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**Evaluating the Effectiveness of Electronic Devices in Enhancing Students' Engagement
in Large Educational Classes in Colleges of Education, South-Western Nigeria**

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Abstract

Purpose: The low performance of southwest colleges of education students in general education courses in large class has become worsening. As a result, this study was focused at using electronic device in teaching large classes in education courses by employing computer assisted teaching method. This is to improve the learner's poor performance in general education courses. Computer assisted teaching strategies or electronics device is a novel that was been introduce in 1980s by Deakin University, U S A. There is need for the use of electronic devices for student's engagement and involvement in teaching and learning of educational courses.

Methodology: This research used Brades (2007) teleconferencing and computer assisted teaching learning strategies as theoretical frame work for the study. This is coupled with questionnaire that was administered among 360 students that was purposively selected from three colleges of education in southwestern Nigeria. The questionnaire were analysed through the frequency count and pie chat. Electronic devices like projector, Android phone, power point and public address system. There is provision for rooms which was furnished for the keeping of the electronic devices and for using teleconferencing in teaching general education courses in large classes in Southwestern Colleges of Education

Findings: The findings of the study showed that these electronic devices in teaching general education courses has improve the low standard of students performance in general education courses through examination. These also help the students to communicate well and have competence to participate in receiving online lectures.

Unique Contribution to Theory, Practice and Policy: The government and all the educational authorities in southwestern Nigeria should invest more in digital infrastructure by providing electronics devices with a satisfied and reliable internet and power supply. This will help the integration of electronic devices into the teaching and learning process of general education courses.

Keywords: *Electronic Devices, Student Engagement, South-Western Colleges, Institution Teleconferencing*

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INTRODUCTION

The teaching of general education courses in colleges of education in South-Western Nigeria is facing major problems. The interest of some students in educational courses (large class) in colleges of education in Nigeria South-Western is observed to be low. This observation was made from their scores in the general education courses. For long, different methods like excursions to historical places, visual methods and some individuals that have contributed to the development of education and the use of current textbooks had been adopted. The effectiveness of electronic devices in the teaching and learning of general educational courses in large classes has not been tested and used in South-Western colleges of education.

Unfortunately, the application of computer assisted teaching (CAT) to the teaching and learning of educational courses is bedeviled by series of problems such as insufficient computers, scarcity of education textbooks, epileptic power supply, paucity of funds, inconsistent educational policies and socio-political problems. Although many schools have been equipped with modern electronic gadgets to teach online courses, especially with the experience of COVID-19, some of these gadgets have been stolen, vandalised or abandoned because of poor power supply to the school environment. While some of students have electronic gadgets like computer, iPads, and other multimedia devices that could aid their learning, such devices are being used for some other things that are unrelated to their education. Sometimes, the students face the challenge of getting their gadgets charged due to the epileptic nature of power supply in most communities nowadays.

Currently, higher institutions of learning are starting to include digital teaching tools more and more in their classes thereby offering great opportunity to improve the learning environment (Wesonga, Justus, Myonga & Johan Vander, 2025). Some tools that are capable of increasing students' engagement and learning involvement are learning management systems (LMS), mobile learning apps, massive open online courses (MOOCs) and collaborative platforms. Worldwide digital teaching tools are becoming increasingly adopted as solutions to problems common in conventional educational environments including large educational classes or overcrowded classroom, limited access to learning resources and the demand for more flexible and customized learning environments.

Timothy & Reyes (2020) found that these tools improve students' engagement and learning involvement by means of asynchronous learning, instantaneous feedback and interactive activities. Tan and Huang (2021) underline the significance of e-learning system in African institutions.

Digital learning tools like video lectures and interactive quizzes shown by Bowers & Cummings (2022) greatly helped to keep students interest, engagement and participation in online courses (large class). This assists the students to control their learning and enable self-assessment and result to better performance. Mobile learning is a clear tool for improving students' engagement and academic success in large class. Ally & McLeod (2020) said these tools help students to engage with course materials outside of the classroom thereby promoting ongoing education. These tools improve academic performance and engagement by addressing the difficulties experienced by students with time limits or geographical constraints.

As a result, this paper focuses on how lecturers of education courses in colleges of education in South-Western about the need to properly impart knowledge to students of colleges of education through effective use of electronic devices that are capable of enhancing students'

engagement in large classes. Therefore the students in southwestern colleges of education will be to have interest in both general education courses and departmental courses.

Statement of the Problem

The rapid development of digital technology has led to crucial changes in higher education that provide significant opportunities to increase students' engagement and improve learning outcomes. It has been observed that students' interest and performance in education courses has drastically fallen. The observation of some lecturers of those education courses came to limelight with the reports at various school board meetings indicating that many of the students who sat for semester examinations could not make very good grades in the courses.

Many of the graduates of colleges of education did not perform well in education courses unlike in their departmental courses. The large size of education classes is being fingered for this. Therefore, these researchers are of the opinion that effective use of electronic devices in the teaching and learning of education courses in our colleges of education will definitely improve the poor interest and performance of these students in general education courses which are usually large classes. This is because these electronic devices encourage personalized/individual learning and collaboration, and also enhance flexible, interactive and customized learning environment. Electronic devices have revolutionised different aspects of man's life and it is believed that effective use of the devices will greatly help in improving the teaching and learning of education courses in colleges of education in South-Western Nigeria.

Many colleges of education do not have electronically equipped lecture halls to be used to teach their students. Apart from Olagbende (2021) that examined the difficulties encountered in teaching large classes of education in Nigeria, and the theoretical focus of Parade (2007) video conference, etc., scanty full-blown research exists on the use of electronic devices in the teaching and learning of education courses in colleges of education South-Western Nigeria. As a result, this paper attempts to fill the existing research gap on the use of electronic devices in the teaching and learning of education courses in colleges of education in South-Western Nigeria.

Benefits of Electronic Devices in Large Classes (Education Courses)

- i. **Increase Students' Engagement:** Students who use electronic devices in the classroom may be more engaged. Many teachers use interactive soft-wares and programmes as learning technologies so that students can respond to questions and attend lectures digitally.
- ii. **Collaboration:** Electronic devices make it easier for students to collaborate and work on solving problems in teams.
- iii. **Creativity:** The content available online is endless. Students who are interested in learning about arts, music, videos and virtually anything else can find plenty of resources.
- iv. **Automation:** Among the benefits of electronic devices in the classroom for teachers is automation. Teachers can upload lessons into an learning management systems (LMS) for students to access on their own time.

Research Objectives

The primary objectives of this research are:

- i. To evaluate the current state of use of electronic gadgets in student engagement or in the pedagogy of education courses in large classes in colleges of education in South-Western Nigeria.
- ii. To assess the impact of electronic gadgets on learners' interest and academic performance in educational courses with a focus on large class settings.
- iii. To identify challenges and best practices in the effective use of electronic gadgets for teaching and learning in large classes in colleges of education in South-Western Nigeria.

Research Questions

This study will provide answers to the following research questions:

1. What is the availability and adequacy of electronic devices for teaching large classes in colleges of education in South-Western Nigeria?
2. What challenges hinder the effective use of electronic devices in teaching education courses in large classes?
3. What strategies can enhance the adoption of electronic devices in colleges of education in South-Western Nigeria?

Significance of the Study

This study is significant for several reasons:

- i. The results will inform us how available and adequacy of electronic devices is in teaching and learning of educational courses in large classes.
- ii. The research result will show various challenges facing effective use of electronic devices in the teaching and learning of education courses in large classes.
- iii. The paper will highlight effective electronic devices or tools, and teaching approaches thereby offering suggestions for teachers and institutions to raise students' engagement and involvement in learning.

METHODOLOGY

This study will make use of make-shift lecture rooms that will be furnished in the three colleges of education in South-Western Nigeria. These make-shift lecture rooms are equipped with moderate electronic gadgets needed in the teaching of education concepts in large classes. Such tools will include teleconferencing gadgets. It will be used to teach students on modern learning. The colleges where the pilot study will be carried out are Oyo State College of Education, Lanlate; Federal College of Education (Special), Oyo; and Federal College of Education, Osiele, Abeokuta. A self-constructed questionnaire will be administered to select students used for the pilot study. Questionnaires were analysed with frequency counts and pie charts.

Data Collection

Data will be gathered through the administration of questionnaires from the pre-test before the introduction of Computer Assisted Teaching (CAT) and teleconferencing is introduced. Post-test is administered after the respondents have been tutored through CAT and teleconferencing.

Sampling Technique

Three hundred and fifty students from the three selected colleges of education were sampled through random sampling technique.

Data Analysis

The data generated with the questionnaire will be analysed with the statistical tools of frequency counts and pie charts.

LITERATURE REVIEW

Many scholars have examined the use of electronic/computer teaching discourse in various educational/academic teachings. Examples of such are Taiwo (2010), Oyeleke (2005), Egbe (2009), Raheem & Ghani (2013), Harry (2001), Ansley & Bull (2006), etc. Harry (2001) states that electronic teaching discourse implies the usage of automated gadgets like laptops, iPads, projectors, tablets, etc., in the teaching and learning of education courses or subjects.

Durrant and Green (2005) investigate the new challenges in the new literacies and new technologies in school education. Ansley and Bull (2019) examined the changing literacies in the new teaching and learning multi-literacies. Aremu (2012) studied the problems and prospects of applying electronic devices in the teaching and learning of general education courses while Aremu (2015) studied the students' perception of the use of electronic devices in large classes in South-Western Nigeria's colleges of education. Aremu (2015) studied 160 randomly sampled students that registered and studied different general education courses and departmental courses. The data were analysed using the statistical tool of pie chart. The theoretical framework for the study were Brade's (2007) teleconferencing and Kasper (2011) pragmatic competence. Goterg (2009) finds that the use of electronic devices like iPads, laptops, projectors, tablets and video conferencing are newly introduced modern technologies in general education courses in Nigeria.

Alabi (2020) finds that students who use electronic devices in the classroom may be more engaged as the students are able to access top-notch instructional materials online. Electronic devices make it easier for students to collaborate and work on group learning as teams and they are used to keeping regular participation (Gonzalez, Pastor & Smordual, 2021).

Electronic gadgets in the classroom for large class is very important for supporting equity in learning and teaching, improving student-instructor communication and enabling cooperation and access to course resources within and outside the classroom (Antwi, Agyemang & Mensah, 2021).

This study found that poor internet made it difficult for students living in remote areas to effectively electronic devices. The effect of electronic devices in South-Western colleges of education in Nigeria was found to be noticeable as Adewale (2023) found that students' understanding and mastery of general education course materials clearly improved. Video lecture conferencing causes students to go extra mile over complex topics when it is convenient.

The study observed that some areas with slow internet access and unstable power supply formed less benefit from video conferencing lectures. The significant obstacles like poor internet access and insufficient tools for teachers and students hinder effective use of the tools. Also digital literacy, infrastructural backing and technology availability affect how these tools will be effective in large education classes. Inadequate training and technical support for teachers and students also limit their efficacy (Mtebe & Sanga, 2020).

The application of electronic device in colleges of education Southwestern Nigeria has been recorded and several differences across the examined studies have become clear. The studies show that these devices increase students' involvement and engagement and raise learning outcomes in general education courses.

The COVID-19 epidemic has led to an accelerated shift to digital learning in higher institutions of learning. But there are still some areas that need to be sensitized and equipped with necessary electronic devices, especially some colleges in rural environments. Adekumle, Ogunbode & Okoro (2023) show how mobile teaching and learning was embraced and how students' involvement in urban Nigeria changed.

Students' engagement and involvement in underfunded areas was hampered by differences in access to mobile devices and data costs. From the study of Simelane-Mnisi (2023) who investigated South African University of Technology on how well Learning Management System (LMS) technologies improved students' engagement. He used a mixed-methods approach in incorporating 116 academics. It was found that the use of LMS tools, including multimedia content, interactive forums and quizzes, raised students' participation and engagement.

Theoretical Framework

Brade teleconferencing and computer-assisted teaching (CAT) by Harry (2020) and Brade (2007) offer the study the needed theoretical under-pinning. Computer-assisted teaching (CAT) is the engagement of automated tools such as iPads, android phones and computers in disseminating messages. The usage of electronic gadgets has been observed to be used in some private secondary schools across Nigeria, but not in colleges of education as higher institutions of learning especially in South-Western Nigeria. Brade's teleconferencing is the use of technology to teach course contents to students who are physically present in other locations.

Siemen 2005 specifically focuses on connectivism which emphasizes learning through network and digital technology, including online communication tools such as teleconferencing

Davis (1989) stated that the efficacy of system adoption is predominantly contingent upon user acceptability of information technology that complement each other in two theories via Perceived Usefulness and Perceived ease of use.

Analysis and Discussion of Findings

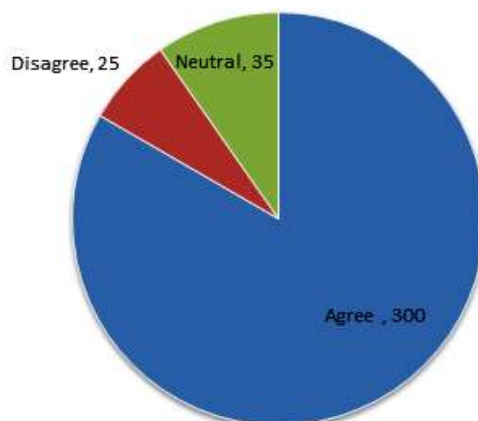
The following are the findings from the analysis of the data generated with the questionnaires.

Research Question 1: What is the availability and adequacy of electronic devices for teaching large classes in South-Western Nigeria's colleges of education?

Statement 1:

There are no enough electronic devices in South-Western Nigeria's colleges of education and there are no enough classrooms and the few available are even not spacious.

Out of 360 respondents, the following are responses of the respondents in degrees. 300 degree of students agreed that available electronic devices are not enough to teach education courses in large class; 25 degree disagreed while 35 degree were neutral.



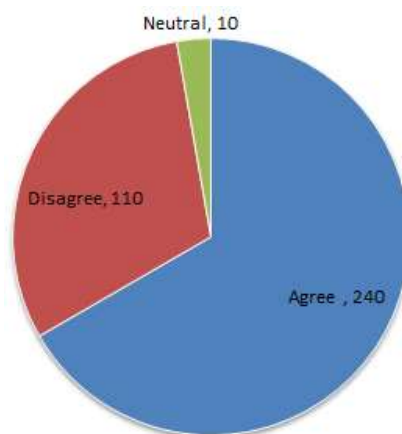
There are no enough rooms to assemble the electronic devices for teaching large general education classes.

Research Question 2: What challenges face the effective use of electronic devices in teaching large education courses' classes?

Statement 2:

It has been observed from the research study that the major challenges facing the use of electronic devices include epileptic power supply and insufficient computer literate teachers that can handle large classes using electronic devices for teaching.

The irregular supply of electricity hinders the use of electronic devices for teaching education courses in large classes. 240 degree of the respondents agreed that there is no supply of electricity to help them enjoy their lectures using electronic devices. 110 degree of the respondents agreed that there is shortage of computer literate teachers to use electronic devices to teach large classes while 10 degree of the respondents was neutral.



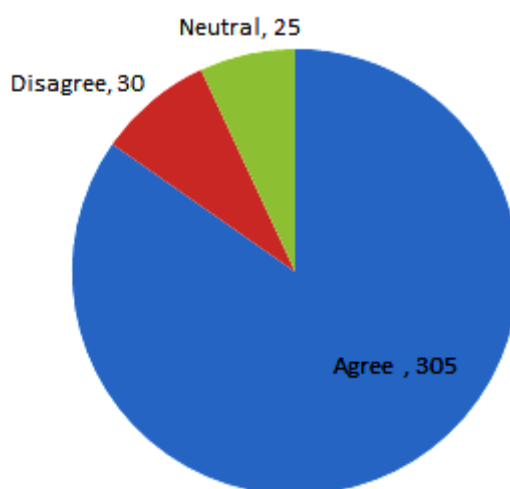
Research Question 3: What strategies can enhance the adoption of electronic devices in large classes?

Statement 3:

Having enough functional electronic gadgets will improve the teaching and learning of educational courses in large classes. While having effective and efficient computer literate lecturers that are innovative and creative will bring success to the usage of electronic devices

to teach large classes in education courses. Spacious classroom and conducive learning environment are also needed.

305 degree of the respondents agreed that there is need to have functional electronic devices for them to enjoy the teaching of education courses in large classes. This will help students to love general education courses instead of concentrating on only their departmental courses. 30 degree of the respondents disagreed while 25 degree of the respondents were neutral. Government needs to employ more computer literate lecturers or make provisions for retraining of the lecturers through seminars or workshops.



Conclusion

Digital teaching tools are now gradually changing the structure of teaching and learning in higher education systems. These electronic devices have great potentials to increase students' engagement and involvement. The study's findings have revealed that these gadgets can have a positive impact on the educational process. The respondents have acknowledged that electronic devices like Androids, computers, tablets and smartphones enhance their engagement and involvement in teaching and learning and also give them access to a wide range of educational resources.

During the conduct of this research, it was observed that there were some recurring patterns of students' interaction with electronic devices in colleges of education in South-Western Nigeria. To promote students' engagement consistently, having reliable internet connectivity, gadgets and technical support is necessary. Rural students encounter challenges that hinder complete participation in learning environments. Inadequate infrastructure, teacher support and presence, and inconsistent power supply reduce students' engagement in large classes in general education courses. The gadgets could be adopted as a tool for training and retraining of teachers and used to teach students in large education courses' classes.

Recommendations

Based on the findings, the following recommendations are offered.

There should be improvement on the provision of ICT infrastructure like electronic devices and consistent internet connectivity for all colleges of education in South-Western Nigeria.

Government should provide wi-fi facilities in all the colleges of education so that learners will be able to have regular access to the internet thereby making it possible for them to access quality learning materials online.

Government or the institutions should create institutional or national policies that support flexible and mixed learning approaches.

Comprehensive teacher training programmes should be developed and implemented by the managements of the institutions to empower educators with the skills and knowledge needed to effectively make use of electronic devices in teaching and learning of education courses. This training should be consistent.

Colleges of education in South-Western Nigeria should include digital literacy in their curriculum in order to help the students to know how to use educational electronic devices efficiently.

There should be regular monitoring and evaluation of the use of electronic devices in teaching general education courses. This will help identify areas of weakness and evaluate their impact on students' engagement, involvement and learning outcomes.

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