COMPARATIVE EFFECTS OF VIDEO-BASED AND TEXT-BASED MOBILE LEARNING APPROACHES ON THE PEFORMANCE OF UNDERGRADUATES IN ADEYEMI FEDERAL UNIVERSITY OF EDUCATION, ONDO, NIGERIA

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Abstract

This paper compares the effectiveness of video-based and text-based mobile learning among undergraduates. The study adopted quasi-experimental research design. The sample consisted of 500 undergraduate students of Adeyemi Federal University of Education, Ondo, Nigeria, who are in 200 level, drawn across the five Schools in the University through random sampling. The study employed Undergraduate Performance Test (UPT) as research instrument. Three hypotheses were generated and tested at 0.05 level of significance. Data collected were analyzed using t-test statistical analysis. The study revealed that undergraduates taught using video-based mobile learning approach performed significantly better ($t = 43.94$; $p<0.05$) in comparison with text-based mobile learning approach. Also, there was no significant difference between the performance of female and male undergraduates taught using video-based mobile learning and text-based mobile learning approaches with ($t=.124$; $p>0.05$), ($t=1.560$; $p>0.05$) respectively. In view of these findings, it was recommended, among others, that learning in the mobile age be improved among undergraduates by providing teachers with necessary training and resources.

Keywords: Video-based, Text-based, Mobile learning, Performance, Gender

Introduction

The widespread use of mobile technology appears to be fast revolutionizing the way we live, learn and work. Mobile devices such as smartphones, tablets, laptops, and digital notebooksare becoming increasingly prevalent with human beings. Interestingly, these devices especially smartphones are no more restricted to attending calls, communicating with family and friends, gaming, and online shopping, they are being applicable to many aspects of our lives. Dos (2014) argued that mobile phones are not accessories anymore; they have become integrated like our clothes. Mobile learning, which is also referred to as mLearning, is a way of accessing learning content through mobile device (Mohamed, Laila & Hamza, 2012). This method empowers learning at the point of need, enabling users to access content whenever and wherever suits them.This approach empowers learners, offering both convenience and innovative engagement with course materials and real-world contexts. The most important element of mobile learning is its focus on the mobility of the learner - giving them the ability to choose when and where they want to access learning which means that they can go at their own pace, increasing engagement and improving knowledge retention (Sharples&Spikol, 2017).

According to Saccol et al (2010), mobile devices erase the barriers between students and the teacher, are used to jointly develop educational content, increase its availability, update and generate the content of the training course, and help personalize students' obligations. Today, almost every student has at least one universal (multifunctional) gadget with a set of applications, which allows us to conclude that it is impossible to get around the trend of mobile learning in the modern world (Pechenkina, 2017).

With traditionalmethods of education, teachers, for example, often need todevelop methodological material focused on various situationsof interaction between students. The presence of a smartphone,the Internet, and various web resources significantly simplifiesthe work for the teacher in terms of preparing methodologicalmaterial and creating the opportunity for students to study andcommunicate at the same time (Sergeeva et al, 2021). The use of mobile devices in the contextof a student group facilitates joint activities and student/student,student/teacher, and student/group interaction (Ajayi, 2020).

According to Klimova (2019), learning foreign language, particularly studying and revising English vocabulary via smartphone is effective in enhancing the performance of university students. Toyaibayeva et al (2022) also asserted that

mobile learning provides students with opportunity to activate their independent activity. They stressed further that it increases individualization of learning.

Mobile learning exists in different forms such as m**icrolearning, gamification, video and audio based learning, text-based learning, virtual instructor-led training, among others. However video-based and text-based forms of mobile learning are the focus of this study.**Video-based learning uses images, audio, graphics, and text to convey information. Video learning can be synchronous or asynchronous: synchronous learning is when an instructor presents information to a live remote audience, while asynchronous learning involves pre-recording an instructional video that lets learners watch along at their convenience. Video-based learning is found to improve students' learning output (Nadeak&Naibaho, 2020). According to Abdulkareem (2022), video-based multimedia approach yields positive influence on students' performance as the students are able to see and hear the learning concept. However, the study did not establish any difference in students' performance along gender dichotomy.

Text-based mobile learning is an approach that utilizes written text, shared on mobile devices, to provide educational content and facilitate learning.Daramola and Umoru (2021) investigated the effects of whatsapp using text-based instruction, on the students of Colleges of Education. Their findings showed a positive influence of the approach on students' performance. However, their study revealed no gender-based effect in students' performance.

It has been established than mobile learning is possible using video-based approach as well as text-based approach; however, there is the need to find out which of the two is more effective in teaching an undergraduate course. This study therefore, examined whether the use of video-based mobile learning could enhance the performance of undergraduate students of Adeyemi Federal University of Education better than the text-based mobile learning.

Purpose of the Study

The study investigated the effectiveness of video-based mobile learning and text-based mobile learning approaches on the performance of undergraduate students.Specifically, the study sought to:

(i) determine the effectiveness of video-based and text-based mobile learning approaches on the performance of university undergraduates, and

(ii) determine the influence of gender on the performance of university undergraduates when exposed to video-based and text-based mobile learning approaches.

Research Hypotheses

The following hypotheses were raised to guide the study:

1. There is no significant difference between the performanceof students taught with video-based mobile learning approach and those that were taught with text-based mobile learning approach.
2. There is no significant difference between the performance of femalestudents exposed to video-based mobile learning and their male counterparts.
3. There is no significant difference between the performanceof female students taught with text-based mobile learning approach and their male counterparts.

Methodology

This study adopted a quasi-experimental design. The study was delimited to a compulsory 200 level course with code SEC 202, titled "Curriculum and Instruction" in Adeyemi Federal University of Education, Ondo, Nigeria. Therefore, the populationconsisted of the entire 200 level undergraduates of the University during 2021/2022 academic session. The sample consisted of 500undergraduates, who were in 200 level, drawn across the five Schools in the University through random sampling. The total sample was also distributed randomly with 200 students assigned to video-based group, another 200 to text-based group, and 100 students assigned to control group.

Undergraduate Performance Test (UPT) was used as a research instrument for the study. UPT has two sections, A and B. Section A sought information on the bio-data of the undergraduate students and section B contained 20 multiple-choice items on the content covered in the study. Each item with correct option was allotted 1 mark while the item with incorrect option was scored zero. The instrument was ensured for content and construct validity by two experts: one expert from Test and Measurement and another one from Curriculum and Instruction, both from School of Education, Adeyemi Federal University of Education, Ondo. To ascertain the reliability of the instrument, it was subjected to test re-test reliability test of two weeks interval administration and the data obtained were analysed using Pearsons' Product Moment Correlation analysis, which yielded a correlation coefficient of 0.82.

The experimental procedure of the study took eight weeks in three stages. There was a pre-treatment stage of one week where the researchers visited the departments to select the sampled undergraduate students. During this period, the course lecturers who assisted in the study were contacted and interacted with. The

research instrument (UPT) was administered to the students as a pre-test. This was followed by the treatment stage of six weeks. The researchers created two whatsapp group platforms: one for the video-based group and the other for the text-based group. Lecture note on "Curriculum and Instruction" was prepared in PowerPoint slides, and with the slides a YouTube video was created engaging some animations and sound effects. The video was posted on the video-based group platform for students to view and study. For the text-based group, the same lecture note was prepared in PDF text format which was posted on their platform for the students to read and study. The students in control group were taught using lecture method. The last stage was post-treatment stage of one week during which UPT was re-administered as post-test. The data obtained from both pre-test and post-test were collated for statistical analysis. The hypotheses formulated were analysed using t-test statistics at 0.05 level of significance.

Results

Hypothesis one: There is no significant difference between the performance of students taught with video-based mobile learning approach and those that were taught with text-based mobile learning approach.

Table 1:t-test analysis of the performance mean scores of students taught usingvideo-based mobile learning and those that were taught with text-based.

Variations	N	Mean	SD	df	t	P
Video-based	200	58.04	15.01	399	43.94	0.000*
Text-based	200	31.80	11.16			

*P<0.05

Table 1 shows that the t-cal value of 43.94 is significant because the P value (0.000) is less than 0.05 significant point. As a result, the null hypothesis is rejected. There is significant difference in the performance of students in video-based group and those in text-based group. The mean value of the table further revealed that the students taught using video-based mobile learning had higher performance than their counterparts in the text-based mobile learning.

Hypothesis two: There is no significant difference between the performance of female students exposed to video-based mobile learning and their male counterparts.

Table2: t-test analysis of the performance of female and male studentsin the video-based group

Variations	N	Mean	SD	df	t	P
Female	119	66.85	9.04	119	0.124	0.668
Male	81	44.65	2.58			

P>0.05

Table 2 shows there was no significant difference in the performance of female and male students exposed to video-based mobile learning (t = 0.124;P>0.05). Though the mean value of the table revealed that female students had higher performance than their male counterparts; the difference is not statistically significant. Hence, gender has no significant influence on the performance of students taught using video-based mobile learning.

Hypothesis three: There is no significant difference between the performance of female students taught with text-based mobile learning approach and their male counterparts.

Table 3:t-test analysis of the performance of female and male students in the text-based group

Variations	N	Mean	SD	df	t	P
Female	103	58.20	13.55	119	1.560	0.881
Male	97	27.83	7.29			

P>0.05

Table 3 shows there was no significant difference in the performance of female and male students exposed to text-based mobile learning (t = 1.560; P>0.05). Though the table revealed the performance mean value of female studentsto be higher than their male counterparts; the difference is not statistically significant. Hence, gender has no significant influence on the performance of students taught using text-based mobile learning.

Discussion

Based on hypothesis one, analysis of the data revealed that undergraduatestudents taught with video-based mobile learning performed better than those taught using text-based mobile learning. This result agreed with the submission of Nadeak and Naibaho (2020) who found video-based learning as a means of improving students' learning output. It is also in agreement with the

findings of Abdulkareem (2022) that video-based multimedia approach yields positive influence on students' performance as the students are able to see and hear the learning concept.

In comparing the performance of female and male undergraduates in the video-based mobile learning group, the finding revealed that there was no statistically significant difference in performance of female and male students. The findings, however, is in agreement with the findings of Abdulkareem (2022) who affirmed that gender had no significant effect on the performance of Physics students who learnt through video-based multimedia approach. However, the finding is contrary to the submission of Cruz et al (2023); that students who were taught using video clip instruction displayed gender difference along gender line. In a similar vein, findings from the study also revealed no statistically significant difference in the performance of female and male students who were taught with text-based mobile learning approach. This corroborates the findings of Daramola and Umoru (2021) that female and male students of College of Education performed alike with whatsapp text-based instruction.

Conclusion

Based on the findingsof this study, it is can be concluded that video-based mobile learning approach has acomparativeadvantage in enhancing undergraduate students' performancethan the text-based mobile learning approach. Also, there is no gender bias in the performance of undergraduates in both video-based and text-based mobile learning groups. Both female and male performed alike. It is therefore recommended that the Federal and State governments as well as university managements can pave way for the improvement of learning in this mobile age, among undergraduates, by providing the teachers with necessary training and resources for the implementation of mobile learning. It is also recommended that students of both gender should be encouraged in mobile learning environment without unnecessary discrimination.

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