

EFFECTIVENESS OF FACEBOOK AND WHATSAPP SUPPORTED INSTRUCTIONAL PLATFORMS ON UNDERGRADUATE STUDENTS' ACHIEVEMENT IN EDUCATIONAL TECHNOLOGY

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Abstract

This study investigated the effectiveness of face book and whatsapp supported instructional platforms on undergraduate students' achievement in educational technology. A three by two (3x2) factorial design was adopted using pretest- posttest approach. Three research questions were raised to guide the study and three hypotheses were tested. A total of 180 educational technology students selected from three universities out of five universities offering educational technology in Nigeria were randomly assigned to Experimental Group I (exposed to facebook supported instructional platform), Experimental Group II (exposed to whatsapp supported instructional platform) and Control Group (taught through lecture method). Educational Technology Achievement Test was used for data collection. ETAT was validated by experts and the reliability coefficients of 0.734 were obtained using Pearson Product Moment Correlation Coefficient formular. Data gathered were analyzed using Analysis of Variance and t-test analysis and significance was ascertained at 0.05 alpha levels. Findings revealed that significant difference exists in the mean achievement of the three groups ($F_{cal} = 117.393$; $df = 179$; $P < 0.05$). And there was no significant difference existing between gender levels when both were taught using facebook supported instructional platforms

($P > 0.05$ level of significance ($P = 0.179$)). It was therefore recommended among others that Facebook and whatsapp supported instructional platform should be made as one of the major teaching strategies for Educational technology courses in universities since from the finding of this study they are more effective.

Keywords: Facebook supported instructions, Whatsapp supported instructions, Achievement, Educational Technology, Lecture method

Introduction

It is an established fact that educational technology is the vehicle through which instruction is being driven in the teaching and learning environment. This underpinning knowledge provides educators and learners with the framework of establishing themselves in the technology realm of life by sharing and participating in learning through social media. Learning through social media demands social presence which can only be done through social participation using appropriate educational technology tools to integrate technology in the classroom and to promote learning in a diverse society. Educational technology is a systematic and organized process of applying modern technology to improve the quality of education. It is a systematic way of conceptualizing the execution and evaluation of the educational process, the learning and teaching and the application of modern educational teaching techniques (Lazar, 2015). With the application of educational technology, students can independently progress in mastering teaching materials, choose the pace of work, repeat the material that is not sufficiently clear, get results of their performance and track down their progress.

Social media are one of the educational technology tools used in promoting meaningful and qualitative interactions among learners and teachers (Okereke, 2014). Social media are platforms that enable one to connect with friends and family, share photos, videos, music and other personal information with a wider group of people. They are online service platforms that focus on building and reflecting social relations among people who share interest and

activities (Effiong & Odey, 2013). They are mainly designed for information, entertainment and educational reasons. For educational purposes, it serves both teachers and learners as educationists believe that social media help teachers in adequately preparing their lessons, designing and implementing lessons with the most efficient and effective teaching methods as well as evaluating the learning outcomes (Olugbemi, 2013). Marco, *et al* (2016) identified Facebook and Whatsapp as among the communication tools employed by teachers and students in carrying out educational purposes.

Findings from different studies revealed that the use of facebook and whatsapp teaching strategies improve the performance of students and also enhance their academic achievement. Angadi and Hegadi (2015) researched on Facebook as an instructional tool in fostering academic achievement, social interaction skills and attitude towards use of facebook. Their studies show that Facebook is an effective teaching strategy which not only helps in academic gains but also in developing the learners' potential skills. Similarly, Aicha (2014) researched on the impact of Whatsapp mobile social learning on the achievement and attitude of female students compared with face to face learning in the classroom. The purpose of the study was to explore the impact of using Whatsapp mobile learning activities on the achievement and attitudes of online students using mobile devices at the university. The results of the experiment showed that the students taught using Whatsapp mobile social learning performed significantly better than students taught using face to face learning in the classroom. Also the findings of a study on the impact of social media networks websites usage on students' academic performance at University of Jordan conducted by Maqableh, *et al* (2015) revealed that social network improves the student's academic performance. However, Ghareb and Sharif (2015) in their study on the effect of facebook on academic performance and social life for undergraduate students of university of human developments found out that daily usage of facebook affects academic performance of students and suggested that if lesser

time would be spent on facebook students' academic performance would be increased.

Apart from the positive effect of the use of social media learning strategies, gender differences have long been observed to have link with performance of students in academic tasks especially in higher institutions. The term gender is used to refer to the socially constructed roles that individuals adopt and present to others (Jossan, 2012). Most social media contexts involve a mix of both genders. Social media technologies have a long history of shaping and being shaped by the gender of their users. Many studies have found that girls on average spend more times on social network sites and use them more actively than boys do (Brenner, 2012; Rideout *et al.*, 2010). Haq and Chand (2012) carried out a research on pattern of facebook usage and its impact on academic performance of university students: A gender based comparison. The study revealed among other findings that Facebook use; in general, adversely affect the academic performance of male students as compared to female students. However, Brown and Kabre (2011) carried out research on the influence of Facebook usage on the academic performance and the quality of life of college students. The general objective of the study was to examine the impact of facebook usage on the academic performance and the quality of life of college students. Their findings indicated that the number of hours per week spent on facebook did not affect academic performance of students. It was also reported that females did better than males with higher Grade Point Averages (GPAs). Johnson and George (2014) researched on the impact of Whatsapp messenger usage on students' performance in tertiary institutions in Ghana. It was observed that the performance response of the female students far outweighed their male counterpart by 66:34%. Reason being that women preferred using whatsapp for communication, especially for learning related activities than their male counterpart.

Statement of the Problem

Despite technological advancements in the teaching sector and the educational benefits of social media, university lecturers

especially in the developing countries like Nigeria are yet to adopt the use of social media in teaching. University Educational institutions that ignore newer technologies for teaching and learning, such as the social media, may become less relevant in the development of human capital, therefore, undermining national economic growth and development. There is a need to introduce the concept of social media as a new form of educational technology in teaching because of its educational benefits. It cannot replace a conventional teaching methodology in education but rather to support, complement and enhance its effectiveness. This will provide students with greater experience in dealing with the world of work related issues they encounter. Its teaching methodologies will lead to a learning society in which the creative and intellectual abilities of students will allow them to meet the goals of transformation and development.

Aim and Objectives of the study

The aim of this study is to investigate effectiveness of facebook and whatsapp supported instructional platforms on undergraduate students' achievement in educational technology. Specifically, the objectives of the study are:

- i. To determine the achievement of students taught educational technology concept using Facebook and Whatsapp supported instructional platform and lecture method.
- ii. To find out the influence of gender on the achievements of students taught educational technology concept using Facebook supported instructional platform.
- iii. To find out the influence of gender on the achievements of students taught educational technology concept using Whatsapp supported instructional platform.

Research Questions

- i. What are the mean achievement scores of students taught educational technology using Facebook and Whatsapp supported instructional platforms and Lecture method?

- ii. Is there any difference in the mean achievement scores of male and female students taught educational technology using Facebook supported instructional platform?
- iii. Is there any difference in the mean achievement scores of male and female students taught educational technology using Whatsapp supported instructional platform?

Research Hypotheses

- H₀₁:** There are no significant differences in the mean achievement scores of students taught educational technology using Facebook and Whatsapp supported instructional platforms and lecture method.
- H₀₂:** There is no significant difference in the mean achievement scores of male and female students taught educational technology using Facebook supported instructional platform.
- H₀₃:** There is no significant difference in the mean achievement scores of male and female students taught educational technology using Whatsapp supported instructional platform.

Significance of the Study

This study would be significant to educational policy makers, educational administrators, curriculum planners, students, teachers, researchers and the whole educational system. This study would offer recommendations to educational policy makers on the educational status of our university students and lecturers towards utilization of social media for teaching and learning. These recommendations would enable them initiate social media policies, programmes and enriching innovations to stimulate the interest of students and lecturers.

Research Design

The research design adopted for this research was a factorial research design. This is a complex experimental design that permits multiple independent variables trying to find their effects on the dependent variables. A three by two (3x2) factorial design was adopted using pretest- posttest approach. The design represented three levels of treatments and two levels of gender

(male and female). The three groups were taught five units of instruction on distance education courses. The experimental group 1 was taught using facebook supported instructional platform, experimental group 11 taught using whatsapp supported instructional platform while the control group was taught using lecture method.

Population of the study

The Population of this study comprised all Educational Technology students in all public universities in Nigeria comprising 3,056 students. The sample for the study was 180 second year Educational Technology students. This sample was selected randomly from three out of the five public universities offering Educational Technology in Nigeria.

Instruments for Data Collection

The instruments used to gather data for the study were Educational Technology Achievement Test (ETAT) and Treatment Instruments. The treatment instruments are called Facebook Supported Instruction (FSI) and Whatsapp Supported Instruction (WSI). The facebook Supported Instruction (FSI) and Whatsapp Supported Instruction (WSI) were developed by the researcher in collaboration with an online course developer. These broadly constitute the body of instructions which the students were exposed to. The topics treated were concept of distance education; characteristics, types, merits and demerits of distance education; modes of delivery in distance education; methods of teaching and learning in distance education; and modes of assessments in distance learning. ETAT was made up of fifty (50) multiple choice objectives questions that were validated and its reliability determined as 0.734 using Pearson Product Moment Correlation Coefficient formular.

Result

HYPOTHESIS ONE (Ho₁)

There are no significant differences in the mean achievement scores of students taught educational technology

using Facebook and Whatsapp supported instructional platforms and lecture method.

Table 1a: ANOVA comparison of the post test mean scores of the experimental groups I, II and control group.

Sources of variation	Sum of square	df.	Mean	f- cal	Sig.
Between Groups	13270.211	2	6635.106		
Within groups	10004.117	177	56.520	117.393*	.000
Total	23274.328	179			

*: Significant at 0.05

Table 1a shows the ANOVA result of the comparison of posttest mean achievement scores of students taught educational technology in Experimental Group I, II and the Control Group. An examination of the table shows $F(2, 177) = 117.393$, $P < 0.05$. On the basis of this, hypothesis one was rejected. Therefore, there was significant difference in the achievement of students taught Educational Technology in Experimental Group I (those taught using Facebook Supported instructional platform), Experimental Group II (those taught using Whatsapp instructional platform) and those in Control Group (through lecture method only). Sidak post-hoc analysis was carried out to locate where significant difference exists as presented in Table 1b.

Table 1b: Sidak post-hoc analysis of the posttest mean achievement scores of students in experimental group I, II and the control group

Treatment	Experimental I	Experimental II	Control
Exp. I (Facebook)	-----	6.595*	20.630*
Exp. II (Whatsapp)	-6.595*	-----	14.035*
Control (Lecture)	-20.630*	-14.035*	-----

*: Significant at $p = 0.05$ level.

Table 1b shows the Sidak post-hoc analysis of posttest mean achievement scores of students in Experimental Group I, Experimental Group II and the Control Group. The table indicates that significant difference exist between the mean scores of students in Experimental Group 1 and Experimental Group 11 (mean difference =6.595). It also shows that significant difference exist between Experimental Group I and the Control Group (mean difference = 20.630) and also between Experimental Group II and Experimental Group 1 (mean difference = -6.595). The implication of the analyses presented in Table 1b is that the use of Facebook Supported instructional platform improves students' achievement towards Educational technology better than Whatsapp instruction while the use of Whatsapp instruction method also improves students' achievement better than the use of lecture method.

HYPOTHESIS TWO (Ho₂)

There is no significant difference in the mean achievement scores of male and female students taught educational technology using Facebook supported instructional platform.

Table 2a: t-test Comparisons of the Mean Achievement Scores of Male and Female Students taught Educational Technology using Facebook Supported Instructional Platform.

Variables	N	df	Mean	S.D	t-values calculated	Sig.
Male	30	58	75.07	8.706	1.360 ^{ns}	.179
Female	30		71.90	9.323		

Not significant at 0.05 level.

Table 2a shows t-test comparisons of the mean achievement scores of male and female students taught educational technology using Facebook supported instructional platform. The table indicated that there was no significant difference since $P > 0.05$ level of significance ($P = 0.179$) On the basis of this, hypothesis two was retained. Therefore, there was no significant difference in the mean achievement scores of male and female students taught educational technology using Facebook

supported instructional platform. An indication that facebook supported instructional platform is gender friendly.

H₀₃: There is no significant difference in the mean achievement scores of male and female students taught educational technology using Whatsapp supported instructional platform.

Table 3a: t-test Comparisons of the Mean Achievement Scores of Male and Female Students taught Educational Technology using Whatsapp Supported Instructional Platform.

Variables	N	df	Mean	S.D	t-cal	Sig.
Male	30		69.00	6.782		
		58			2.978*	.004
Female	30		64.87	3.431		

*Significant at 0.05 level.

Table 3a shows t-test comparisons of the mean achievement scores of male and female students taught educational technology using Whatsapp supported instructional platform. The table indicated that there was significant difference since $P < 0.05$ level of significant ($P = 0.004$). On the basis of this, hypothesis three was rejected. Therefore, there was significant difference in the mean achievement scores of male and female students taught educational technology using whatsapp supported instructional platform. The significant difference was in favour of male students.

Discussion of Results

There are no significant differences in the mean achievement scores of students taught educational technology using Facebook and Whatsapp supported instructional platforms and lecture method. Analysis of Variance (ANOVA) was used to determine the level of achievement of students in the three groups (experimental group I, II and control group). The methods indicated a significant difference in favour of the students in the experimental group I and II as against the control group. Sidak post hoc test was carried out to find out where the differences between the three groups occur. It indicated that there was significant difference

between the mean achievement scores of the students exposed to Facebook supported instructional platform and Whatsapp supported instructional platform as against the control group which was taught using lecture method. Students exposed to Facebook supported instructional platform did better than those exposed to Whatsapp supported instructional platform and those exposed to Whatsapp supported instructional platform also did better than those in control group. This result agrees with earlier findings of Angadi & Hegadi (2015) who investigated on Facebook as an instructional tool in fostering academic achievement, social interaction skills and attitude towards use of facebook. Their findings revealed that Facebook method helped in increasing achievement in Educational Psychology subject than the traditional lecture method of teaching. The study shows that Facebook is an effective teaching strategy which not only helps in academic gains but also in developing the learners' potential skills. It is also in line with the work of Aicha (2014) who found out a statistical difference existing between the experimental group and the control group. The experimental group taught using whatsapp mobile social learning performs better than the control group taught using face to face learning in the classroom. Maqableh, *et al* (2015) supported them by attesting that social network improves the student's academic performance. This work disagrees with the work of Ghareb and Sharif (2015) that researched on facebook effect on academic performance and social life for undergraduate students of university of human developments and found out that daily usage of facebook affects academic performance of students and suggested that if lesser time would be spent on facebook students' academic performance would be increased.

There was also no significant difference in the mean achievement scores of male and female students taught educational technology using Facebook supported instructional platform. T-test analysis was used to determine the mean achievement scores of male and female students taught educational technology using facebook supported instructional platform. The finding showed that there was no significant difference in the mean achievement scores of male and female

students taught educational technology using facebook supported instructional platform. This implies that facebook supported instructional platform is a gender friendly platform, an indication that the platform improved the academic performance of both male and female students. The study contradicts the work of Brown and Kabre (2011) that carried out research on the influence of Facebook usage on the academic performance and the quality of life of college students and recorded significant difference in favour of female students. They reported that females did better than males with higher Grade Point Averages (GPAs). The work is also in total contradiction with the findings of Haq and Chand (2012) which revealed that Facebook use in general; adversely affect the academic performance of male students as compared to female students.

There is no significant difference in the mean achievement scores of male and female students taught educational technology using Whatsapp supported instructional platform. T-test analysis was used to determine the mean achievement scores of male and female students taught educational technology using whatsapp supported instructional platform. The finding showed that there was significant difference in the mean achievement scores of male and female students taught educational technology using whatsapp supported instructional platform. Male students did better than female students. This disagrees with the work of Johnson and George (2014) who observed that the performance response of the female students far outweighed their male counterpart by 66:34%. Reason being that women preferred using whatsapp for communication, especially for learning related activities than their male counterpart.

Conclusion

Findings from the study revealed that Facebook and whatsapp supported instructional method helped in fostering achievement and increasing retentive abilities of students in Educational technology subject course than the lecture method of teaching. It helped students to enhance their various elements of retentive powers thereby yielding a positive attitude towards

Educational technology. The findings clearly showed that Facebook and whatsapp are good instructional tools which do not only facilitate learning but also assist in developing the retentive capabilities of learners and at the same time equipping them with those technological driven qualities, which at present, are very vital.

Recommendations

Facebook and whatsapp supported instructional platform should be made as one of the major teaching strategies for Educational technology courses in universities since from the findings of this study they were more effective.

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