

EFFECTS OF THE USE OF MOBILE PHONE APPLICATION ON HIGHER INSTITUTIONS PHYSICS STUDENTS' ACADEMIC ACHIEVEMENT IN EKITI STATE, NIGERIA.

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ABSTRACT

The study investigated the effect of use of mobile phone application on Higher Institutions' Physics Students Academic Achievement in Ekiti State, Nigeria. Three hypotheses were used for the study. A pretest-posttest quasi-experimental design was adopted for the study. The sample of the study consists of eighty students from four tertiary institutions in Ekiti state. The research instruments for the study were Physics mobile phone application & self-structured achievement test to collect data. Data collected were analysed using t-test statistical tool. One of the findings of the study revealed that there was significant in the physics students' academic achievement. The study concluded that Students taught using mobile phone application activity performed better than their counterparts, taught without mobile phone application. Therefore, it was recommended that Physics lecturer should be

trained on how best to involve students to use mobile phone application during physics lecture so as to facilitate students' academic achievement.

Introduction

Physics, science that deals with the structure of matter and the interactions between the fundamental constituents of the observable universe. Among all the branches of physical sciences, Physics takes a centre- stage in the development of technology. To keep abreast with this development in technology, the teaching and learning of Physics in our higher institutions is pivotal. However, it is disheartening that academic achievement of most of teeming students in higher institutions is worrisome which has led to low enrolment(Omosoro, 2017).

Students are more likely to engage in rich technology interactions when they are outside the classroom in order to supplement what has been taught already in the class, (Haythornthwaite& Andrews, 2007). According to Prensky (2005), mobile phone technologies are not only used in communicating with others but are actually computers that are small as well as portable and students carry this technology wherever they go, therefore these technologies can be used for learning purposes. Mobile phone technology is a necessity in a student's life and also an important technological device to them. They are basically used for making and receiving calls, text, and picture messaging and accessing the internet. According to Maha & Heba(2015), mobile learning functions by integrating a number of hardware and software technologies into multimedia applications to facilitate the understanding of educational content.

Today's students are extremely competent in the use of mobile phones (Haythornthwaite& Andrews, 2007). Students consider these devices as a pleasant, individual possession in which no other device is observed. Mobile phones are also seen as a trendy accessory that suits students' individual needs often expressed choice of mobile wallpaper, ringtones, phone covers and other fashion accessories (Attewell, 2005).

University students use mobile phones far more often than desktop computers and even laptops. This implies that mobile phones can be an even more significant learning tool and a typically raised area in the near future (Kimura, 2011). Therefore, mobile phone

technologies can support students in their learning by exploring their world through these technologies.

Equally, in their research, Kyunghwa , Sungwoong, Min-Ho & Betsy(2018) stated that teachers and students rely on mobile technologies because: mobile phones are nearly always present in daily life; smartphones can be used as hand-held computers to support learning activities with integrated technologies such as voice recorder/player, camera/camcorder, web browser, and personal computing and numerous mobile applications are being developed for educational activities

There are various educational benefits of mobile phone technologies that are most often cited as: easily accessing content, integrating a broad range of educational activities, supporting independent study and student organization, encouraging student enthusiasm, supporting classroom-based collaboration and interaction as well as supporting inquiry- based instruction and learning (Roschelle, 2003). More sophisticated mobile phones, also known as android, can be used to assist students in accessing information from the web, transforming it, transferring it, collaborating with students and also creating a more media-rich approach to instruction (Ferry, 2009).

The report published by Nigerian Communication Commission, NCC (2018) revealed that there are about 146 millions subscribers in the country resulting in a mobile penetration rate of 75% of the population. The proliferation of mobile technologies such as mobile phones calls for their educational use to enhance learning in higher institutions. Therefore, there is urgent need to carry-out research on the effect of use of mobile phones application on higher institutions students' academic achievement in Physics.

Statement of the problem

The proliferation of mobile technologies such as mobile phones and personal digital assistant, and their pedagogical capabilities calls for their educational use to enhance learning in tertiary institutions. As mobile phone becomes popular in the society and many people can afford the cost, the demand of mobility is extended to teaching and learning. Never in the history of the use of technology in education has there been a technology that was available to citizens as mobile telephone.

Mark (2007) suggested that today's students are no longer the people the current educational system have been designed to teach. Today's students have enormous access to digital technology and display characteristics such as digital fluency and familiarity with new

technologies as never before imagined, they are digital natives. It is, therefore necessary to incorporate their digital literacy within meaningful learning scenarios. In line with these developments, we propose the enhancement of learning experience through the use of mobile technologies. Therefore, there is urgent need to carry-out research on the effect of use mobile phones application on students' academic achievement in Physics.

Purpose of the Study

The study examines the effect of use of mobile phone application on tertiary institution students' academic achievement in physics in Ekiti State. Specific objectives of the study are:

1. examine the significant effect of the treatment on the physics students' academic achievement in physics;
2. ascertain the significant difference between academic achievements of male and female students taught physics using mobile application and

Significance of the Study

This work will equip the lecturers and students with requisite knowledge on phone applications and how to use them effectively and efficiently

Moreover, lecturers would also see physics phone application as an acceptable and beneficial development in improving students' academic achievement. This will also enables the lecturers to periodically assess their work and get motivated for greater action for progress especially when outcomes are positive.

Research Hypotheses

The following hypotheses are were tested at 0.05 alpha level of significance to authenticate the findings of the study:

H₀1: There is no significant difference between academic achievement of experimental and control groups..

H₀2: There is no significant difference between academic achievements of male and female students taught using physics mobile application.

Methodology

The design for the study was a 2x3x2 pre-test post-test, non-randomized quasi-experimental design. Physics solver application downloaded from the Google play store was used for the study. The target population for this study were tertiary institutions in Ekiti State. The study covered the institutions (College of Education Ikere Ekiti, University of Nigeria Nsukka (Ikere Campus), Ekiti State, University and Federal polytechnic Ado Ekiti). The sample size of Eighty (80) students was used for this study using simple random sampling techniques. Twenty (20) students each were selected from the following schools; College of Education Ikere Ekiti.(COE IK); University of Nigeria Nsukka.(UNN), Ikere Campus; Ekiti State University.(EKSU); Federal Polytechnic Ado Ekiti. (FEDPOLY). The research instruments for the study were Physics mobile phone application and self-structured achievement test to collect data. Data collected were analysed using t-test statistical tool.

Testing of Hypotheses

H₀1: There is no significant difference between academic achievement of experimental and control groups.

Table 1: A t-test Analysis comparing the treatment on the physics students’ academic achievement in physics.

| Group | N | X | S.D | df | Calculated value | Critical value | Decision |
|--------------------|----|-------|------|----|------------------|----------------|-------------|
| Experimental Group | 40 | 23.65 | 2.76 | 78 | 2.11 | 1.96 | Significant |
| Control Group | 40 | 23.34 | 2.05 | | | | |

Significant at 0.05 probability level

The data in table 1 shows that the calculated t-value of +2.11 is higher than the critical value 1.96 on the basis of this, the difference is statistically significant.

Hence, the null hypothesis which states there is no significant difference between academic achievement of experimental and control groups was rejected (t-2.11, 78 df).

Therefore there is significant difference between academic achievement of experimental and control groups in favour of experimental.

H₀2: There is no significant difference between academic achievements of male and female students taught physics using mobile application.

Table 2: A t-test analysis comparing the academic achievements of male and female students taught physics using mobile application.

| Gender | N | X | S.D | Df | Calculated value | Critical value | Decision |
|--------|----|-------|-------|----|------------------|----------------|-------------|
| Male | 20 | 24.21 | 3.415 | 78 | 2.77 | 1.96 | Significant |
| Female | 20 | 24.13 | 3.352 | | | | |

Significant at 0.05 probability level

The data in table 2 indicates that the calculated t-value of 2.77 is greater than the critical value of 1.96. On the basis of this, the difference is statistically significant. Hence, the null hypothesis was rejected ($t = 2.77, 78df$). Therefore there is significant difference between academic achievements of male and female students taught physics using mobile application in favour of male students.

Discussion of Results

The foregoing shows the analysis of data collected for this study. As indicated in the findings, students have improved academic achievement through the use of mobile application to learn Physics.

The first hypothesis revealed that there is was significant difference between academic achievement of experimental and control groups favour of experimental group. This is in accordance with the assertion of Rova(2010), who found that there was statistically significant difference between performance of Physics students taught with mobile application and those taught without mobile application. The findings also correlate with findings of Miller (2013) who stated that the relevance of mobile application on students’ learning in Physics was significant; adding that mobile application played a prominent role in improving Physics students’ academic performances.

The testing of the second hypothesis showed that there is significant difference between academic achievements of male and female students taught physics using mobile application.

Conclusion

From the results obtained in the study on the effects of use of mobile phone application on students' achievement in physics it was found out that: Students taught physics using mobile phone application activity performed better than their counterparts, taught without mobile phone application; male students did perform better than their female counterparts when using mobile phone application.

Recommendations

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

- (1) Physics lecturer should be trained on how best to involve students to use mobile phone application during physics lecture instructions so as to facilitate students' achievement in the lesson. This could be achieved through seminars and workshops for lecturers in tertiary institution;
- (2) Lecturers should make teaching and learning of physics gender friendly;
- (3) the curriculum planners should ensure that mobile phone application approach in physics curriculum, as it will help to promote students' achievement in the subject.

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