

E-Learning Innovations as a Correlate of Instructional Delivery in Private Secondary Schools in Rivers State

Ojuroh, Womemi

Department of Educational Management

Faculty of Education

University of Port Harcourt

emi.ogiribo@gmail.com

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Abstract

This study examined the relationship between e-learning innovations and instructional delivery in private secondary schools in Rivers State, Nigeria. Three research questions guided the study, and three null hypotheses were tested. A correlational design was adopted. The population consisted of 8,500 teachers across the 1,415 accredited private secondary schools in Rivers State, with a sample of 850 representing 10% of the total population, selected using a stratified random sampling technique. A validated 4-point rating scale questionnaire, created by experts, was used for data collection. The Cronbach Alpha method determined the reliability of the instrument, yielding coefficients of 0.88 and 0.83. Pearson Product Moment Correlation (PPMC) statistics were used to answer the research questions, while same statistics was used to test the hypotheses at a 0.05 level of significance. Findings revealed a high and significant relationship between e-learning innovations, such as internet resources, interactive whiteboards, multimedia projectors and instructional delivery in private secondary schools in Rivers State. Based on the findings, it was concluded that e-learning innovations are generating considerable enthusiasm among teachers, particularly regarding the delivery of quality instruction. Consequently, it was recommended that the management of private secondary schools should regularly provide teachers with internet access at little or no cost to enhance instructional delivery in the classroom.

Keywords: *E-learning, Innovations, Instructional Delivery*

Introduction

Instructional delivery of knowledge and skills to learners in the educational system requires the integration and use of innovative instructional resources to keep pace with the emerging trends in the 21st century educational system. One innovation which is capable of influencing or enhancing instructional delivery is the integration and use of Information and Communication Technology in the form of e-learning (Onu & Ezhim, 2019). Merriam (2019) defined instructional delivery as the process of encoding information and procedures for easy understanding by the receiver. It implies that the teacher through this process carefully selects the method and technique for handing down learning experiences to learners through appropriate mediums of communication. In the context of this paper, instructional delivery entails preparing and sending learning experiences to learners via e-learning innovations. Consequently, it cannot be argued that the use of ICT by teachers can help them in improving their instructional delivery and consequently improve students' learning

performance. If properly adopted and utilised, e-learning can create an improved learning atmosphere that is student-based, facilitate proficient and mutual learning by stimulating increased teacher and student interaction, hence, Miima, et al. (2023) recommended its adoption for classroom instructional delivery. Thus, the use of e-learning innovations in teaching is necessary if teachers are to improve the quality of their instructional delivery. The activity of instructional delivery comprises the application of a collection of instructional resources and master plans to interact and communicate with students around academic domain to support student engagement (Onu & Ezhim, 2019). Looking at the peculiarity of students' learning ability and the dynamic needs of students, it calls for a serious review of teacher's instructional resource utilisation and methods of instructional presentation. This can be adequately attained subject to the teachers' ability to utilise various instructional styles, which will equip students with the desired type of skills and values to make them functional citizens of the society for national development. Given this background, it is expected that a functional kind of teaching and learning process be adopted by teachers to effectively deliver knowledge and skills. In the 21st century, it is expected that teachers integrate e-learning innovations into instructional delivery, since it has been noted by researchers (Onu & Ezhim, 2019; Ziden et al, 2021; Miima, et al., 2023) to improve instructional delivery and enhance learning. E-learning is defined as the delivery of learning using purely internet and digital technology (Al-Busaidi, 2023). It uses a computer and software programs for its learning process, and was first designed for working adult students who were unable to receive formal education as full-time students (Moore, et al., 2021). E-learning, also known as electronic learning, is a method of learning that utilises electronic innovations, such as computers, mobile devices, and the internet, to access and deliver educational content. However, this paper is underpinned by the diffusion of innovations theory by Rogers in the year 1995, which he explained as "the spread of new ideas from its origin of invention to its targeted users" (Rogers 1995). This means that with innovations in Information and Communication Technology (E-learning) in the external world, teachers and learners in schools should be seen to be utilising such innovations in enhancing teaching and learning. Fedena as cited in Oluwuo (2021), saw some of these e-learning innovations in education to include virtual reality, artificial intelligence, blended learning, learning management systems, cloud computing, 3D printing, use of biometrics in schools. Others are digital readers and tablets, gamification, mobile technology, smartphones, multimedia projectors, desktop and laptop computers, internet resources, interactive whiteboards and video conferencing. However, this study would confine itself to internet resources, interactive whiteboards and multimedia projectors. The essence of these types of innovations is drive quality instructional delivery for the realisation of secondary educational objectives. The internet resources are innovations that have helped both teachers and students in the classroom environment, ensuring the smooth process of teaching and learning. Internet resources refer to any information, materials, or services that are available online and can be accessed through the internet. Some examples of internet resources are websites, online databases, digital libraries: Online collections of books, articles, and other digital materials, social media and online courses. The internet resources facilitate quick information retrieval, dissemination, and storage. One of the major advantages of the internet resources, as disclosed by Agomuo (2021), is the availability and accessibility of a vast amount of data and information on any subject matter by anyone, anytime, and anywhere. No wonder, Akubueze (2022) in his study affirmed that there is a high correlation between internet resources and the teaching/learning process, because the internet resources improve research and help both teachers and students carry out their assignment of teaching and learning.

Furthermore, interactive whiteboards as part of e-learning innovations is a large, touch-sensitive display that allows users to interact with digital content using their fingers or a stylus. More so, it can be seen as a large electronic and interactive display board that connects to a computer, projector and internet and is usually mounted on a wall or floor stand, which is used for instructional delivery. Interactive whiteboards are used in a variety of settings, including classrooms at all levels of education for instructional delivery, workgroups, training rooms, workshops and seminars. According to Onwukwe, et al (2023), a positive and high relationship exists between interactive whiteboards and instructional delivery. From the studies of Otunuya (2022) and Agomuo (2021), it was observed that it is highly suitable for teachers' project presentations and teaching process in the classroom environment.

In addition, a multimedia projector is another e-learning innovation that has been observed to have aided the delivery of quality instructions by teachers. It is an electronic device that projects digital images, videos, and other multimedia content onto a screen or wall. Also, it is an image projector that receives a video signal and projects the associated image on a projection screen using a lens system. All video projectors use a very bright light to project the image and most modern ones can correct curves, obscure and generally other discrepancies through manual settings. This device is extensively used for many applications, such as conference room presentations and classroom training. They are sometimes connected to an interactive whiteboard to interactively teach students, thereby promoting quality instructional delivery (Onwukwe, et al., 2023). Adekunle, et al (2020) opined that multimedia projector, as an e-learning innovation, has a significant relationship with the teaching process carried out by the teacher in the classroom environment. This is due to the fact that the images displayed by the projector help teachers to explain abstract concepts better to students' understanding, thereby making instructional delivery very stress-free. The innovation of internet resources, interactive whiteboards, and multimedia projectors has revolutionised the way instructional delivery is approached in modern educational settings. These technological tools have created new opportunities for teachers to engage students, convey complex information, and foster a more interactive learning environment, as well as inclusive learning experiences that cater for diverse learning styles. As technology continues to evolve, it is essential for teachers to stay up-to-date with the latest developments and best practices in instructional delivery, ensuring that students receive the best possible education. This paper therefore examined 'e-learning innovations as a correlate of instructional delivery in private secondary schools in Rivers State'.

Statement of the Problem

The proliferation of technology has transformed the way education is delivered globally. However, in Rivers State, Nigeria, public secondary schools face challenges in leveraging e-learning innovations to enhance instructional delivery. Despite the potential benefits of internet resources, interactive whiteboards, and multimedia projectors, many schools lack the infrastructure, technical expertise, and effective utilization strategies to integrate these innovations into teaching practices. This has resulted in a significant gap in the quality of education provided to students, potentially hindering their academic achievement, digital literacy, and future prospects. Also, notwithstanding the increasing importance of technology in modern education, many public secondary schools in Nigeria have yet to fully integrate e-learning innovations into their instructional delivery, which may have far-reaching consequences for students' competitiveness in the global economy. The question here is whether there is a relationship between e-learning innovations and instructional delivery. Hence, this study addresses the problem.

Aim and Objectives of the Study

The aim of the study was to examine the relationship between e-learning innovations and instructional delivery in private secondary schools in Rivers State. The objectives specifically sought to:

1. determine the relationship between internet resources and instructional delivery in private secondary schools in Rivers State.
2. ascertain the relationship between interactive whiteboards and instructional delivery in private secondary schools in Rivers State.
3. Find out the relationship between multimedia projectors and instructional delivery in private secondary schools in Rivers State.

Research Questions

The following research questions guided the study:

1. What is the relationship between internet resources and instructional delivery in private secondary schools in Rivers State?
2. What is the relationship between interactive whiteboards and instructional delivery in private secondary schools in Rivers State?
3. What is the relationship between multimedia projectors and instructional delivery in private secondary schools in Rivers State?

Hypothesis

The following hypotheses were formulated and tested at 0.05 level of significance:

1. There is no significant relationship between internet resources and instructional delivery in private secondary schools in Rivers State.
2. There is no significant relationship between interactive whiteboards and instructional delivery in private secondary schools in Rivers State.
3. There is no significant relationship between multimedia projectors and instructional delivery in private secondary schools in Rivers State.

Methodology

This study adopted a correlational research design to ascertain the relationship between e-learning innovations and instructional delivery in public secondary schools in Rivers State. The population for this study comprised 8,500 teachers (3,978 male and 4,522 female) across 1,415 accredited private senior secondary schools in Rivers State. A stratified sampling technique was used to select a sample size of 850 respondents, representing 10% of the total population. This is considered as this appropriate percentage to serve as an acceptable sample for a population running into thousands. The research instrument for this study was a questionnaire consisting of two sets, titled: E-learning Innovations Assessment Scale (EIAS) and Instructional Delivery Assessment Scale (IDAS). The instrument consisted of two sections (A and B). Section A elicited demographic information from the respondents, while Section B included items addressing research questions one to three. The items on the instrument were rated on a 4-point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The instrument was validated, and its reliability was tested using Cronbach's Alpha reliability statistics, which yielded coefficients of 0.88 and 0.83 for EIAS and IDAS, respectively. Data for this study were primarily collected by the researcher. A total of 583 copies of the questionnaire were administered to the respondents, and 827 copies were retrieved and deemed suitable for analysis, resulting in 97% retrieval rate.

The data collected for the study were analyzed using Pearson Product Moment Correlation Coefficient (PPMC) statistics. Research questions were answered based on the value and direction of the correlation coefficients. Correlation coefficients between 0.90 and 1.00 were considered Very High (VH), 0.70 to 0.80 were High (H), while correlation coefficients between 0.50 and 0.60 were Moderate (M), and between 0.30 and 0.40 were Low (L), while those below 0.20 (< 0.20) were considered Very Low (VL). The same correlation statistics were also used to test the corresponding hypotheses at the 0.05 significance level. The data obtained were run using the Statistical Package for the Social Sciences (SPSS) version 23. 23.00.

Results and Analysis

The results of the analysed data for the research questions and their corresponding hypotheses are presented in tables as shown below.

Research Question 1: What is the relationship between internet resources and instructional delivery in private secondary schools in Rivers State?

Table 1: Pearson Product Moment Correlation (PPMC) Showing the Relationship between Internet Resources and Instructional Delivery in Private Secondary Schools in Rivers State

Variables	n	df	r	Decision
Internet Resources	827	825	0.711	High
				(Positive Relationship)
Instructional Delivery	827			

Decision Rule: 0.90 – 1.00 = Very High (VH), 0.70 – 0.80 = High (H), 0.50 – 0.60 = Moderate (M), 0.30 – 0.40 = Low (L), 0.20 (< 0.20) = Very Low (VL).

Source: Researcher's Field Result, 2025.

Data on Table 1 reveal a correlation coefficient of $r = 0.71$. This value is high and positive, indicating that there is a high and positive relationship between internet resources and instructional delivery in private secondary schools in Rivers State. This implies that an increase in the adoption of internet resources will lead to a corresponding increase in instructional delivery in private secondary schools in Rivers State.

Research Question 2: What is the relationship between interactive white boards and instructional delivery in private secondary schools in Rivers State?

Table 2: Pearson Product Moment Correlation (PPMC) Showing the Relationship between Interactive White Boards and Instructional Delivery in Private Secondary Schools in Rivers State

Variables	n	df	r	Decision
Interactive White Boards	827	825	0.704	High
				(Positive Relationship)
Instructional Delivery	827			

Decision Rule: 0.90 – 1.00 = Very High (VH), 0.70 – 0.80 = High (H), 0.50 – 0.60 = Moderate (M), 0.30 – 0.40 = Low (L), 0.20 (< 0.20) = Very Low (VL).

Source: Researcher's Field Result, 2025.

Data on Table 2 reveal a correlation coefficient of $r = 0.70$. This value is high and positive, indicating that there is a high and positive relationship between interactive white boards and instructional delivery in private secondary schools in Rivers State. This implies that an increase in the adoption of interactive white boards will lead to a corresponding increase in instructional delivery in private secondary schools in Rivers State.

Research Question 3: What is the relationship between multimedia projectors and instructional delivery in private secondary schools in Rivers State?

Table 3: Pearson Product Moment Correlation (PPMC) Showing the Relationship between Multimedia Projectors and Instructional Delivery in Private Secondary Schools in Rivers State

Variables	n	df	r	Decision
Multimedia Projectors	827	825	0.742	High
				(Positive Relationship)
Instructional Delivery	827			

Decision Rule: 0.90 – 1.00 = Very High (VH), 0.70 – 0.80 = High (H), 0.50 – 0.60 = Moderate (M), 0.30 – 0.40 = Low (L), 0.20 (< 0.20) = Very Low (VL).

Source: Researcher's Field Result, 2025.

Data on Table 3 reveal a correlation coefficient of $r = 0.74$. This value is high and positive, indicating that there is a high and positive relationship between multimedia projectors and instructional delivery in private secondary schools in Rivers State. This implies that an increase in the adoption of multimedia projectors will lead to a corresponding increase in instructional delivery in private secondary schools in Rivers State.

Test of Hypotheses

Hypothesis 1: There is no significant relationship between internet resources and instructional delivery in private secondary schools in Rivers State.

Table 4: Showing the Significant Relationship between Internet Resources and Instructional Delivery in Private Secondary Schools in Rivers State

Variables	n	df	r	p-value	Level of Decision Significance
Internet Resources	827	825	0.711	0.00	0.05
					H_{01} Rejected (Significant)
Instructional Delivery	827				

Source: Researcher's Field Result, 2025

For the hypothesis tested, it was revealed from Table 4 that r of 0.71 is significant with $P < 0.05$ because the calculated probability value of 0.00 is less than the critical probability value (level of significance) of 0.05. Therefore, the null hypothesis was rejected. By implication, there is a significant relationship between internet resources and instructional delivery in private secondary schools in Rivers State.

Hypothesis 2: There is no significant relationship between interactive white boards and instructional delivery in private secondary schools in Rivers State.

Table 5: Showing the Significant Relationship between Interactive White Boards and Instructional Delivery in Private Secondary Schools in Rivers State

Variables	n	df	r	p-value	Level of Significance	Decision
Interactive White Boards	827	825	0.704	0.00	0.05	H_{02} Rejected (Significant)
Instructional Delivery	827					

Source: Researcher's Field Result, 2025

For the hypothesis tested, it was revealed from Table 4 that r of 0.70 is significant with $P < 0.05$ because the calculated probability value of 0.00 is less than the critical probability value (level of significance) of 0.05. Therefore, the null hypothesis was rejected. By implication, there is a significant relationship between interactive white boards and instructional delivery in private secondary schools in Rivers State.

Hypothesis 3: There is no significant relationship between multimedia projectors and instructional delivery in private secondary schools in Rivers State.

Table 6: Showing the Significant Relationship between Multimedia Projectors and Instructional Delivery in Private Secondary Schools in Rivers State

Variables	n	df	r	p-value	Level of Significance	Decision
Multimedia Projectors	827	825	0.742	0.00	0.05	H_{03} Rejected (Significant)
Instructional Delivery	827					

Source: Researcher's Field Result, 2025

For hypothesis tested, it was revealed from Table 6 that r of 0.74 is significant with $P < 0.05$ because the calculated probability value of 0.00 is less than the critical probability value (level of significance) of 0.05. Therefore, the null hypothesis was rejected. By implication, there is a

significant relationship between multimedia projectors and instructional delivery in private secondary schools in Rivers State.

Discussion of Findings

The Relationship Between Internet Resources and Instructional Delivery in Private Secondary Schools in Rivers State

The first finding of the study revealed that there is a high and positive relationship between internet resources and instructional delivery in private secondary schools in Rivers State. A corresponding hypothesis tested establishes a significant relationship between internet resources and instructional delivery in private secondary schools in Rivers State. These findings are in line with Agomuo (2021) and Akubueze (2022), who in their studies affirmed that there is a high relationship between internet resources and instructional delivery. A possible explanation of these findings is the fact that the respondents are teachers who work in private schools, where these internet resources are provided and integrated into the teaching and learning process. This implies that when internet resources as e-learning innovations, are integrated in the teaching and learning process, they improve research and help teachers deliver quality instruction.

The Relationship Between Interactive White Boards and Instructional Delivery in Private Secondary Schools in Rivers State

The second finding of the study revealed that there is a high and positive relationship between interactive white boards and instructional delivery in private secondary schools in Rivers State. A corresponding hypothesis tested establishes a significant relationship between interactive white boards and instructional delivery in private secondary schools in Rivers State. These findings are in agreement with Agomuo (2021), Otunuya (2022) and Onwukwe, et al (2023) whose empirical studies reported that there is a high relationship exists between interactive whiteboards and instructional delivery. A possible explanation of these findings is the fact that most private schools in the state under review provide interactive whiteboards in their classrooms to aid teachers in their instructional delivery. The implication of this is that when interactive white boards are provided for teachers to carry out project presentations and teaching process in the classroom environment, it promotes quality instructional delivery for better student performance.

The Relationship Between Multimedia Projectors and Instructional Delivery in Private Secondary Schools in Rivers State

Lastly, the third finding of the study revealed that there is a high and positive relationship between multimedia projectors and instructional delivery in private secondary schools in Rivers State. A corresponding hypothesis tested establishes a significant relationship between multimedia projectors and instructional delivery in private secondary schools in Rivers State. These findings are in consonance with Adekunle, et al (2020) and Onwukwe, et al (2023) averred that multimedia projectors have a significant relationship with instructional delivery. An explanation of these findings is linked to the fact that many teachers in private schools make use of the multimedia projectors to present their lessons. The implication of this is that when this e-learning innovation is been utilized, it promotes quality instructional delivery.

Conclusion

Based on the findings of the study, it was concluded that e-learning innovations such as internet resources, interactive whiteboards and multimedia projectors are generating considerable enthusiasm among teachers, particularly regarding the delivery of quality instruction.

Recommendations

In light of the findings and conclusion of this study, the following are hereby recommended:

1. The management of private secondary schools should regularly provide teachers with internet access at little or no cost to enhance instructional delivery in the classroom.
2. The managers of private schools should always prioritise the development of e-learning innovation, such as interactive whiteboards, in private secondary schools for instructional delivery.
3. The management of private secondary schools should regularly conduct ICT training for their teachers to enhance their skills and knowledge in integrating e-learning resources like multimedia projectors into instructional delivery.

References

- Agomuo, E.E. (2021). *Modern office technology: Issues, procedures & practice*. University of Nigeria Press.
- Akubueze, O.J. (2022). *Business educators' utilization of information and communication technology facilities in tertiary institutions in the South East Zone of Nigeria*. A Masters Thesis, Department of Vocational Education, Nnamdi Azikiwe University, Awka.
- Al-Busaidi, K. A. (2023). An empirical investigation linking learners' adoption of blended learning to their intention of full e-learning. *Behaviour & Information Technology*, 32(11), 1168-1176.
- Merriam, W. (2019). *Definition of instructional delivery*. <http://www.merriam-webster.com/dictionary/instructionaldelivery>.
- Miima, F., Ondigi, S. & Mavisi, R. (2023). Teachers' perception about integration of ICT in teaching and learning of Kiswahili language in secondary schools in Kenya. *International Journal of Arts & Commerce*, 2 (3), 27-32.
- Moore, J. L., Dickson-Deane, C., & Galyen, K. (2021). E-learning, online learning, and distance learning, and distance learning environments: Are they the same? *Internet Higher Education*, 14(2), 129-35.
- Oluwuo, S. O. (2021). *Management of innovation education for the attainment of sustainable development goals*. A Keynote Address Presented at the Conference Organized by University of Port Harcourt Chapter of Nigerian Association for Educational Administration and Planning (NAEAP) Held at Ebitimi Banilgo Hall Abuja Unipark, University of Port Harcourt from Monday 17th to Thursday 20th May, 2021.
- Onu, F. M. & Ezhim, I. A. (2019). Utilization of ICT facilities for enhancing instructional delivery of agricultural science in Nigerian secondary schools. *Library Philosophy and Practice (e-journal)*, 2646. <https://digitalcommons.unl.edu/libphilprac/2646>.
- Onwukwe, V.O., Lekwa, U.U., & Aliche, K.U. (2023). *Modern office technology for tertiary institutions*. EL'DEMAK Publishers.
- Otunuya, O.S. (2022). E-learning: A tool for distance learning in Business education. *Nigerian Journal of Business Education*, 3(2), 42 - 51.
- Rogers, E. M. (1995). *Diffusion of innovations*. 4th Edition. The Free Press.
- Ziden, A. A., Ismail, I., Spain, R. & Kumutha, K. (2021). The effect of ICT use in teaching and learning on students' achievement in science subjects in a primary school in Malaysia. *Malaysian Journal of Distance Education*, 13(2), 19-32.