



EXPLORING LECTURERS' USAGE OF DIGITAL SOFTWARE PACKAGES FOR RE-ENGINEERING PEDAGOGICAL TRANSFORMATION IN SELECTED TERTIARY INSTITUTIONS IN RIVERS STATE FOR SUSTAINABLE NATIONAL DEVELOPMENT



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Abstract

The study explores lecturers' usage of digital software platforms for re-engineering pedagogical transformation in selected tertiary institutions in Rivers State for sustainable national development. With the growing demand for digital integration in education, the role of software packages such as Zoom, Google Classroom, Microsoft Office and others has become critical in enhancing teaching and learning processes. This study adopted the descriptive survey design. The study was guided by two specific objectives, two research questions and two hypotheses. The population of the study stood at 62, which comprised of 40 lecturers drawn from the Department of Educational Management, Rivers State University and 22 lecturers drawn from the Department of Educational Management, Ignatius Ajuru University of Education. The census sampling technique was deployed while the entire population was used for the study due to its manageable size. Data was collected using a self-structured questionnaire titled "lecturers' usage of digital software packages for re-engineering pedagogical transformation (LUDSPRPT)". The reliability of the instrument was done using test re-test method. Scores obtained were correlated using Pearson Product-Moment Correlation Coefficient and it yielded a reliability coefficient of 0.77. Research questions were answered using Mean and Standard Deviation, while the t-test statistical tool was used in testing the formulated hypotheses at 0.05 level of significance. The study revealed that while a good number of lecturers are aware of and utilize basic software packages there still remains a gap in the strategic integration of advanced educational tools for reengineering pedagogical transformation within the tertiary education landscape. It was further revealed that to a high extent lecturers apply Microsoft PowerPoint for effective instructional delivery in Rivers State University and Ignatius Ajuru University of Education respectively while to a moderate extent, lecturers apply Zoom for effective instructional delivery. Based on the findings, the researchers recommended, among others, that targeted digital literacy trainings should be encouraged to foster effective and innovative pedagogical practices through technology.

Keywords: Digital software platforms, Re-engineering, pedagogical transformation, tertiary institutions, sustainable national development



Introduction

Technology has, since the 20th century, become an integral part of the education system. This trend has continued to evolve and get better, and at every point in time, more technologies are developed to suit contemporary societal needs and situations. Digital software has become prominent and has been infused significantly into education and over the years increased in sophistication and usefulness. Today, the use of digital software in the education system has received more attention for improving the quality of teaching and learning, (Eziokwu, Victor & Ugorji, 2020).

Reengineering pedagogical transformation requires digital software platforms that play crucial roles in modern instructional delivery, enhancing the teaching and learning experiences. Software packages enable educators to create engaging content, interactive lessons, and assessments. These packages often include learning management systems (LMS), video conferencing tools, content creation software, and assessment platforms. Through these tools, instructors can facilitate remote learning, personalize instruction, real-time collaboration, and effective assessment, making education more dynamic and accessible (Amaewhule & Ochen, 2023). The term software packages has been growing in popularity in the Information Technology and academic world. However, software applications refer to a set of electronic programmes, instructions or data that a computer processor reads in order to perform a task or operation.

Re-engineering pedagogical transformation via digital software platforms is necessary for sustainable national development because sustainable development is only possible when tangible steps are taken to raise the level of literacy and numeracy in any society. This is to say that educational institutions and their programmes are the tools with which to achieve development and its sustainability.

Sustainable development is that development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland Report in Okafor & Egenti, 2021). It requires that societies meet human needs both by increasing productive potentials and by ensuring equitable opportunities for all. Sustainable development must not endanger the natural systems that support life on earth- the atmosphere, the waters, the soils and the living beings. Sustainable development aims at maximizing the net benefits of economic development subject to maintaining the stock of all environmental and natural resource assets (physical, human and natural) over time (Samuel, 2020). Sustainable development suggests that all would be better off if each person took into account the effect of his or her actions on others. Social progress and innovation are the key elements of development, and education provides them.

Statement of the Problem

In recent years, the integration of various software packages, such as Microsoft Word, Microsoft Excel, Microsoft PowerPoint and Zoom into education has gained significant attention. While this software's offer the potential to revolutionize teaching and learning experiences in our universities, their availability and effective utilization by lecturers in instructional delivery still remains a concern due to limited access to reliable internet connectivity and inadequate digital literacy skills among lecturers. A lot of Universities in Nigeria are suffering inadequate funding and investment opportunities for software startups of educational institutions; this may be affecting innovation and growth in the educational system. Thus, the need for the pedagogical transformation with the use of software packages needs to be continuous and target-oriented in view of the new developments in the world as a result of technological development. Hence, the need to investigate the application of software packages by lecturers for re-engineering pedagogical transformation in Rivers State-owned universities.

1.3 Purpose of the Study

The study aimed at investigating the application of software packages by lecturers for re-engineering pedagogical transformation in Rivers State-owned Universities. Specifically, the study sought to:

4. Investigate the extent to which lecturers apply Microsoft PowerPoint for re-engineering pedagogical transformation in Rivers State University and Ignatius Ajuru University of Education.
 5. Ascertain the extent to which lecturers apply Zoom classroom for re-engineering pedagogical transformation in Rivers State University and Ignatius Ajuru University of Education.
- Research Questions

The following research questions guided the study.

5. To what extent do lecturers apply Microsoft PowerPoint for re-engineering pedagogical transformation in Rivers State University and Ignatius Ajuru University of Education?
6. To what extent do lecturers apply zoom classroom for re-engineering pedagogical transformation in Rivers State University and Ignatius Ajuru University of Education?

Hypotheses

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

- There is no significant difference in the mean ratings of lecturers in Rivers State University and Ignatius Ajuru University of Education on the extent to which they apply Microsoft PowerPoint for re-engineering pedagogical transformation
- There is no significant difference in the mean ratings of lecturers in Rivers State University and Ignatius Ajuru University of Education on the extent to which they apply zoom classroom for re-engineering pedagogical transformation.

Theoretical Review

Research has shown that education based on multimedia can help students' understanding and memorization. Educational multimedia is one of the media systems that, due to their multi-sensory nature, can easily adapt to various learning styles and provide easy and stable learning with various forms of interaction. The advantages of multimedia can be creativity, saving time, eliminating useless activities, adding time for communication with students and discussions, presenting materials in various formats, identifying different learning styles, active learning with feedback, the possibility of repetition, and tailored learning (Navad, 2024).

Heidari et al. (2010) ; Navad, (2024) compared the effect of teaching using English educational software and teaching in the traditional way, and reported that the use of educational software is more effective than the traditional method on the academic progress and motivation of students towards learning English. On the other hand, In addition to the theoretical foundations that support the use of multimedia and the model of understanding concepts in education, the empirical foundations support the use of this multimedia and the model of understanding concepts in education and learning]. Among the studies carried out in this field, we can mention the research of Salehizadeh and Asadi (2013); Navad, (2024), who have reported positive results of its use by building and designing a multimedia researcher and using it in geography education

The results of Khoddam's research (2013); Navad, (2024) have also shown the positive role of computer lesson simulator software in improving students' motivation and learning. The report of Gharebaghian (2011) in research entitled: "The effect of using a simulated educational environment on the internal motivation and learning of undergraduate students in the field of geology of Boali Hamedan University" indicates the positive effects of using the simulation method on the internal motivation and learning of students in the earth course. Clark (2008) ; Navad, (2024) reported in a research that he has done in relation to new media and information and communication technology, including educational software on motivation and learning, that simulator software even increases the motivation of teachers along with increasing learning. Studies have shown that when educational aid software is used appropriately, it can significantly and effectively help improve teaching and increase learning.



Conceptual review

Concept of Software Packages

Software packages play a crucial role in modern instructional delivery, enhancing the teaching and learning experience. They enable educators to create engaging content, interactive lessons, and assessments. These packages often include learning management systems (LMS), video conferencing tools, content creation software, and assessment platforms. Through these tools, instructors can facilitate remote learning, personalized instruction, real-time collaboration, and effective assessment, making education more dynamic and accessible. Wey & Ochen (2023).

Software packages refer to collections of computer programmes and applications bundled together to provide a comprehensive set of functionalities and features for specific purposes. These packages are designed to address particular needs or tasks, making it easier for users to access and use multiple software tools under a unified interface. Each software package typically contains a combination of applications, utilities, libraries, and related resources that work together to offer a complete solution for specific tasks or activities. Software packages can vary widely in their scope and purpose, catering to different industries, professions, or domains. Examples of software packages include office suites, which bundle word processing, spreadsheets, presentations, and others. There are literally thousands of software programmes designed to help the user use the computer to accomplish some tasks (Wey & Ochen, 2023).

Computer software, or simply software, is a collection of data or computer instructions that tell the computer how to work. This is in contrast to physical hardware, from which the system is built and performs the work. In computer science and software engineering, computer software is all information processed by computer systems, programs and data. Computer software includes computer programs, libraries and related non-executable data, such as online documentation or digital media. Computer hardware and software require each other and neither can be realistically used on its own. There are different types of computer software. According to Wikipedia (2019), the two main types of computer software are the system software and the application software. The system software provides the platform for users to install and run application software, and it's made up of multiple programs needed to run a computer system smoothly. Application programs are designed to perform specific tasks, such as word processing, video editing, spreadsheets and web browsers. Education software is a massive, all-encompassing term used to refer to any and all software designed for use in the education industry. According to Katherine, Kimberly, Roxanne, Maria, John, and Katherine (2016). Educational software is a term used for any computer software which is made for an educational purpose. It encompasses different ranges from language learning software to classroom management software to reference software, etc. The purpose of all this software is to make some part of education more effective and efficient.

Application of Power-Point for re-engineering pedagogical transformation

The pedagogical approaches utilized by instructors are vital in skill development and significant learning. Notable progress in technology, economic empowerment, and self-sufficiency attained by powerful nations such as Hong Kong, Japan, Thailand, Singapore, and others can be ascribed, among other causes, to good pedagogical techniques. The significance of education and pedagogical approaches is paramount in this period dominated by Science, Technology, and Mathematics, facilitated by Information and Communication Technology. Science, technology, and engineering significantly contribute to economic progress and the provision of contemporary amenities for humanity (Chung & Intan, 2025).

Governments, institutions, and administrations underscore the necessity for a pragmatic, technically-focused curriculum and efficient means for instructing technical courses in schools and educational establishments (Ratu & Komara, 2021). Research conducted by Saripudin, Fauzi, and Nugraha (2022) indicates that computers and other technology facilitate the adaptation and modification of curriculum materials for at-risk kids, thus equalizing educational chances for all. Educational professionals must prioritize the optimal utilization of these tools in classrooms, especially for at-risk

children. Tang, Wijaya, Weinhandl, Houghton, Lavicza, and Habibi (2022) assert that PowerPoint provides several opportunities for educating those with disabilities. This readily accessible and user-friendly software enables educators to develop captivating and pleasant resources to enhance learning with minimal time and ingenuity. After slides are prepared, they can be replicated across several presentations and kept on disks for utilization on various machines. Many children are motivated by computer-assisted learning, and for those with physical, cognitive, or learning challenges, PowerPoint offers opportunities for independent practice that would normally require adult assistance. Presentations can be shared with students who have access to PowerPoint or PowerPoint Viewer for extra practice. Teachers only need to spend a small amount of time learning the basics of the program, allowing them to unlock their creativity and use PowerPoint to create more engaging and effective instructional materials for their students. The use of PowerPoint in education is undeniably contentious. Diverse research undertaken to assess its effects have shown inconclusive outcomes. Although numerous individuals contend that it improves student performance (Khozaei, Zare, Moneghi, Sadeghi & Taraghdar, 2022). Conversely,

Power-Point is a presentation programme developed by Microsoft. It is a part of the Microsoft Office system which is widely used by business people, educators, students, and trainers. PowerPoint is one of Microsoft's most used software packages. It is a representation of information that allows one to communicate the information effectively to the audience. It also allows one to show the information through various colored text, graphics, sounds, videos and animations (Ibrahim, 2018). As a part of the Microsoft Office suite, Power-Point has become the world's most widely used presentation program. It is a complete presentation program that allows teachers to produce professional-looking presentations in classroom (Lari in Ibrahim, 2018). PowerPoint is one of the main teaching tools that play an integral role in promoting the teaching and learning processes, thus contributing to the field of education as a whole. Application Microsoft PowerPoint provides presentations with a visual element, which can be used in the field of education to great effect (Kanika in Ibrahim, 2018).

PowerPoint is one of the main teaching tools that play an integral role in promoting the learning and teaching processes, thus contributing to the field of education as a whole. Application Microsoft PowerPoint provides presentations with a visual element, which can be used in the field of education to great effect. Most people have used PowerPoint at some point in their education or career. It is fairly easy to pick up the basic functions of the program for simple presentations, and information can easily be conveyed through bullet points and images on various slides. Most people do not delve into the broader functionality of the programme though, but those interested in business management should look into everything PowerPoint has to offer (New, 2021).

Application Of Zoom Classroom For Re-Engineering Pedagogical Transformation

The sudden outbreak of coronavirus (COVID-19) pandemic brought about stay at home and keeping social distances from others as much as possible to help prevent the spread of the virus. This forced the educational sector in Nigeria and the world at large to look for alternative ways of teaching other than the traditional physical classroom method, including video conference via zoom. Furthermore, the Covid-19 pandemic forced several government agencies, institutions, non-profit organizations, and individuals to also embrace zoom. A lot of transformation is taking place in the world and the education sector cannot be left behind. The 21st century requires reengineering education to produce a workforce that will meet the demand of today's workplace. Zoom classroom promises to be one of those software tools that can be deployed to transform education in our tertiary institutions in this century. Ogwunte and Amadi (2020) in support of Achibald and Barnald (2018), stated that Zoom cloud application offers the ability to communicate in real time with geographically dispersed individuals via computer, tablets or mobile devices. Unlike many other technologies, Zoom cloud possesses a number of additional advantages that enhances its potential instructional delivery utility.

Zoom was founded by Eric Yuan in 2011. It is a web-based videoconferencing tool with high-quality audio, video, and screen sharing that is excellent for virtual meetings, online meetings, and classrooms, webinars, among other things (Alhumaid et al., 2020; Karal, 2011). It therefore become

widely available for lecturers, students, and other supporting staff in many institutions. Instructors were able to design an interactive Face to face learning environment through the utilization of zoom's various features. Some utilized zoom's features includes; Breakout rooms for small collaborative group work, polls for student participation, and chat to enhance class discussions are all accessible on the virtual whiteboard with annotation functionality. Meetings and classes via Zoom can also be recorded and saved for later use (Bhatt, Sonia, Shiva, 2020).

Zoom classroom is a popular tool that allows students to share and access digital content from anywhere utilizing an internet connection and an appropriate device (Sadik, 2016). Zoom classroom is one of the most effective cloud systems. Zoom is a web based collaborative conferencing tool that provide quality audios, video and screen sharing (Luiz, & Manuela, 2021; Abubakar & Abubakar, 2022).

Methodology

This study adopted the descriptive survey design. The study was guided by two specific objectives, two research questions and two hypotheses. The population of the study stood at 62, this comprised of 40 lecturers drawn from the Department of Educational Management, Rivers State University and 22 lecturers drawn from the Department of Educational Management, Ignatius Ajuru University of Education. The census sampling technique was deployed while the entire population was used for the study due to its manageable size. Data was collected using as self-structured questionnaire titled "lecturers' usage of digital software packages for re-engineering pedagogical transformation (LUDSPRPT)" The reliability of the instrument was done using test re-test method. Scores obtained were correlated using Pearson Product Moment Correlation Coefficient and it yielded a reliability coefficient of 0.77. Research questions were answered using Mean and Standard Deviation while t-test statistical tool was used in testing the formulated hypotheses at 0.05 level of significance

Results/ Discussions

Research Question 1: To what extent to does lecturers apply Microsoft PowerPoint for for re-engineering pedagogical transformation in Rivers State University and Ignatius Ajuru University of Education?

Table 1 Mean and Standard Deviation on the extent to whichlecturers apply Microsoft PowerPoint for re-engineering pedagogical transformation in Rivers State University and Ignatius Ajuru University of Education

S/No	Items	Institutions RSU Lecturers = 40		SD	Remark	IAUE lecturers = 22		SD	Remark
		<u>X</u>				<u>X</u>			
1	PowerPoint helps students understand lesson better.	2.52		0.32	High Extent	2.51		0.52	High Extent
2	Ability to use PowerPoint for accessibility via email or file sharing platforms	2.88		0.43	High Extent	2.71		0.43	High Extent



3	PowerPoint provides a structural framework for organizing course content	3.28	0.65	High Extent	2.63	0.19	High Extent
4	PowerPoint allow lecturers to create visually appealing presentation	3.21	0.67	High Extent	3.11	0.27	High Extent
5	Ability to automatically create table to enhance job performance.	2.62	0.70	High Extent	2.53	0.81	High Extent
Grand Mean/SD		2.91	0.62	High Extent	2.69	0.59	High Extent

Source: Field Survey Data, 2025

Table 1 showed that items 1 to 5 with aggregate mean scores of 2.52, 2.80, 2.96, 3.16 and 2.58 rated high extent by the respondents; above all the aggregate grand mean scores of 2.80 indicates that to a high extent Lecturers apply Microsoft PowerPoint for re-engineering pedagogical transformation. The low value of aggregate standard deviations ranging from 0.77 to 1.34 suggested that the responses are very contiguous.

Research Question 2: To what extent to does lecturers apply Zoom classroomfor re-engineering pedagogical transformation in Rivers State University and Ignatius Ajuru University of Education?

Table 2 Mean and Standard Deviation on the extent lecturers apply Zoomfor re-engineering pedagogical transformation in Rivers State University and Ignatius Ajuru University of Education

		Institutions RSU lecturers = 40			IAUE lecturers = 22		
S/No	Items	<u>SD</u>	Remark	<u>SD</u>	Remark		
		X		X			
16	Ability to use for interactive and collaborative learning process	2.50 0.38	high Extent	2.52 0.25	high Extent		
17	Ability to use zoom for screen sharing, breakout rooms, polls, and chat functions	2.50 0.31	high Extent	2.52 0.22	high Extent		
18	With zoom students are encouraged for learning experience	2.51 0.62	high Extent	2.53 0.17	high Extent		

19	Ability to use zoom for video conferencing and real-time	2.52	0.73	high Extent	2.52	0.41	high Extent
20	Zoom allows instructors to conduct live virtual classes.	2.52	0.44	high Extent	2.51	0.29	high Extent
Grand Mean/SD		2.52	0.50	Moderate Extent	2.53	0.27	Moderate Extent

Source: Field Survey Data, 2025

Table 4 showed that item 16, 17, 18, 19, 20 with aggregate mean scores of 2.50, 2.51, 2.52, 2.52 and 2.51 was rated to high extent by the respondents. Above all, the aggregate grand mean score of 2.53 indicates that to a high extent lecturers apply zoom for re-engineering pedagogical transformation. The low values of aggregate standard deviations ranging from 0.27 to 0.57 suggest that the responses are very contiguous.

Test of Hypotheses

Hypothesis 1: There is no significant difference in the mean ratings of lecturers in Rivers State University and Ignatius Ajuru University of Education on the extent they apply Microsoft PowerPoint for re-engineering pedagogical transformation.

Table 3 : t-test of difference in the mean ratings of lecturers in Rivers State University and Ignatius Ajuru University of Education on the extent they apply Microsoft PowerPoint for re-engineering pedagogical transformation.

Respondents	N	Mean	Std	Df	t-cal	t-crit	A	Decision
RSU LECT	40	2.91	0.62	60	1.37	1.697	0.05	Accepted
IAUE LECT	22	2.69	0.59					

Source: Field Survey Data, 2025

The result in table 3 shows that at degree of freedom of 60 and at 0.05 level of significance, the t-calculated value of 1.37 is less than the t-critical value of 1.697. Thus, the null hypothesis was accepted. This implies that there is no significant difference in the mean ratings of lecturers in Rivers State University and Ignatius Ajuru University of Education on the extent they apply Microsoft PowerPoint for re-engineering pedagogical transformation. In other words, lecturers in Rivers State University and Ignatius Ajuru University of Education have a common view on the extent they apply Microsoft PowerPoint for effective instructional delivery.

Hypothesis 2: There is no significant difference in the mean ratings of lecturers in Rivers State University and Ignatius Ajuru University of Education on the extent they apply Zoom for re-engineering pedagogical transformation.

Table 4: t-test difference in the mean ratings of lecturers in Rivers State University and Ignatius Ajuru University of Education on the extent they apply Zoom for re-engineering pedagogical transformation

Respondents	N	Mean	Std	Df	t-cal	t-crit	A	Decision
RSU LECT	40	2.52	0.69	60	1.48	1.697	0.05	Accepted
IAUE LECT	22	2.53	0.59					

Source: Field Survey Data, 2025

The result in Table 4. Showed that the degree of freedom of 60 at a 0.05 level of significance, the t-calculated value of 1.48 is less than the t-critical value of 1.697. Thus, the null hypothesis was accepted, meaning that there is no significant difference in the mean response scores of lecturers in Rivers State University and Ignatius Ajuru University of Education on the extent they apply Zoom for re-engineering pedagogical transformation. In other words, lecturers in Rivers State University and Ignatius Ajuru University of Education have common view on the extent they apply zoom for instructional delivery.

Conclusion

The study revealed the relevance of innovative educational software that can help educators in tertiary institutions in Rivers State. Consequently, there is need for more training and enlightenment among educators on emerging educational technologies to enhance their abilities and to integrate them into the teaching and learning process. This would go a long way to equip lecturers with the relevant digital skills and knowledge needed to teach and meet the need of digital millennial and indeed emerging realities in the education sector in the 21st century. More funding have to be budgeted for the education sector, particularly to facilitate the availability and accessibility of educational technologies.

Recommendations

Based on the findings and conclusions made from the study, the researcher recommends the following:

2. Targeted digital literacy training should be encouraged by University management to foster effective and innovative pedagogical practices through technology for lecturers to update their knowledge on the relevance and use of various software platforms and how to integrate them effectively.
3. The government should adequately fund tertiary institutions to incorporate multimedia platforms that can transform teaching and learning in the 21st-century classroom.

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