iPads, Windows or Android devices, i.e. small, wireless, mobile personal computers which have finger-driven touch screens and are backed-up by diverse applications in a well-provisioned application market place (Melhuish, 2010, Clark & Luckin, 2013).

Hattie, (2013) claimed that the following conditions should be fulfilled in order to integrate technology into the classroom; namely the role of the teacher, the need of professionalization, and the need of adapted teaching and learning approaches.

While it can be argued that the use of technology during classes can support constructivist approaches (Linn, 1998; Sanhoitz, Ringstaff & Dwyer 1998), implementing technology into classes does not imply a radical change of the didactics (Stoddart & Niederhauser, 1993; VanDusen, 1995). According to Yelland, (2006), learning with technology needs more than making learning activities digital, it is also about creating 'contexts for authentic learning that use new technologies in integrated and meaningful ways to enhance the production of knowledge and the communication and dissemination of ideas'.

Obviously, with regard to integrating technology into the classroom setting, it is the teacher's main responsibility to facilitate this educational innovation (Chen, Looi & Chen, 2010; Vanderlinede, & Braak, 2011). In this light, Fullan, (2001) formulated three important dimensions for educational innovation: (1) the possible use of adaptive material; (2) the possible use of new teaching approaches and, (3) the possible change of beliefs. While the need to investigate perceptions is emphasized by numerous authors (Vanderlinde, & Braak, 2011; Fullan, 2001) who stress that cognisance of end users' perceptions of this technological innovation is crucial for predicting the success, speed and extent of its integration in classroom practice, teachers' beliefs and attitudes towards innovation should be examined. Furthermore, research of Fullan (2001) and Niederhauser & Stoddart (2001) show that teachers' beliefs are crucial; their beliefs are related to the actual uses of the implemented technology. The personal willingness of teachers to adopt and integrate innovations into their classroom practice is the key for successful innovation (Gess-Newsome, Southerland, Johnson, & Woodbury, 2003; Ghaith, & Yaghi, 1993; Groff, & Mouza, 2008).

The 21st century is characterized globally by a dynamic force for individual learners to collaborate and compete in a world which is driven by technology and information. The world is a global community where students in tertiary institutions should carve their niche as citizens of their country and a member of the global village where dignity of labour, skills and academic acquisition are paramount. University education should be committed to the appropriate, effective and sustainable use of information and communication technology to broaden access to and improve the quality and efficiency of education service delivery for the individual and the community. The introduction of mobile Learning (M-Learning) is a new paradigm shift in the education industry. The core idea of m-learning is to improve on past technology with a view to making life more self-realized, self-employed, skillful and technology centered. With the absolute use of m-learning, learning tasks would be easily surmounted by university students.

Mobile Technology is a form of technology that is usually used in cellular communication and other related aspects. It uses a form of platform where by many transmitters have the ability to send data at the same time on a single channel. This platform is called code-division multiple access (CDMA). This platform allows many users to make use of single frequencies because it restricts the likelihood of interference of frequencies from two or more sources. This channel has evolved over the years. The m-technology has improved from a simple device used for phone call and messaging into a multi-tasking device used for GPS navigation, internet browsing, gaming, instant messaging tool etc. M-technology through tablet and other portable computers are becoming more and more popular. This includes m-learning.

M-learning is an educational system. It is learning supports with the help of mobile devices, a continuous access to the learning process. It can be on appliances such as phone, laptop or tablet. Learning can take place whenever and wherever you want. M-learning is a form of e-learning whereby mobile devices, especially smart phones, are used to access learning resources on the internet or intranet and this is becoming acceptable. In advance country, more and more schools are using laptops or tablets, Children consider it to be a fun. There are increasingly more educational apps available for teachers. Examples of mobile learning in education include;

Offering mobile learning material: This is the easiest way of mobile learning. You can offer texts, videos or audios. It's possible to do this whenever you want. Participants are able to prepare homework by watching a video that the teacher has put online. This way of mobile learning is relatively less interactive. It's more

about individual consuming. There is no interaction with teachers or other students, which makes it an asynchronous way of learning.

Interaction during lessons: If you do want to have some more interaction, you can use mobile devices during your lessons. An example of this is asking questions during your instruction. Teachers ask questions and the pupils will answer them on their mobile devices. Teachers are able to get immediate feedback. This is especially easy for teaching large groups.

Synchronous learning: Immediate feedback from your teacher or fellow students? This is possible with synchronous learning. You are able to get direct feedback while you're at home. Teachers can interact with their students during their lectures.

There are four generations of mobile system world-wide which include: 1G wireless communication system which became commercially available in the early 1980s. The 2G mobile networks referred to as "digits" introduced in the early 1990s. The 3G, UMTS (Universal Mobile Telecommunication System) launched in 2001, it offers up to fifteen times the network capability of the analogue, incorporating voice, video, multimedia and broadcast data services. The latest is the 4G network referred to as B3G which came in to existence in 2010. 4G is intended to provide high speed, high capacity, low cost per bit. It also encompasses mobile TV, Mobile Virtual Networks Systems (MVNS) and mobile search and discovery. 4G extends the scenario to all internet protocol networks that integrate broadcast cellular and cordless, Wireless Local Area Network (WLAN) short range system and fixed wire.

According to Ring (2012), the main types of mobile devices used in education process include, Note book computer, tablet PC, Personal Digital Assistance (PDA), Cellular Phones, Smart Phones, Global System for Mobile Communication (GSM), Wireless Application Protocol (WAP), General Packet Radio Service (GPRS), Bluetooth, Infrared Data Association (IrDA). Among its characteristics are accessibility, interactivity, situating of instructional activities, adaptability, immediacy and permanency among others. Its prospects include but not limited to Short Message Services (SMS), cell broadcast, voice and call forwarding, e-commerce, mobile payment, e-banking, and e-learning. M-learning is not without its limitation, these include inadequate power supply, lack of raw material input, inappropriate infrastructural support, increased armed robbery and lack of technical and competent staff maintenance capacity which we believe are surmountable in the near future. M-learning as operated in some developed countries of the world should be introduced in to Nigeria University system in no distant future.

Purpose of the Study:

Most Universities in Nigeria are faced with students' population explosion, inadequate teaching staff and shortage of infrastructures, (Tolorunleke, 2010). Millions of Nigeria students apply for admission through JAMB yearly into the universities and other tertiary institutions, but unfortunately not even two third of them are placed by JAMB/universities. The question is "What happens to the rest?" If quality learning opportunities are to be created for all in the education industry, then formal education needs to be complimented by the informal through the sky. The question then is 'what alternative teaching strategy can the education system adopt to bridge the gap'.

Research Questions

1. Will there be difference in the mean achievement score of undergraduate taught using mobile learning?
2. Will there be difference in the mean achievement score of Male and Female undergraduate taught using mobile technology?

Research Hypotheses

The hypotheses were tested at 0.05 level of significance.

Ho1: There is no significant difference in the mean achievement score of undergraduate taught using Mobile technology and those taught conventionally.

Ho2: There is no significant difference in the mean achievement score of male and female undergraduate taught using mobile technology.

Methodology:

The study employed quasi-experimental design; the experimental research design is pre-test treatment/post-test groups. The two groups were pre-tested before the study to ensure equity in their cognitive background, after that the experimental group was taught using the IMTP; while the control group was taught using the conventional lecture method. The study was conducted for four weeks after which a post-test was administered to both groups. The population of the study consisted of all undergraduate students of Faculty of Education in Kogi State University, Anyigba. Purposive sampling was used to select 235 students who were willing to participate and has Whatapps enabled phones. They were then divided into experimental and control group contain 121 males and 114 females. The experimental group was made up of 123 students (68 male and 65 females) while the control group had 112 students (53 males and 59 females).

Whatapps application was used; a group was created for the students in the experimental group. The content of the lesson was sent on the students' phone two days before the class discussion while the control groups were only taught conventionally using lecture method. The two groups (i.e. experimental and control groups) were both exposed to the same examination and results computed.

Instructional Mobile Technology Package (IMTP) in video, audio and text mode designed by the researchers were used to teach the selected students for four weeks in educational technology. The instrument used to assess the students contains five essay researcher designed questions with option to answer any three questions. Both the experimental and control group were exposed to the same examination of paper and pen which was pre-test from other students that were not part of the study group. The assessment was based on standard rating of 0-39% Fail, 40-44% E Poor, 45-49% Fair, 50-59% Good, 60-69% Very Good, 70-above% Excellent. The data collected was analysed using mean, standard deviation to answer research question while the hypotheses were tested using ANCOVA.

Result

Research Question 1: Will there be difference in the mean score of academic performance of undergraduate students taught using mobile learning?

Table 1:
Mean achievement score of both groups

Group	N	Mean	STD	Mean diff.
Experimental	123	53.60	8.50	
Control	112	30.50	7.783	23.10

Table 1 shows that a difference in mean achievement score of 23.10 exist between the experimental and control groups. This difference is in favour of the experimental group.

Research Question 2: Will there be difference in the mean score of academic performance of Male and Female undergraduate students taught using mobile technology?

Table 2:
Mean achievement scores for male and female

Sex	N	Mean	STD	Mean diff.
Male	68	54.41	9.13	

Female	55	52.75	7.63	1.66
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Table 2 shows that a mean difference in achievement scores of 1.66 exists between male and female students taught using IMTP, this difference is in favour of the male students.

Ho1: There is no significant difference in the mean achievement scores of undergraduate students performance taught using Mobile technology and those taught conventionally.

Ho2: There is no significant difference in the mean achievement scores of academic performance of male and female undergraduate students taught using mobile technology.

Table 3:
ANCOVA analysis on method and sex

Source	Type III sum of squares	df	Mean square	F	Significance	Decision
Corrected model	31469.902	4	7867.475	117.518	.000	
Intercept	25636.44	1	25636.414	382.937	.000	
Pretest	13.281	1	13.281	.198	.656	
Method	29846.491	1	29846.491	445.823	.000	S
Sex	110.547	1	110.547	1.651	.200	NS
Method *sex	5.350	1	5.350	.080	.778	NS
Error	15397.783	230	66.947			
Total	474274.000	235				
Corrected Total	46867.685	234				

Table 3 revealed that the computed F (1.230). 445.823 for method is greater than f-critical (3.84), $p=0.000$ is less than 0.05. Based on the result, the null hypothesis is rejected and the alternative accepted at 0.05 level of significance. This implies that, there is a significant difference between the mean achievement scores of students taught using IMTP and those taught conventionally. The table also reveals that computed f (1.230), 1.651 for sex is less than f-critical (3.84) and $p=.200$ is greater than 0.05. Based on the result, the null hypothesis is upheld at 0.05 level of significance. This implies no significant difference between male and female achievement.

Discussion of Findings:

The data analysed in research question one indicated that there was significant difference in the post-test mean achievement scores of experimental and control groups after been exposed to the treatment. This simply means that students that are taught using IMTP performed better than those taught using conventional method. This study is in line with the study of Chaung and Chen (2009), Bala and Musa, (2006), Agwagah, (2000); and Alamina and Olubunmi, (2001). This may be as a result of the treatment with IMTP which allowed the student to interact with the learning materials before the class discussion giving the students opportunity to have better understanding of the concept of the lesson taught. The difference was found to be statistically significant. Furthermore, the study revealed close mean achievement scores between male and female students taught using IMTP. It shows that both male and female students benefited equally in the learning process, no statistical differences existed between the achievement scores of male and female students taught using IMTP. This result is in tandem with the works of Olagunju, (2001) and Aremu, (1999). The finding showed that there was no significant difference in the achievement of male and female students who were taught using the IMTP. It shows that the IMTP favoured both male and female students.

Conclusion:

It must be noted that in some tertiary institution, students are barred from using their phones in lecture classes while in some developed learning environment, mobile phones are required for learning. The study concludes
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that, use of mobile technology in blended learning by undergraduate students enhances better performance and increased their academic achievements.

Recommendation:

Based on the findings of this study, the following recommendations were made:

1. Mobile technology should be adopted into the Curriculum of the undergraduate students of Nigerian Universities.
2. Undergraduate students of Nigerian Universities should be allowed to make use of mobile technology devices as part of their learning resources within the classroom.

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