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Proficiency of University Lecturers in the Adoption of Emerging Instructional Technologies in Nigeria

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Abstract: The purpose of this study was to assess the Proficiency of University Lecturers in the Adoption of Emerging Instructional Technologies in Nigeria. The study employed the descriptive/qualitative research design. A Google forms questionnaire made of close-ended items was used to collect data related to Nigerian university lecturers' proficiency in the adoption of emerging instructional technologies. Descriptive statistics including mean and standard deviation were used to describe the status of lecturers. SPSS version 25 was used to run the collected data from respondent university lecturers. A total of 123 responses were recorded and it was discovered that the awareness of emerging instructional technologies by Nigerian lecturers is on the rise, meaning they are quite much aware of emerging teaching technologies as today, lecturers' use of emerging teaching technologies is still quite low in Nigeria, lecturers' proficiency in using emerging teaching technologies is just normal or average and therefore needs to be improved. It is therefore recommended that lecturers should make an extra deliberate effort to know what is new in the teaching profession as per new instructional technologies. School managements should as a matter of urgency encourage the use of emerging teaching technologies in Nigeria and old lecturers are advised to go for short courses on ICT.

Keywords: Emerging technologies; technology adoption; instructional technology; proficiency.

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Introduction

Integration of emerging instructional technologies in higher education has the potential to enhance teaching and learning experiences. Within this context, the proficiency of university lecturers in adopting and effectively utilizing technologies is a critical factor influencing a successful implementation. The landscape of higher education has been transformed by the rapid advancement of instructional technologies such as online learning platforms, virtual reality and artificial intelligence (Zhang et al., 2023). While emerging technologies

offer new opportunities for engagement, collaboration and personalized learning, the extent to which university lecturers are proficient in adopting and using these technologies varies across institutions and individuals.

According to Kim and Han (2022), the proficiency of university lecturers in adopting emerging instructional technologies is a complex and multifaceted. Lee and Choi 2022) found that lecturers demonstrate a high level of proficiency in integrating technologies into their teaching practices; they further hinted that the lecturers often possessed advanced technological skills, engaged in continuous professional development and actively sought for opportunities to enhance their pedagogical practices with emerging technologies. However, the study of Wu and Chen (2023) indicated that a significant number of university lecturers struggle with the adopting and effectively utilizing technologies. Factors such as a lack of technological training, limited access to resources and support and resistance to change hinder their proficiency in integrating emerging instructional technologies. These challenges might impede the realization of the full potential of technologies in higher education.

The proficiency of university lecturers in the adoption of emerging instructional technologies has important implications for the quality of education and learning outcomes as higher levels of proficiency are associated with increased student engagement, improved learning experiences and better educational outcomes (Zhang et al., 2023). Thus, addressing the issue of proficiency among university lecturers is crucial to enhance the effectiveness and relevance of higher education in the digital age. In the digital age, it is more crucial than ever for higher education to adopt new technologies for teaching. University lecturers are extremely important in Nigeria as they are in many other nations, in determining how students learn. It is therefore important to worry about how well-equipped lecturers are in adopting and using new technologies to improve teaching methods.

Contemporary studies indicate that university lecturers in Nigeria have been slow in adopting new technologies, largely because of various obstacles and difficulties. According to Adeyemi and Awolusi (2021), lecturers' skills and attitude influence educational technology adoption and usage. Insufficient technological infrastructure, lack of technical support and inadequate training are some of the main hindrances to integration of technologies (Akinsola & Oyediran, 2020). Despite these difficulties, the potential advantages and benefits of integrating technology in teaching are becoming more widely acknowledged. Salau and Olojede (2020) noted that selected lecturers believed that emerging technologies are useful tools for enhancing the instructional delivery. They emphasized on the potential of technologies in promoting interactive learning. Ukwu and Ukwu (2021) highlighted the benefits of emerging technologies on teaching and learning outcomes, including raising students' engagement, heightened critical thinking and enhanced academic performance. This study therefore sought to establish the current level of competence among university lecturers in Nigeria about the adoption of emerging technologies for instruction.

Review of Related Literature

This section presents the reviewed literature that relate to the problem under investigation. It is organized into subheadings as follows:

Technological Trends

The digital revolution causes a fundamental upheaval and drastic changes in how institutions, businesses and professionals think and operate. Technological revolution has affected all facets of the society including education. A society that focuses on knowledge will experience rapid increase in demand for online education and technological gadgets to support education (Ngoc et al., 2020). Therefore, education systems must support new teaching techniques and the use of technology in the transfer of knowledge to create a successful knowledge society. Technology turns out to be a useful instrument for enhancing the educational system. For instance, Web 2.0 occupies the biggest potential to develop a massive data warehouse and technologically advanced learning environments, that support access to knowledge and skills. In order to raise the value of knowledge, technology gives people the chance to engage with one another and creates learning communities (Ikenwe et al., 2019).

Terry (2022) referred to "emerging educational technologies" as including augmented reality, social media, virtual reality, 3D printing, robotics, adaptive learning algorithms, asynchronous learning and micro learning, remote teaching and learning, artificial intelligence and live streaming via Zoom. The author added that there are many more

examples of newly developed educational technology that are currently in use and being developed. In reality, many of them are still emerging years after their original emergence and they will keep dramatically reshaping themselves. According to an international survey by Poudel (2018), 82% of US instructors believed that using technology better prepares learners for the future. Considerable interest in professional development utilizing digital learning to engage students exists among 48% of Australian teachers. Digital technologies, according to 8 out of 10 New Zealand teachers, improve learning achievement. A teacher should therefore have a basic understanding of current technological developments, as well as a specific level of technological literacy and communication abilities. Teachers should also become knowledgeable about the moral implications of utilizing cutting-edge technology as well as the methods and standards for finding, identifying and disseminating pertinent information (Namunga & Otunga, 2012). Poudel (2018) observed that many university instructors appear to be aware of new teaching tools and routinely use some of them, including word processors, PowerPoint and other conventional technologies but teachers in Nigeria specifically employ cutting-edge technology less frequently. In his study, Fatimayin (2013) revealed that instructors have a good attitude toward integrating e-devices into classroom teaching and learning as 70 percent and 92.9 percent, respectively, are aware of the use of emerging technologies in English language instruction.

Proficiency in Emerging Teaching Technologies

Technical proficiency can be defined as the capacity to communicate professionally and effectively, organize information, create high-quality products and develop thinking abilities using technology. The ability of lecturers to use technology to teach and to enhance learning, productivity and performance is referred to as technical competence in educational contexts. To function in a technological world, certain skills are necessary. In response, a wide range of technical tools and devices can be identified and explored by lecturers who are tech-savvy, allowing them to decide which ones best suit the teaching and learning materials. Basic information technology skills are often utilized by lecturers in schools or higher education institutions to organize activities, communicate electronically and produce documents (Saad & Sankaran, 2020). Scholars are convinced that the quality of education will significantly improve if lecturers are knowledgeable and willing to use new technology in teaching and learning. The study by Deepa (2013) found that emerging technology is increasingly playing a key role in educational reforms and innovations at secondary and tertiary institutions. As a result, there is a need to improve pre-service training for future teachers in emerging teaching technologies.

Amuche et al. (2014) conducted a study on "ICT Competence among Teachers of Federal Unity Colleges in the North Central Geopolitical Region of Nigeria and established that while most teachers have personal computers or laptops, they are generally not proficient in using ICT. This makes it difficult for lecturers to effectively use emerging teaching technologies to effectively and efficiently carry out their tasks.

Importance of Emerging Technologies for Teaching

Emerging technology has garnered significant attention for its potential to transform teaching and learning and researches have indicated that emerging technology, such as virtual reality, augmented reality, and artificial intelligence, offers unique opportunities to engage students, enhance learning outcomes and promote critical thinking and problem-solving skills (Hilton et al., 2022). The authors noted that these technologies provide interactive and immersive experiences, enabling students to explore complex concepts and scenarios in a dynamic and engaging way; and furthermore, emerging technology can facilitate personalized and adaptive learning experiences. By analyzing student data and preferences, these technologies can provide tailored learning materials and feedback, catering to individual needs and challenging students at their own pace (Picciano, 2023). Technology offers students quick access to knowledge, rapid learning and enjoyable opportunities to put what they have learned into practice. It allows students to delve deeper into challenging ideas and study new disciplines, especially in the STEM fields (science, technology, engineering, and math). Students can acquire the 21st-century technical abilities required for future careers through the use of technology both inside and outside the classroom. Main advantages of new teaching technologies include increased teacher productivity and efficiency, individualized learning opportunities, curiosity sparked by interesting

content and increased collaboration and communication.

According to Johnson et al. (2016), there are a number of concerns that affect the adoption of new teaching technologies. First is the access constraint, which is defined as a lack of equipment or connectivity. The adoption of modern instructional technologies is not practical if the school lacks sufficient computers and a quick internet connection.

Methodology

Design

The study used the descriptive survey design which deals with present phenomena in terms of conditions, practices, views, beliefs, processes, relationships or trends (Voxco, 2021). The design enabled the researchers to systematically collect data and describe the views of respondents.

Population and Sampling

The population consisted of public university lecturers from Nigeria. Nigeria has 91 public universities with 8401 full time lecturers (Punch Newspaper, 2021). The sample of 123 lecturers was determined through simple random sampling methods.

Instruments

The study used a questionnaire as source of data from the respondents.

Validity and Reliability

The instrument was validated by experts in library and information science and in the field of education. The reliability of the data instrument test yielded the Cronbach's Alpha of 0.82.

Statistical Treatment of Data

Data was analyzed using mean scores and standard deviations. The cutoff points for mean scores was 1.00 to 2.49 for negative responses and 2.50 to 4:00 for positive responses.

Ethical Considerations

The researchers presented the letter of introduction from the Department of Library and Information Science, Ambrose Alli University as a brief attachment to respondents who were typically contacted online (Google forms questionnaire). The schedule for collecting data did not affect the daily operation of respondents. Voluntary participation of respondents was encouraged as respondents were allowed to withdraw their participation at any point of the data collection period. Respondents were also assured that all the information collected from them would be treated with utmost confidentiality.

Results and Discussion

The researchers present these findings through specific research questions that guided the study.

Research Question 1: What is the view of educators on the emerging technologies that facilitate the teaching and learning process?

This research question sought to establish the view of educators on the emerging technologies that facilitate the teaching and learning process as reflected in figure 1.

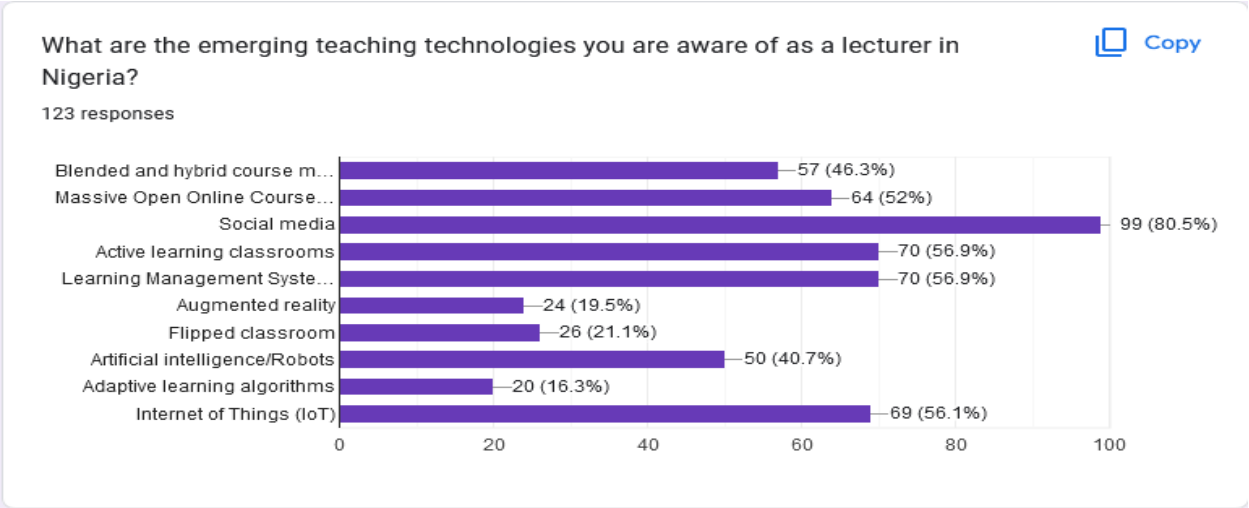

Figure 1: Educators' Awareness of Emerging Teaching Technologies in Nigeria

The figure shows that 99 (80.5%) respondents considered social media as the most important emerging technology in the teaching and learning process. This finding is worthy recognition since social media platforms are essential for effective teaching and learning to be realized. This finding is in line with Açıkgöz-Ülgen and Özdamar Kızıltepe (2021), Bista at. al. (2022) and Idhalama and Ikenwe (2021) who opined that social media remained a commendable platform for effective teaching and learning during the pre and post COVID 19 era.

A high number of respondents were aware of the following as emerging teaching and learning technologies: active learning classrooms with the frequency of 70 (56.9%), learning management systems with the frequency of 70 (56.9%), Internet of Things (IoT) with the frequency of 69 (56.1%) and massive open online course with the frequency of 64 (52%). This finding is worth noting since Gikas et al. (2023) found that active learning classrooms, learning management systems, Internet of Things, and Massive Open Online Courses play crucial roles in transforming teaching and learning as these technologies enable student engagement, facilitate personalized learning experiences and provide greater access to education. The finding therefore implies that lecturers are aware of emerging teaching and learning technologies and as such have a positive perception of such.

Furthermore, figure one indicates that the following emerging technologies were lowly scored (Adaptive learning algorithms: (20 (16.3%), Augumented reality (24 (19.5%), Flipped classrooms (26 (21.1%) and Artificial intelligence/robots (50 (40.7%). This part of the discovery coincides with a research by Oyelere, et, al. (2023) who found that adaptive learning algorithms, augmented reality, flipped classrooms and artificial intelligence/robots are not widely popular among lecturers in developing countries like Nigeria.

Research Question 2: What emerging technologies for teaching were adopted by Nigerian lecturers?

Figure 2 shows the responses regarding the various emerging technologies for teaching adopted by Nigerian lecturers.

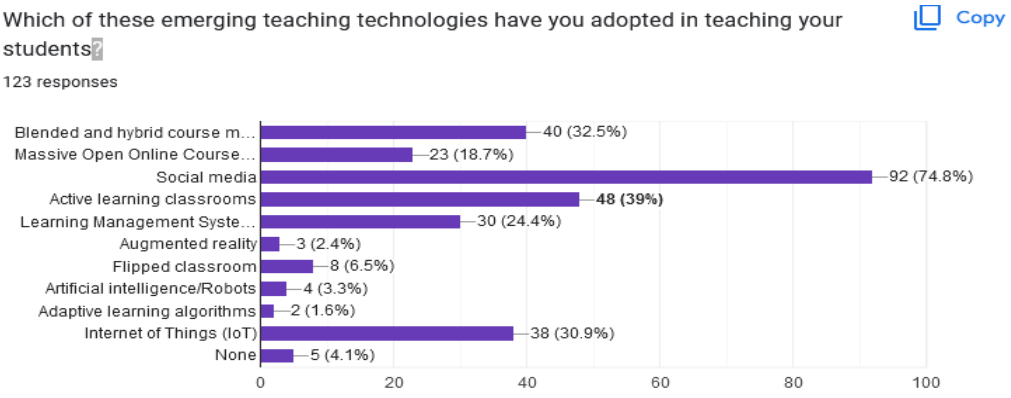

Figure 2: Emerging Instructional Technologies

Results show that 92 (74.8%) of lecturers adopted social media as an emerging teaching technology, 48 (39%) adopted active learning classroom, 40(32.5%) used blended and hybrid course models, 38 (30.9%) used Internet of Thing. Furthermore, 30 (24%) respondents used the learning management system, 23 (18.7%) adopted Massive open online courses while 8 (6.5%) used flipped classrooms. Finally, 4 (3.3%), 3 (2.4%) and 2 (1.6%) of lecturers used artificial intelligence/robots, augmented reality and Adaptive learning algorithms, respectively. This finding implies that lecturers used a variety of emerging teaching technologies in a variety of ranges. Some technologies were more used than the rest. The finding is in line with the position of Hodges et al., (2022) who noted that the COVID-19 pandemic has accelerated the need for lecturers to adapt to online and hybrid teaching formats, requiring the integration of various technologies to ensure effective instruction. The authors further argued that lecturers must be proficient in using learning management systems, video conferencing platforms, and other digital tools to facilitate virtual learning experiences

Research Question 3: What is the proficiency level of lecturers in the use of emerging teaching technologies?

This research question sought to establish the proficiency of lecturers on the use of emerging technologies. Respondents were asked to rank their proficiency in the use of emerging technologies. As appears in figure 3. The figure indicates that 41.5%, which is the highest indicated that they are simply good in the use of technologies. Close to one-third of the respondents (26.8%) considered their proficiency as average while only 17.9% considered their proficiency as excellent.

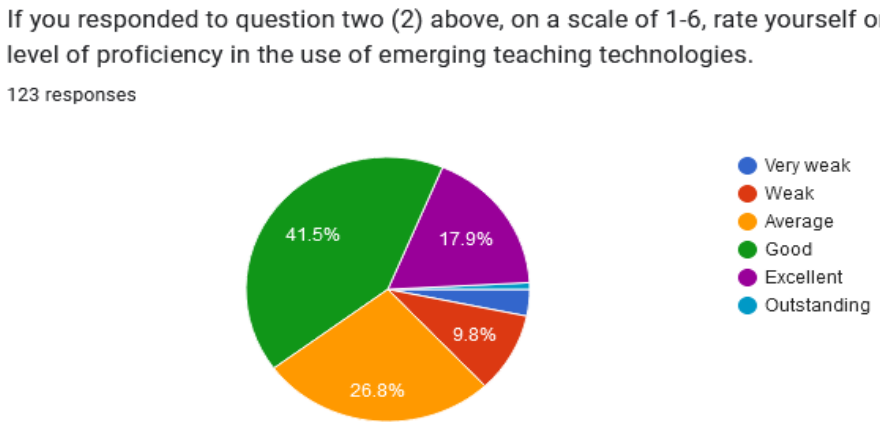

Figure 3: Proficiency in the Use of Technology

Finally, 9.8% considered their level of proficiency as weak and a very minute number noted that their proficiency is very weak and outstanding. The findings imply that the lecturers' proficiency in using emerging teaching technologies is just normal or average and therefore needs to be improved upon. The level of proficiency greatly varied from one group to the others. The findings are similar to those by Amuche et al. (2014) in North Central Geopolitical Zone of Nigeria which showed that while most teachers had personal computers or laptops, they were generally not proficient in using the ICT to support the teaching and learning processes. This makes it difficult for lecturers to effectively use emerging teaching technologies to effectively and efficiently carry out their tasks.

Conclusions and Recommendations

Conclusions

Based on the findings of this research, the following concluding points have been reached: Majority of lecturers are aware of emerging teaching and learning technologies and as such have a positive perception of such. Lecturers used a variety of emerging teaching technologies in a variety of ranges. Lecturers' proficiency in using emerging teaching technologies is just normal or average and therefore needs to be improved upon.

Recommendations

The corresponding recommendations are therefore as follows: Nigerian lecturers should continue to explore the field of emerging teaching and learning technologies. There is need for evaluation and re-evaluation of correct use of emerging teaching and learning technologies by lecturers in Nigeria. Finally, periodic training is still required for Nigerian lecturers in the area of emerging teaching technologies.

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