



# **Utilization of Zoom Instructional Strategies in Tertiary Institutions with Multiple Campuses in Rivers State, Nigeria**

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## **Author's contribution**

*The sole author designed, analysed, interpreted and prepared the manuscript.*

## **Article Information**

### **Open Peer Review History:**

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://prh.globalpresshub.com/review-history/1637>

**Original Research Article**

**Received: 16/05/2024**

**Accepted: 21/07/2024**

**Published: 27/07/2024**

## **ABSTRACT**

Some of the benefits of multiple campuses is the ability to decongest overcrowding on a single campus, providing a more comfortable and conducive learning environment. Due to the recent economic downturn, the costs associated with students and lecturers moving throughout higher institutions' campuses have significantly increased. This, in turn, contributes to an increased level of stress for guidance and instructors in tertiary institutions. The study investigates the utilization of Zoom instructional strategies in tertiary institutions with multiple campuses in Rivers State. The study employed a descriptive survey design, with a sample size of 400 individuals selected through random selection. The study was conducted with two research questions and two null hypotheses, which were examined at a 0.05  $\alpha$  level of significance. Data collection, involved the use of a structured questionnaire with 15 items. The reliability of the questionnaire was assessed using

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Cronbach alpha, resulting in a coefficient of 0.88. The study questionnaires were resolved by employing the mean and standard deviation, while the hypotheses were tested with t-test statistics. The results indicated that the zoom software for instructions was highly available and moderately utilized in the tertiary institution with multiple campuses in Rivers State. The utilization of the Zoom instructional strategy will reduce the cost of moving from one campus to another and promote teaching and learning in this period of economic downturn. Therefore, the administrator must create a conducive environment to encourage the implementation of this instructional strategy.

*Keywords: Campuses; instruction; tertiary institutions; zoom.*

## 1. INTRODUCTION

Technological progress has accelerated at an unprecedented rate in the modern era. Almost every part of human organizational training and function is now impacted by computer technology. The incorporation of these technological innovations into curriculum to positively impact teaching and learning has made great strides in recent years [1]. The preferences of students who were born into the digital age, changes in instructional technology, widespread availability of computers, and improvements in software and hardware have all had an impact on how technology is used in classrooms today. Among the many things covered by this integration are the following: the extension of instructional delivery, the teaching of programming skills, online training, testing, self-directed practice, interactive learning software, and access to information, communication, and public technology. Instead of being its own distinct field of study, it aspires to be interdisciplinary [2,3].

Zoom is a web-based platform that allowed users to have video conferences and share media, and is one of the most recent software-based conferences. It facilitates productive learning for instructors and students alike [4]. The accessibility and utilization of zooms incorporating technology, a component of the e-world, into education curricula at Nigerian universities would probably boil down the curriculum to global classroom discussions and interactions [5]. The technology offered by Zoom might revolutionize the way and when people learn. The content is delivered by Zooms through electronic means of communication and information technology. A systematic feedback system, a computer-based operating network, video and audio conferencing, internet websites worldwide, and computer-assisted instruction are among the approaches that make use of these facilities [6]. According to Ateb et al. [7], this mode of distribution expands the potential

locations where students could participate in continuous learning.

One of the fundamental necessities for the effective implementation of e-learning technologies in Nigerian universities is the availability of zoom software. The importance of having available, usable, and well-maintained e-learning resources at all times was highlighted by Gabadeen et al. [8]. A few examples of e-learning technologies are computers, online libraries, email, Google, and messaging apps like WhatsApp and Skype. Teachers and students in tertiary institution benefit from having access to the internet, especially the intranet, so that they can use laptops to type, create PowerPoint presentations; operate projectors, and complete homework. To ensure the continued use of these e-learning tools, it is necessary to keep them up to date [9].

A campus in a tertiary institution refers to the physical grounds and buildings where educational activities and administrative functions take place [10]. Multiple campuses in tertiary institutions have several benefits, including increased accessibility for students in different geographical locations, decongestion of overcrowded campuses, specialized programs tailored to specific fields of study, community engagement with local partners, scalability and growth opportunities, disaster preparedness and resilience, innovation and experimentation through pilot programs and collaborative projects [11]. However, there are also challenges and considerations, such as ensuring consistency and effective communication between campuses, investing in infrastructure and resources, integrating different campus cultures, integrating technology for digital connectivity and providing technical support. The need for multiple campuses in tertiary institutions is driven by several factors. Firstly, multiple campuses increase accessibility for students by serving different geographical locations, reducing long commutes and making higher education more

accessible [12]. Additionally, having campuses in various regions attracts a more diverse student body, enriching the educational experience [13]. In terms of disaster preparedness and resilience, having multiple campuses ensures that educational activities can continue uninterrupted in the event of natural disasters or emergencies [14].

Teachers in higher education need subject-matter experience, an awareness of how students learn with different zoom programs, and a solid foundation in technology to effectively use zoom in the classroom [15]. According to Shobowale [16], technology in education cannot be considered valuable until it is used efficiently. There is no denying that instructors at the university level need some background knowledge to make good use of Zoom for lesson delivery. Consequently, according to Adeogun [17], the use of advanced ICT facilities in the classroom would be nothing more than a pipe dream if educators lack the necessary skills and confidence to effectively incorporate ICT into their lessons. According to Atah et al. [7], it cannot be integrated into the curriculum by educational administrators without the requisite knowledge, attitudes, and abilities (STL). Thus, it is critical that university professors receive information and communication technology (ICT) training to enable them to effectively use zoom technology for lesson delivery. The following abilities are necessary to make good use of zoom technologies, according to Bamigboye and Bankole [18]: the ability to find and run an application programme, like word processing, the ability to connect a computer and its peripherals, the ability to access information on CDs and DVDs, the ability to organize electronic files into folders, the ability to print to different networked printers, etc.

### 1.1 Statement of the Problem

One of the importance of multiple campuses is the ability to decongest overcrowding in a single campus, providing a more comfortable and conducive learning environment. Resources such as libraries, laboratories, and recreational facilities can be distributed across campuses to prevent strain on a single set of facilities.

However, there are challenges and considerations in managing multiple campuses. Ensuring consistency in the quality of education and administrative processes across all campuses can be challenging. Effective

communication between campuses is crucial for coordination and resource sharing. Significant financial investment is required for infrastructure, technology, and staffing. Equitable distribution of resources is necessary to provide a uniform student experience. Fostering a sense of community and belonging among students and staff at different campuses is important.

As a result of the recent economic breakdown, it is observed that the cost of students and lecturers running around in the campuses of tertiary has become extremely high, Thus, putting more pressure on guidance and lecturers of tertiary institutions in Rivers State. Based on this development of reliable digital infrastructure and technical support are essential for connecting campuses and enabling remote collaboration and learning. This research is centre on the utilization of zoom instructional strategies in tertiary institutions with multiple composes in Rivers State.

### 1.2 Aim and Objectives of the Study

The study is aimed at the utilization of zoom instructional strategies in tertiary institutions with multiple composes in Rivers State.

Specifically, the study sought to ascertain:

1. The zoom software technology available for teaching and learning in tertiary institutions in Rivers State.
2. The level of utilization zoom instructional strategies in tertiary institutions in Rivers State.

### 1.3 Research Question

The following research questions guide the study:

1. What are the zoom software technology available for teaching and learning in tertiary institutions in Rivers State.
2. To what extent is the level of compliance to zoom instructional strategies in tertiary institutions in Rivers State.

### 1.4 Hypotheses

The null hypothesis was formulated to guide the study and was tested at 0.05 level of significance:

1. There is no significant difference between the mean of students and instructors on

zoom software technology available for teaching and learning in tertiary institutions in Rivers State.

2. There is no significant difference between the mean score of students and instructors on the extent is the level of compliance to zoom instructional strategies in tertiary institutions in Rivers State.

## 2. LITERATURE REVIEW

### 2.1 Information Technology Network

In the industrialized world, things have altered drastically due to the information technology revolution. Previously scarce or costly data is now widely available and inexpensive [19]. Information scarcity is becoming less common among people in industrialized nations, and information overload is becoming more common. Aside from giving rise to brand-new markets and businesses, communications technology has utterly transformed how these sectors function. For instance, the current state of high-speed communication and computing technologies would have made transport and finance much less viable sectors. Technology advancements in microelectronics, satellites, optical fibre, and packet switching have led to dramatic costs and performance drops, which have accelerated the spread and adoption of these fields [20]. There is a strong demand for information products in industrialized nations that can be transmitted across end-to-end networks with high bandwidth. These products include video, interactive computer services, telephone, and print delivery. Telecommunications providers are interested in investing in the local loop upgrade because of the availability and demand for these services. The main reason for increasing digital connectivity in developed countries is the strong demand for content or network services in the market [21,22].

### 2.2 ICT Competence of Instructors

The level of computer literacy among teachers is a significant indicator of how often technology is used in the classroom [23]. According to Peralta and Costata [24], the level of technical proficiency among Italian instructors affects their utilization of ICT in the classroom. Nonetheless, in order to carry out effective and efficient instructional activities, instructors cited pedagogical and didactic competence as crucial requirements. Regarding the most important competencies for teaching with technology, Portuguese educators had different views.

Technical competence and pedagogical efficiency were cited by student-teachers as important factors in integrating ICT into teaching and learning processes. Both experienced and new teachers emphasized the need to have the right attitude and technical skills, while innovative teachers focused on the curriculum and didactic competencies. Teachers who have worked with computers before tend to have higher faith in their own abilities when it comes to using them in the classroom [24]. In conclusion, research has shown that self-assurance has a clear correlation to teachers' competence [21]. There is a correlation between teachers' self-confidence and their assessments of their own computer skills in the classroom, especially when compared to their students' perceived competence.

## 3. METHODOLOGY

The study employs a descriptive survey research design. Three tertiary institutions in Rivers State conducted the research: the Federal College of Education Technical Omoku, the Ignatius Ajuru University of Education, and Rivers State University. The study's sample population consisted of four hundred (400) students and lecturers from three institutions. A self-constructed questionnaire was used to collect the data. "Utilization of zoom instructional strategies in tertiary institutions with multiple campuses in Rivers State" was the title of the instrument. The questionnaire consisted of two sections. Sections A and B Section A elicited information about the respondents' backgrounds, whereas Section B was divided into three (3) clusters: Cluster A; zoom software technology available for teaching and learning, Cluster B; utilization zoom instructional strategies. Two experts from the Department of Computer and Robotic Education and one from Measurement and Evaluation at Federal College Education (Technical) Omoku validated the instrument. The reliability of the instrument was determined using Cronbach's alpha, and a reliability coefficient of 0.88 was obtained. The researcher visited the institution and distributed four hundred (400) copies of the validated questionnaire draft to the respondents with the help of research assistants. The researcher immediately collected the completed questionnaires, and the research assistants collected the remaining ones after completion. The distribution and collection of all the questionnaires resulted in a 100% response rate. Mean descriptive statistics and simple regression were used to analyze the collected data.

## 4. PRESENTATION OF RESULTS AND DISCUSSIONS

### 4.1 Research Question 1

What are the zoom software technology available for teaching and learning in tertiary institutions with multiple campuses in Rivers State?

Table 1 depicts the availability of zoom software for teaching and learning in tertiary institutions with multiple campuses in Rivers State. The outcome demonstrates that Mobile/Smart phone (4.54), personal laptops computer (3.86) and desktop computer (4.21) were highly available. Further finding estimated that other items (see Table 1) used in zoom software were available except computer simulation conference (2.04) and Interactive radio tape (2.4) that were moderately available. The grand total mean of 3.21 indicate the availability of zoon software for teaching and learning in tertiary institution in Rivers State. The availability of software in the tertiary institution will allow for more flexibility in synchronous or asynchronous instruction, which makes it easier for students to attend class, even if they are unable to physically, be present on campus [9]. This method of instruction can be especially helpful for students who have family or commitment or those who simply prefer to work at their pace [25].

Similar study by Mohamed-Riyath et al. [4] on the attitudes of students on the use of Zoom in higher educational institutes of Sri Lanka reported the availability of zoom software. The study is also consistent with Mpungose [5], who

reported lecturers' reflections on use of Zoom video conferencing technology for e-learning at a South African. Idiedo and Tralagba [26] reported the importance of online teaching and learning using zoom during COVID-19.

### 4.2 Research Question 2

To what extent is the level of compliance to zoom instructional strategies in tertiary institutions in Rivers State?

Table 2 illustrates the extent of utilizing Zoom software instructional strategies in tertiary institutions with multiple campuses in Rivers State. The outcome demonstrates that mobile/smart phones (4.24), personal laptop computers (4.73), and desktop computers (4.45) were very highly utilized. An in-depth examination reveals that the tertiary institutions in Rivers State heavily utilized extended microphones, wireless internet service, and digital satellite. Some of the items that were moderately utilized were the interactive white board (2.14), interactive radio tape (2.16), bulletin board (2.12), and virtual learning environment (2.16). Computer simulation (1.20), video conference (1.38), and interactive television (1.42) were lowly utilized in tertiary institutions in Rivers State. The grand total mean of 2.58 indicates that zoon software instructional strategies are lowly utilized in tertiary institutions in Rivers State. Implementing Zoom-enabled instructions can lead to cost reductions for higher education institutions. Institutions can reduce expenses related to classroom and laboratory facilities, as well as travel and accommodation

**Table 1. Available zoom software for teaching and learning in tertiary institutions**

S/ No	Item N=400	X	SD	RMK
1	Mobile/Smart phone	4.54	0.72	HA
2	Interactive white board	3.14	0.52	A
3	Personal laptops computer	3.86	0.45	HA
4	Extended microphones	3.48	0.68	A
5	Wireless internet service	3.37	0.64	A
6	Extended microphones	3.20	0.77	A
7	Interactive radio tape	2.41	0.23	MA
8	Digital satellite	3.02	0.25	A
9	Bulletin board	3.16	0.13	A
10	Virtual learning environment	2.76	0.47	A
11	Computer Simulation	2.04	0.51	MA
12	Video conference	2.90	0.11	A
13	Desktop computer	4.21	0.57	HA
14	Interactive white board	2.79	0.23	A
	<b>Grand total</b>	<b>3.21</b>	<b>0.45</b>	<b>A</b>

*Highly Available=HA(5-3.6), Available= A(3.5-2.6), Moderately Available=MA(2.5-1.6), Not Available=NA(1.5-0)*

**Table 2. Level of compliance to zoom instructional strategies in tertiary institutions in Rivers State**

S/ No	ItemN=400	X	SD	RMK
1	Mobile/Smart phone	4.24	0.82	VHU
2	Interactive white board	2.14	0.42	MU
3	Personal laptops computer	4.23	0.15	VHU
4	Extended microphones	3.18	0.86	HU
5	Wireless internet service	3.07	0.46	HU
6	Extended microphones	2.73	0.60	U
7	Interactive radio tape	2.16	0.52	MU
8	Digital satellite	3.01	0.22	HU
9	Bulletin board	2.12	0.34	MU
10	Virtual learning environment	2.16	0.56	MU
11	Computer Simulation	1.20	0.29	LU
12	Video conference	1.38	0.21	LU
13	Desktop computer	4.45	0.63	VHU
14	Interactive television	1.02	0.11	LU
<b>Grand total</b>		<b>2.58</b>	<b>0.44</b>	<b>MU</b>

VHU = Very Highly Utilized (5-3.6); HU = Highly Utilized (3.5-2.6); MU = Moderate Utilized (2.5-1.6); LU = Lowly Utilized (1.5-0)

costs for both students and instructors [5,9]. This study is consistent with Okoro's [27] research on the use of the Zoom E-learning Management System in business education at Nigerian universities, as well as Akanferi et al.'s [28] investigation into the methods of developing a Zoom meeting application for educational purposes. McGreal & Olcott [29] emphasized the importance of using technology to implement strategic reset micro-credentials for higher education executives.

### 4.3 Hypothesis 1

There is no significant difference in the mean score of students and instructors on zoom software technology available for teaching and learning in tertiary institutions in Rivers State.

Table 4 presents the statistical analysis of the hypothesis that there is no significant difference in the mean of students and instructors using Zoom software technology for teaching and learning in tertiary institutions in Rivers State.

Because the statistical probability value ( $p = 0.949$ ) was greater than the 0.05  $\alpha$ -level, the

hypothesis was not rejected. This is an indication of the availability of Zoom software technology for teaching and learning in tertiary institutions with multiple campuses in Rivers State. This finding corroborates the observations of Mpungose [5], Akazua et al. [9], and Okoro [27], who worked on the importance of zoom software in tertiary institutions.

### 4.4 Hypothesis 2

There is no significant difference in the mean score of students and instructors on the extent of utilization of zoom instructional strategies in tertiary institutions in Rivers State.

Table 4 shows the statistical analysis of the hypothesis that there is no significant difference in the mean score of students and lecturers on the extent of compliance with Zoom instructional strategies in Rivers State tertiary institutions.

The hypothesis was not rejected on the premise that the statistical probability value ( $p = 0.408$ ) was greater than the 0.05  $\alpha$ -level. This implies that zoom instructional strategies were lowly utilized in tertiary institutions in Rivers State.

**Table 3. z-Test Analysis on the zoom software technology available for teaching and learning in tertiary institutions in Rivers State**

	N	Mean	S. D	Df	p-value	$\alpha$ -level	Decision	
Lecturer	1	295	2.317	1.159	396	0.949	0.05	Accepted
Student	2	105	2.326	1.036				

Source: Researchers' Field Work; 2024

**Table 4. z-Test Analysis on Level of compliance to zoom instructional strategies in tertiary institutions in Rivers State**

		<b>N</b>	<b>Mean</b>	<b>S. D</b>	<b>Df</b>	<b>p-value</b>	<b>α-level</b>	<b>Decision</b>
Lecturer	1	295	2.175	0.976	396	0.408	0.05	Accepted
Student	2	105	2.077	0.849				

Source: Researchers' Field Work; 2024

The result is in agreement with Mohamed-Riyath et al. [4], Akazua et al. [9] and Orie, [30], who reported on the compliance of technology with teaching and learning in high institutions.

## 5. CONCLUSION

The study reports the utilization of Zoom instructional strategies in tertiary institutions with multiple campuses in Rivers State. The study focused on zoom software technology available for teaching and learning, and the extent of utilization of zoom instructional strategies in tertiary institutions in Rivers State. The findings reveal the availability of Zoom software technology and the utilization of Zoom instructional strategies in tertiary institutions in Rivers State.

Therefore, the utilization of Zoom instructional strategies in tertiary institutions with multiple campuses in Rivers State can reduce cost, enhance collaboration, boost the efficiency of teaching practices, and improve student engagement in the classroom through the use of Zoom software resources if properly managed. It was therefore important for tertiary institutions to incorporate a zoom software instructional strategy in order to reduce the cost teaching and learning in this period of economic downturn.

## 6. RECOMMENDATIONS

The following recommendations are therefore made:

1. The Rivers State government should give appropriate finances to buy the zoom software facilities for tertiary institutions that are not properly equipped.
2. Rivers State tertiary institutions should provide and update their personnel's digital skills.
3. Tertiary institutions in Rivers State should organize orientation workshops for lecturers and students to enable them to properly align with the functions and network connectivity of zoom software technology.

## DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

## COMPETING INTERESTS

Author has declared that no competing interests exist.

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