

Exposure and Usage of Zoom Technology among Lecturers and Students of Delta State Polytechnics, Ogwashi-Uku and Otefe-Oghara, Delta State

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Abstract

Technology is advancing every field of endeavour world over. This underscores the need for digitalised education in Nigeria not just as alternative system of education but also a technological breakthrough that enhances teaching, improves academic performances and imparts needed science and technological skills that can transform Nigeria's educational landscape. One of the most common technologies used in teaching and learning is zoom technology. However, the availability of digital facilities, technological know-how, funding and willingness of academics and students to transit from analogue to digital form of teaching and learning will determine the extent to which Nigeria society will benefit from this educational innovation for sustainable national development. Nonetheless, the benefits would not be achieved unless there is positive attitude towards the adoption of digital education such as zoom technology by academics and students. This study looked at exposure and usage of zoom technology among lecturers and students of Delta State Polytechnics, Ogwashi-Uku and Otefe-Oghara. The study was anchored on diffusion of innovation theory. The survey research design was adopted for this study. Multi-sampling techniques was used to select respondents. Questionnaire was employed as instrument for data collection. The data was computed using SPSS and results presented in figures, simple percentages and tables.

Keywords: Digital Education, Zoom Technology, Exposure, Usage

Introduction

The primary difficulties encountered by lecturers and students in higher education regarding zoom technology typically revolve around how educators incorporate new technologies into teaching and how students adapt to these innovative approaches in their learning experiences. Zoom serves as a platform through which students receive instruction via Information and Communication Technology tools. E-learning, a modern learning medium that has emerged alongside the advancements of human civilization in the digital age encompasses Zoom as one of its integral components. E-learning has emerged as a technology integrated into students' classroom learning experiences, employing internet-based tools for instruction (Hartley, 2001). It is enough to say that Zoom cloud meetings, accessible on computers and Android devices, are among the technologies that improve teaching and learning in the digital age. They facilitate effective and efficient education, offering convenience for users to engage in learning activities anytime and anywhere, particularly during both internal and external crises.

Aremu and Adeoluwa (2021) highlighted the extensive adoption of Zoom cloud meetings by educators, particularly lecturers, as it significantly streamlines teaching and learning processes without the need for physical classroom meetings. Beyond enhancing the effectiveness and efficiency of education, Zoom cloud meetings also offer opportunities for lecturers and students to acquire new skills. The application also delivers a fresh and enjoyable learning experience for both lecturers and students, leading to positive learning results.

As noted by Olugbade and Olurinola (2021), in the last twenty years, educators and higher education institutions have broadened their educational approaches through various ICT systems such as Moodle, Microsoft Teams, and Zoom platforms, as well as Learning Management Systems (LMS). Online courses, assessments, and web-based teaching materials provide benefits to both educational institutions and students. For instance, online learning allows higher education institutions to broaden their accessibility to students who might face challenges in regularly attending campus-based classes (Betts, 2017). Park and Kim (2020) suggest that employing interactive communication methods and utilizing teaching aids in online learning fosters robust relationships between educators and students. This approach aligns with students' expectations of teacher engagement, consequently enhancing student participation and enjoyment in online classes. Akgun and Akkoyunlu (2013) argue that technological progress has brought about significant changes in education, particularly in networking and communication. They note that rich learning environments are increasingly becoming more pertinent and effective for both educators and students. This emphasizes the significance of interactivity as a key feature in digital teaching and learning. Buelow, Barry, and Rich (2018) highlight that specific elements within online discussions and assignments, such as interactive discussions and engaging assignments, are not only enjoyable for students but also effectively integrate prior learning and relate to contemporary societal concerns. This involves stimulating students with insightful inquiries about real-life events and encouraging them to share diverse viewpoints, thereby fostering the formation of individual perspectives. This approach enables students to articulate a range of ideas and cultivate unique viewpoints, ultimately enhancing the learning experience.

The benefits of Zoom technology in educational settings for both academics and students come with their share of challenges. According to Sareen and Nangia (2020), while teachers generally hold a favourable view of online teaching, they may lack confidence in their proficiency with online teaching technologies, and some may feel more effective in traditional classroom settings. Lin and Jou (2013) express concerns about teachers' experiences with web-based learning tools, citing issues such as limited time, user-friendliness, connectivity issues, and low student engagement as common complaints.

Statement of the problem

The contemporary world is grappling with numerous challenges across political, social, cultural, religious, and economic spheres, posing significant threats to established human institutions, including education.

Developed and developing nations alike are confronting serious obstacles that disrupt human activities either partially or entirely. Consequently, higher education institutions are increasingly concerned about maintaining educational continuity despite physical constraints imposed by global, national, or local crises. Thus, there's a pressing need for technological solutions to effectively engage students during such periods.

Among the array of technologies employed by educators and learners, Zoom stands out, particularly in developing nations like Nigeria. Zoom offers a robust platform for delivering a high-quality learning experience, catering to both developed and developing countries. As Zoom gains popularity among the general populace, it is essential for lecturers and students to harness its potential to enhance teaching and learning, thereby contributing to national growth and development in both the short and long term. However, leveraging Zoom in education is not without its challenges.

Efforts to uphold traditional teaching methods often hinder the swift adoption of digital educational resources like Zoom. Lecturers may face challenges in transitioning their teaching materials to online environments for easier student access, while students may struggle to navigate this new learning paradigm. Nevertheless, embracing digital tools early on is crucial to meeting global standards in education.

It is imperative for lecturers and students to familiarize themselves with digital educational resources like Zoom, as unforeseen circumstances may necessitate emergency teaching and learning. Failure to adapt technologically could severely impede academic progress in educational institutions.

Therefore, this study examined the exposure to and utilization of Zoom technology among lecturers and students at Delta State Polytechnics in Ogwashi-Uku and Otefe-Oghara, Delta State, Nigeria.

Objectives of the Study

The study was conducted to achieve the following objectives:

1. To ascertain the level of exposure of lecturers and students to zoom Technology
2. To investigate the level of usability of Zoom Technology by lecturers and students
3. Examine challenges faced by lecturers and students in the adoption of Zoom Technology in teaching and learning; and

Research Questions

To achieve the objectives of this study, the following questions were put forward:

1. What is the level of exposure of lecturers and students to zoom Technology?
2. What is the level of usability of Zoom Technology by lecturers and students?
3. What are the challenges faced by lecturers and students in the adoption of Zoom Technology in teaching and learning?

LITERATURE REVIEW

Zoom stands at the forefront of contemporary corporate video communication, boasting a user-friendly cloud-based system renowned for its dependability in video and audio conferencing (Maggie, 2021). Zoom Technology serves as a communication hub, enabling individuals to engage in video calls, audio calls, utilize phones, and conduct chats. Utilizing Zoom necessitates both an internet connection and a compatible device. Zoom serves as a video conferencing solution, offering educators and learners the means to convene online via a personal computer or mobile device, with or without video capability. Within Higher Educational Institutions, virtual conference platforms have risen in prominence as the preferred method for facilitating interactive classes (Bahasoan, Ayuandiani, Mukhram, and Rahmat, 2020). Professors can arrange Zoom meetings to conduct virtual classes, with the added option of

recording sessions for subsequent student access. Its utility extends to class delivery, resource sharing, assessment, and the management of day-to-day academic affairs.

Zoom emerges as a versatile digital platform essential for effective teaching and learning, particularly during times of national and global crises. Throughout the COVID-19 pandemic, Zoom experienced a significant surge in usage, becoming instrumental for remote work, distance education, and online social interactions. Enemuio and Muogbo (2023) elucidated that within Zoom's cloud meeting framework, video communications empower educational institutions to broaden their reach across geographical boundaries, thereby engaging more students and offering novel learning prospects, ranging from lectures to inter-institutional research, to reaching students beyond campus confines. The integration of video communications enhances productivity, diminishes training expenses, facilitates access to subject matter experts regardless of location, and provides students with immediate, real-time access to classes and course materials. Echoing this sentiment, Earon (2017) emphasized that the fusion of multimedia and instructional design, alongside practice exercises and feedback mechanisms, fosters a learning environment conducive to students retaining course content. Learners crave autonomy over their learning schedules, a need fulfilled by Zoom's cloud meeting feature, affording them the flexibility to learn from any location at any time.

To prevent the interruption of academic operations during crises, educational establishments must utilize video communications to connect with both current and prospective students, facilitate access to external experts, engage in collaborative efforts with other institutions, and establish virtual channels of communication with students to enrich the teaching and learning experience.

Digital technologies like Zoom technology contribute significantly to students' development of positive attitudes towards learning, as evidenced by research conducted by Alabi, Elmusrati, Sawazaki-Calone, Kowalski, Haglund, Coletta, and Almangush (2019). Similarly, findings from a study by Akinleke and Omowunmi (2017) conducted at the University of Ibadan, Oyo State, and Federal Polytechnic Ilaro, Ogun State, Nigeria; demonstrate students' engagement with Zoom technology for academic purposes. Additionally, Oladele and Molara (2017) examined the attitudes and perceptions of 600 undergraduate students at the Federal University of Technology, Akure, Ondo State, through a survey on the utilization of mobile technologies for learning, revealing the prevalence of students' adoption of m-learning tools such as Zoom technology. Enemuio and Muogbo (2023) discovered that a significant number of lecturers are familiar with Zoom technology but refrain from utilizing it for academic purposes due to various factors. Consequently, this leads to low adoption rates of Zoom technology in teaching and learning within Colleges of Education in Anambra State. This discovery aligns with the observations made by Ajise and Fagbola (2013), who noted a considerable familiarity with Zoom among lecturers in Nigerian tertiary institutions. However, it contrasts with the findings of Mtega, Dulle, Malekani, and Chailla (2014), who reported a lack of awareness of Zoom tools among teaching staff in Tanzania. The exposure of lecturers to these technologies may stem from the widespread availability of Zoom applications on smartphones, tablets, and netbooks, which individuals use for their daily communication and interaction needs. Regarding the utilization of Zoom technology for educational purposes, research conducted by Aremu and Adeoluwa (2021) revealed that students employ Zoom technology for academic pursuits. Similar findings were documented by Korucu and Bicer (2018) in a mixed-methods study involving 30 participants at Konya Necmettin Erbakan University, as well as by Mugo, Njagi, Chemwei, and Motanya (2017) in a descriptive survey comprising 375 respondents at a Chartered University in Kenya, demonstrating that students have exposure to and utilize Zoom technology for academic endeavors. These findings contrast with the observations made by Olasina (2011), who noted a limited usage of Zoom in the teaching and learning processes among lecturers in tertiary institutions. Light and Polin (2010) stressed that although the use of Zoom enhances interaction and communication among students, as well as between students and teachers, its adoption remains low. Echeng (2013) advocated for the adoption of 21st-century technologies

like Zoom in educational and training institutions to facilitate a more effective learner-centred approach and enhance learner engagement.

The use of Zoom technology for academic activities presents challenges. According to Sareen and Nangia (2020), while teachers hold a favourable and positive attitude towards online teaching, they lack perceived proficiency in utilizing online technologies for teaching purposes. It has been revealed that they may perform better in traditional classroom settings. Furthermore, challenges such as user-friendliness issues, connectivity difficulties, and low student participation have been noted. Consequently, universities in Nigeria, akin to the experiences of other developing African countries, find themselves grappling to stay afloat (Lembani, 2019; Abdulmajeed, Adeleke, and Popoola, 2020). This situation has been compounded by a lack of technological skills necessary for developing electronic course materials suitable for delivery in distance and online learning environments among lecturers (Ogunmakin, 2018). However, these advantages are accompanied by significant challenges, including inadequate IT infrastructure provision, socioeconomic and cultural barriers, widespread unawareness, low levels of computer literacy, high costs associated with internet access and ICT devices, insufficient budgetary allocations, outdated equipment and educational materials, a shortage of research funding, and inadequate lecturer remuneration, among other issues (Folorunso, Shawn Ogunseye, and Sharma, 2006; Ejoigu and Sule, 2012; Lembani, 2019; 2020).

Lin and Jou (2013) expressed concern over teachers' grievances during online learning with web applications, citing issues such as insufficient time, lack of user-friendliness, connectivity issues, and low student participation. This challenging situation may stem from whether lecturers in colleges of education are acquainted with Zoom and whether they incorporate it into the teaching and learning process. Ezenwafor, Okeke, and Okoye (2014) affirmed that the degree of students' exposure to technology hinges on lecturers' utilization of technology to engage them in practical sessions. Despite previous studies on Zoom usage in Nigerian education, none, to the best of the researchers' knowledge, have sought lecturers' opinions on the exposure and usage of zoom for specific educational instructions. Therefore, this study determined the level of exposure and usage of Zoom technology for teaching and learning in Delta State Polytechnics, Ogwashi-Uku and Otefe-Oghara, Delta State.

Theoretical Framework

The foundation of this study lies in the Diffusion of Innovation Theory. The Diffusion of Innovation Theory originated from an agricultural experiment conducted by independent farmers who utilized hybrid seeds of corn, equipment, and technologies. Developed into a theory by E. M. Rogers in 1962, it explains how an idea or product gradually gains traction and spreads throughout a specific social system over time. As described by Asemah, Nwammuo, and Nkwam-Uwaoma (2017), the ultimate outcome of this diffusion process is that individuals within the social system adopt a new idea, behaviour, or product. This suggests that individuals modify their actions, embrace new products, and incorporate new behaviour, perceiving the idea, behaviour, or product as innovative.

The theory revolves around the process by which new ideas, products, technologies, principles, and practices are disseminated through specific communication channels over time among members of a social system. The Diffusion of Innovations Theory provides a framework for understanding how an innovation moves through a social system over time. An innovation, in this context, refers to an idea, behaviour, or object perceived as novel by its audience. It's crucial to note that the perception of the innovation by members of the social system determines the pace of diffusion and adoption. The perceived usefulness of the innovation and subsequent new technologies attract members of the social system towards usability and adoption. In the context of the study on the exposure and usage of Zoom technology among lecturers and students in Delta State Polytechnics, Ogwashi-Uku and Otefe-Oghara, Delta State, the Diffusion of Innovations Theory offers valuable insights.

Firstly, the theory x-rays the process through which the exposure and utilization of Zoom technology spread among lecturers and students within these educational institutions. As an innovation, Zoom technology represents a new idea and tool for facilitating teaching and learning, particularly in the context of remote education during internal and external crisis. According to the Diffusion of Innovations Theory, the rate and extent of usage of Zoom technology depend on how quickly and effectively it is communicated and accepted within the social system of the polytechnics.

Moreover, the theory emphasizes the role of perceived usefulness and relative advantage in driving adoption and usage. Lecturers and students may be more inclined to adopt Zoom technology if they perceive it as beneficial and advantageous compared to traditional teaching methods or other online platforms. Factors such as ease of use, accessibility, and effectiveness in facilitating teaching and learning processes will influence the perceived usefulness of Zoom technology and thereby affect its adoption and usage rate.

In summary, the Diffusion of Innovations Theory provides a theoretical framework for understanding the process of exposure and usage of Zoom technology for teaching and learning in the aforementioned polytechnics in Delta State, offering insights into the dynamics of exposure and usage of zoom cloud meeting for teaching and learning among lecturers and students.

Methodology

The study adopted the survey research method which is a sub-category of descriptive research. The entire population of Lecturers and Students of Delta State Polytechnic, Ogwashi-Uku and Otefe-Oghara constituted the population of this study. The study used stratification to have students' strata and lecturers' strata with disproportionate quota system to select 200 students and 50 lecturers from each school where convenience sampling technique was adopted to select students and lecturers that were accessible to the researchers for administration of questionnaire. In measuring the reliability of the research instrument, the SPSS version 22.0 software was used which indicated that the research instrument had a strong reliability. The face and content validity of the instrument were determined by two experts in the field of Test and Measurement. The instrument was administered with the help of trained research assistants. A total of 500 copies of questionnaire were administered. However, 460 copies were returned which accounted for a return rate of 92%. 16 copies were invalidated, making the final copies used to be 444 (88.8%). 360 copies for students while 84 copies for lecturers from the valid copies of questionnaire. The data obtained for the study were analysed, using quantitative approach. The data were presented with the use of frequency counts, simple percentages and tables.

Data Presentation

Table 1: Students' exposure to zoom technology

	Students		Lecturers	
Responses	Frequency	Percentage (%)	Frequency	Percentage (%)
Yes	304	84.4	61	72.6
No	56	15.6	23	27.4

Total	360	100	84	100
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Table 1 above clearly shows that 304 (84.4%) of the respondents are exposed to zoom technology while 56 representing 15.6% do not have exposure to zoom technology. in the same vein, 61 (72.6%) of the Lecturers are exposed to zoom technology while 23 representing 27.4% are not exposed to zoom technology.

Table 2: Students' degree of exposure to zoom technology

Responses	Students		Lecturers	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Less than 1 Year	72	20.0	5	6.0
1-3 Years	248	68.9	45	53.6
4-6 Years	30	8.3	30	35.7
Above 6 Years	10	2.8	4	4.8
Total	360	100.0	84	100

From table 2 above, 248 (68.9%) have been exposed to zoom technology for 1-3 years, 72 (20.0%) asserted that their degree of exposure is less than I year, 30 (8.3%) have been exposed for 4-6 years while 10 (2.8%) exposure to zoom technology is more than 6 years. The table also shows that 45 (53.3%) Lecturers have been exposed to zoom technology for 1-3 years, 30 (35.7%) agreed to have been exposed to zoom technology for 4-6 years, 5 (6.0%) have been exposed for less than I year while 4 (4.8%) are exposed for above 6 years.

Table 3: Students' usage of zoom technology for academic activities

Responses	Students		Lecturers	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Yes	78	21.7	13	15.5
NO	282	78.3	71	84.5
Total	360	100	84	100

Table 3 above clearly indicates that 282 (78.3%) of the respondents do not use zoom technology for academic activities while 78 representing 21.7% use zoom technology for academic purposes. Responses from table also show that 71 (85.5%) of the respondents do not use zoom technology for academic activities while 13 representing 15.5% use zoom technology for academic purposes.

Table 4: Students' degree of usage of zoon technology for academic activities

Responses	Students		Lecturers	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Less than 1 year	292	81.1	65	77.4
1-3 years	40	11.1	12	14.3
4-6 years	15	4.2	5	6.0
Above 6 years	13	3.6	2	2.4
Total	360	100.0	84	100

Table 4 depicts that majority of the students (292: 81.1%) have been using zoom technology for academic activities for less than 1 year. The study found that 40 (11.1%) students have been using zoom technology for academic activities for 1-3 years. 15 (4.2%) claimed to have used zoom technology for academic activities for 4-6 years while 13 (3.6%) respondents assert to have been using zoom technology for academic purposes for above 6 years. The table as vividly show that major part of the Lecturers (65: 77.4%) have been using zoom technology for academic activities for less than 1 year. The data indicate that 12 (14.3%) Lecturers have been using zoom technology for academic activities for 1-3 years. 5 (6.0%) claimed to have been using zoom technology for 4-6 years while 2 (2.4%) Lecturers assert to have been using zoom technology for instructional communication for above 6 years.

Table 5: Challenges faced by Students in the use of zoom technology

Responses	Frequency	Percentage
Lack of Digital Infrastructures	112	31.1
Network Problem	82	22.8
Unstable Power Supply	58	16.1
Poor Attitude towards Acquiring ICT knowledge	45	12.5
lack of awareness of zoom technology	22	6.1
Lack of Knowledge of Use of Computer	17	4.7
Financial Constraints	9	2.5
Others	15	4.2

Total	360	100.0
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The data in table (5) is an indication that the dominant challenge faced by the students in the use of zoom technology is lack of digital infrastructures with 112 students representing 31.1%. 82 (22.8%) students claimed that they are faced with network problem. 58, (16.1%), 45 (12.5%), 22 (6.1%), 17 (4.7%) and 9 (2.5%) students assert that they are faced with unstable power supply, poor attitude towards acquiring Information and Communication Technology knowledge, lack of awareness of zoom technology, lack of knowledge of use of computer and financial constraints respectively, while 15 (4.2%) of the respondents identified other challenges such as institutional digital policies, background of the students, etc as challenges.

Table 6: Challenges faced by Lecturers in the use of zoom technology

Responses	Frequency	Percentage
Lack of Digital Infrastructures	37	44.0
Network Problem	17	20.2
Unstable Power Supply	9	10.7
Poor Attitude towards Acquiring ICT knowledge	6	7.1
lack of awareness of zoom technology	6	7.1
Lack of Knowledge of Use of Computer	4	4.8
Financial Constraints	3	3.6
Others	2	2.4
Total	84	100.0

Discussion of Findings

From the data collected, it is quite revealing that students in tertiary institutions in Delta State are exposed to zoom technology as 304 (84.4%) out of 360 students affirmed their exposure, while 248 (68.9%) students assert to have been exposed to technology for 1-3 years. The finding agrees with Olasina (2012), Fabumni (2012) and Nwana, Egbe and Ugwuda (2017) who found that students of tertiary institutions are exposed to zoom technology. The finding is also in tandem with the research reports of Anejo (2007) who conducted a research using students of National Teachers Institute (NTI) and found that they are exposed to this emergent digital technology. Data from the study also revealed that Lecturers are exposed to zoom technology with 61 (72.6%) out of 84 respondents while 45 (53.6%) respondents affirmed to have been exposed to technology for 1-3 years. It can be deduced from the above findings that lecturers in tertiary institutions in Delta State are highly exposed to zoom technology.

It is imperative to state that exposure does not depict usage. The findings of this study show that 282 (78.3%) out of 360 students do not use zoom technology for academic activities just as 71 (84.5%) out of 84 Lecturers studied do not use zoom technology for teaching. This finding is in tandem with the findings of Adeniran (2013), who discovered that students at Redeemers University in Nigeria use zoom technology at a low rate. In the same vein, Onajite (2017) discovered that academic lecturers usage of zoom technology in teaching business education was to a low extent. However, the findings of this study are in contrast with the findings of Nwokocha and Ibenne (2018), who showed that HND students at Federal Polytechnic, Nekede, use zoom technology for academic purposes.

It can be deduced from the above findings that certain factors are responsible for the non-utilisation of zoom technology for academic activities among students and lecturers. The study found that students and lecturers face various challenges in the use of zoom technology for academic purposes with lack of digital infrastructures as dominant. Other challenges identified are: unstable power supply, network problem, financial constraints, and lack of awareness of relevant online resources, poor attitude towards acquiring information and communication technology knowledge, lack of knowledge of use of computer, institutional digital policies and background of the students.

Conclusion

Zoom technology has become veritable tools in Nigeria education landscape, especially in teaching and learning between lecturers and students in tertiary institutions as some studies have indicated. However, this study has revealed the contrary. The study underscores high levels of exposure of lecturers and students to zoom technology but revealed low usage by both lecturers and students for academic activities. Students and lecturers of tertiary institutions in Delta State face different challenges in the use of zoom technology for teaching and learning. Prominent among the identified challenges is lack of digital infrastructure. Other problems identified are: unstable power supply, network problem, financial constraints, lack of awareness of relevant online resources, poor attitude towards acquiring information and communication technology, lack of knowledge of use of computer, institutional digital policies and background of the students and lecturers.

Recommendations

From the findings of this study, the following recommendations were put forward:

1. Lecturers and students of tertiary institutions should adopt zoom technology to complement conventional classroom teaching and learning.
2. Government and authorities of tertiary institutions provide digital infrastructures such as Wi-Fi to enhance digital teaching and learning as such innovation only thrive if the requisite technology is in place.

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