PERCEPTION OF SANDWICH STUDENTS ON THE UTILIZATION OF ONLINE LEARNING PLATFORMS FOR EFFECTIVE ADULT EDUCATION PROGRAMMES IN NNAMDI AZIKIWE UNIVERSITY AWKA

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Abstract

This study determined the perception of sandwich students on the utilization of online learning platforms for effective adult education programmes in Nnamdi Azikiwe University Awka. Two research questions guided the study. The study adopted a descriptive survey research design. The population for this study was made up of 123 sandwich students who enrolled in the Sandwich programmes from 100 Level to 500 Level in Nnamdi Azikiwe University, Awka for 2024/2025 academic session. No sampling was done as the population was considered manageable. The instrument for data collection was a researcher structured questionnaire entitled Perception of Sandwich Students on the Utilization of Online Learning Platforms for Effective Adult Education Programmes (PSSUOLPEAEPQ). The instrument was validated by two research experts. The data for the study were administered and retrieved by the researcher through a Google Form. The data retrieved for the study was analyzed using mean. The study found out that sandwich students in Nnamdi Azikiwe University, Awka, use of LMS makes it easier for them to access learning materials anytime, anywhere and navigate academic activities such as downloading materials and taking quizzes; and use of YouTube help them in understanding complex academic topics and recall most academic concepts more effectively.

Keywords: Sandwich Utilization, Online Learning, Adult education programmes

Introduction

Education has long been a cornerstone of human civilization, evolving through centuries from informal systems to structured institutions. Historically, in pre-colonial African societies such as Nigeria, education was largely informal and community-based. Indigenous education was integrated into everyday life, with elders transmitting cultural values, skills, moral instruction, and vocational training through oral traditions, apprenticeship, and communal participation. The Nigerian government recognized education as a vital instrument for national development and thus invested in policies aimed at expanding access to education. The National Policy on Education (NPE), first introduced in 1977 and revised periodically, underscores the importance of education in promoting economic growth, social justice, and national integration (Federal Republic of Nigeria [FRN], 2020). It outlines goals such as universal basic education, technical and vocational training, and lifelong learning. Importantly, the policy also emphasizes inclusive learning opportunities, with a particular focus on improving educational standards through adult education.

Adult education programmes are tailored to accommodate the diverse backgrounds, experiences, and responsibilities of adult learners. Unlike formal education, these programmes often emphasize flexible scheduling, practical application of knowledge, and learner-centered approaches to facilitate meaningful engagement. Adult education plays a critical role in addressing gaps in formal education and responding to societal changes, such as technological advancements and evolving labor market demands. It empowers individuals to adapt to new environments, enhance their employability,

and contribute actively to their communities (Candy, 2022). An effective adult education programme entails a learning environment that is often collaborative, encouraging peer interaction and the sharing of experiences, which enriches the learning process and supports social learning. The growing flexibility of adult education programmes-through evening classes, weekend workshops, and online platformsnaturally connects to the broader global shift in education, where the rise of online learning technologies has further expanded opportunities for adult learners.

Sandwich students form a unique category of learners within Nigeria's higher education system. These individuals are typically enrolled in part-time or modular programmes that take place during holidays, such as the long vacation periods, to allow working adults-especially teachers-to improve their qualifications without disrupting their employment. Sandwich programmes are primarily offered by faculties of education and colleges of education affiliated with universities, making them a vital aspect of teacher training and lifelong learning in Nigeria (Ibrahim and Olamide, 2021). Most sandwich students are mature adults, often with several years of work experience, who have returned to school for career progression, professional certification, or personal development. The flexibility of the programme structure allows these learners to attend intensive sessions during holidays, which can span from six weeks to two months (Chinweuba and Adeyemi, 2022). Sandwich students therefore represent a population committed to lifelong learning and educational advancement in utilization of online learning.

The history of online learning can be traced back to the 1960s with the development of computer-assisted instruction and the PLATO (Programmed Logic for Automatic Teaching Operations) system, which was used for delivering instructional content (Bates, 2020).Over time, technological advances and the proliferation of mobile devices and broadband internet have further enhanced the effectiveness and reach of online learning. Google Classroom was adopted as the primary online learning platform due to its user-friendly interface, accessibility, and integration with other Google tools. It provided a structured environment for sharing learning materials, assigning tasks, and facilitating communication between instructors and learners. Among the available online learning platforms are Learning Management Systems (LMS) and Massive Open Online Courses (MOOCs).

Learning Management Systems (LMS) are integral tools in the modern education landscape, especially in the delivery of online learning. An LMS is a software application or web-based technology used to plan, implement, and assess a specific learning process. It provides a centralized platform for the administration, documentation, tracking, reporting, automation, and delivery of educational courses or training programmes (Al-Fraihat, Joy, Masa’deh and Sinclair, 2020). Common examples of LMS platforms include Moodle, Blackboard, Canvas, and Google Classroom. These systems allow instructors to create and share content, manage student enrolment, assess learners' progress, and facilitate communication between students and teachers.

Another online learning platform available for use is Massive Open Online Courses (MOOCs). MOOCs are a significant innovation in the field of online education, offering unrestricted access to high-quality learning content to anyone with internet access. MOOCs are typically free and accessible to large numbers of learners, transcending geographical, financial, and institutional barriers. They provide a flexible and scalable mode of learning that includes video lectures, readings, quizzes, discussion forums, and peer assessments. Well-known MOOC providers such as Coursera, edX, Udemy, and Future Learn partner with top universities and institutions to deliver courses in various fields, ranging from computer science to humanities and professional development (Zhang, Yin, and Johnson, 2020).

These online learning platforms have the potential to bridge educational gaps by offering flexible, accessible, and self-paced learning opportunities tailored to the unique needs of adult

learners. Sandwich students, who often balance academic pursuits with professional and personal responsibilities, can greatly benefit from the autonomy and convenience that LMS and MOOCs provide. However, the effectiveness of these platforms largely depends on students' digital literacy, institutional support, and the quality of content delivery. By exploring their perceptions, Al-Fraihat, et al., (2020) posited that educators and policymakers can identify key areas for improvement, such as user interface design, access to reliable internet, personalized learning experiences, and the integration of interactive and practical content. Ultimately, leveraging LMS and MOOCs effectively can transform the landscape of adult education in the university, promoting lifelong learning, academic success, and professional development among sandwich students.

The rapid advancement of online learning platforms has transformed education by offering flexible, accessible, and interactive learning experiences. These platforms have been particularly beneficial for adult learners, who must balance academic pursuits with work and family responsibilities. In Nnamdi Azikiwe University, Awka, Sandwich programme serves as a critical avenue for adult education, enabling working professionals and other non-traditional students to further their education. However, despite the increasing adoption of digital learning tools in higher education, Sandwich students face significant challenges in utilizing these platforms effectively for academic success.

Key barriers such as insufficient digital literacy, unreliable internet access, limited institutional support, and resistance to technology integration hinder students from fully leveraging online learning resources. While platforms like Learning Management Systems (LMS), Massive Open Online Courses (MOOCs), YouTube educational content, and virtual classrooms offer numerous advantages-such as flexibility, self-paced learning, and real-time access to educational materials-these benefits may remain underutilized if students lack the necessary skills, resources, and institutional backing to engage with them effectively. The successful integration of online learning is no longer just an option but a necessity in today's digital world. It provides a dynamic and interactive environment that accommodates the diverse needs of adult learners, facilitating engagement and knowledge acquisition beyond traditional classroom settings. Therefore this study sought to examine perception of sandwich students on the utilization of Learning Management Systems (LMS) and Massive Open Online courses (MOOCs) as an online learning platform for effective adult education programmes in Nnamdi Azikiwe University, Awka.

The specific objectives was to determine the perception of sandwich students on the utilization of Learning management systems and Massive Open Online Courses as an online learning platform for effective adult education programmes in Nnamdi Azikiwe University Awka. Specifically, the study examined:

1. Sandwich students' perceptions on the utilization of Learning Management Systems as an online learning platform for effective adult education programmes in Nnamdi Azikiwe University, Awka.
2. Sandwich students' perceptions on the utilization of Massive Open Online Courses for effective adult education programmes in Nnamdi Azikiwe University, Awka.
    a. The above objectives formulated that the research questions, thus,
3. What are sandwich students' perceptions of the utilization of Learning Management Systems (LMS) as an online learning platform for effective adult education programmes in Nnamdi Azikiwe University, Awka?
4. What are sandwich students' perceptions of the utilization of Massive Open Online Courses (MOOCs) for effective adult education programmes in Nnamdi Azikiwe University, Awka?

Literature review

Utilization

Utilization refers to the act of making effective use of something. Accordingly, Obi and Onwuegbu (2020) opined that utilization is the effective integration of institutional support services-such as academic advising and counseling-in facilitating the learning and overall satisfaction of adult learners. The authors argue that proper utilization of these services plays a significant role in ensuring that adult learners not only complete their courses but also thrive in their educational endeavors. The optimal use of institutional resources directly impacts adult learners' academic success and personal development (Obi and Onwuegbu). Ugwoke, Eze, and Odo (2021) explained utilization as a dynamic process that includes access, adaptation, and integration of online educational technologies to meet the needs of adult learners in nontraditional learning environments such as sandwich programmes. They advocate for strong policy frameworks and infrastructural support to improve utilizations. Therefore, Utilization refers to the practical application or effective use of available resources, strategies, and methodologies within a specific context. In the case of adult education, utilization involves the implementation of teaching techniques, learning materials, and institutional support systems aimed at enhancing the learning experience of adult learners.

Online Learning Platforms

Online learning platforms are digital environments or web-based technologies that facilitate teaching and learning by enabling the delivery of educational content, interaction between instructors and learners, and the assessment of learning progress over the internet. Harasim (2017) defined online learning platforms as a form of distance education where students and instructors interact through digital platforms, using a variety of technologies such as the internet, email, and video conferencing. This definition emphasizes the interactive and technological nature of online learning, highlighting the use of multiple digital tools to facilitate communication between learners and instructors. According to Ajijola, Bello and Musa, (2021), online learning platforms as a form of distance education where teaching and learning are carried out through internet-based platforms such as Learning Management Systems (LMS), which support communication, interaction, and access to learning resources irrespective of geographical barriers. This definition emphasizes the role of digital platforms in bridging geographical gaps while enhancing interaction and access to instructional content. According to Moore and Kearsley (2022) defined online learning platform as an education system in which the majority of the content and interaction between students and instructors occur through online platforms, allowing for flexible, asunchronous learning. This definition emphasizes the flexibility of online learning, where learners are not bound by time or location and can engage with the content at their own pace. Therefore, online learning platforms refer to structured digital systems or web-based portals that deliver instructional content, support learner interaction, and facilitate educational activities remotely. These platforms have transformed the traditional classroom experience by making learning accessible, flexible, and interactive for students regardless of time or location-a major advantage for adult and sandwich students who often combine work, family, and school responsibilities.

Adult Education Programmes

Adult education programmes are those educational teaching and learning activities engage by adults beyond traditional schooling system. Webb, Holford, Hodge, Milana, and Waller (2017) described adult education programme as encompassing educational opportunities that equip individuals with the capabilities to exercise and realize their rights and take control of their destinies. Within this context, adult education programmes are structured initiatives designed to provide adults

with opportunities for personal and professional development, as well as to strengthen their participation in societies, communities, and environments. Obi and Onwuegbu (2020) defined adult education programmes as educational programme specifically designed to cater to the needs of adults in society, aimed at improving their literacy, vocational skills, and overall life chances." This definition highlights the need for adult education programmes to focus not only on literacy but also on skills development that can improve adults' socio-economic status. Adult education programmes can be refer to organized and structured learning opportunities designed specifically for adults who seek to improve their knowledge, skills, and competencies for personal, professional, or societal development. These programmes often cater to individuals who did not complete formal education during their youth or who desire continuous learning to adapt to changing life and work demands. As such, adult education programmes can be defined as: Structured educational initiatives specifically designed to meet the learning needs of adults who are engaged in formal, non-formal, or informal education settings. These programmes aim to promote lifelong learning, skill acquisition, personal development, literacy, and socio-economic empowerment.

Learning Management Systems as an Adult Education Programme

Learning Management Systems (LMS) have become an indispensable tool in modern education, facilitating the delivery, administration, and management of educational content and learning processes through digital platforms. An LMS integrates various functions such as content delivery, tracking learner progress, assessment, communication, and collaboration in a centralized environment, allowing institutions to optimize teaching and learning experiences (Johnson and Adeoye, 2021). This digital infrastructure has become particularly relevant in Nigeria, where challenges such as limited physical infrastructure and resource constraints hinder widespread access to traditional classroom-based education (Okoro and Eze, 2023). According to Turnbull, Chugh, and Luck (2020) provide a comprehensive overview of Learning Management Systems (LMS), situating them as essential tools in the evolving landscape of education. They define an LMS as a software platform that supports the delivery, administration, tracking, and assessment of learning experiences. The authors emphasize that LMSs are central to both online and blended learning environments, offering institutions a structured way to manage courses, resources, and student engagement.

The adoption of LMS in Nigerian educational institutions has grown significantly over the past decade, driven by the need to enhance educational accessibility and flexibility. Nigerian universities and polytechnics increasingly leverage LMS platforms such as Moodle, Blackboard, and Google Classroom to support both face-to-face and remote learning environments (Adebayo, 2022). These systems allow students to access course materials, submit assignments, participate in discussions, and receive feedback regardless of geographical location, thus addressing barriers such as poor transportation networks and regional disparities in educational resources (Nwachukwu and Chukwuemeka, 2024). For adult learners, in particular, LMS provides an opportunity to balance education with work and family responsibilities, promoting lifelong learning and skill development. However, despite the growing adoption, several challenges remain in fully realizing the potential of LMS.

Infrastructure issues such as inconsistent electricity supply and limited internet connectivity, especially in rural areas, restrict the effectiveness of LMS implementation (Olumide and Salami, 2021).

Moreover, the rise of mobile learning (m-learning) through LMS platforms has opened new frontiers for education in Nigeria. Given the high penetration of mobile phones even in rural areas, LMS providers are optimizing their systems for mobile access, enabling learners to study anytime and anywhere (Chukwu and Amadi, 2022). Nigerian institutions that had already integrated LMS

systems reported smoother continuity of education compared to those reliant solely on face-to-face instruction (Ugochukwu, 2021). The use of LMS also contributes to the professional development of educators. Nigerian universities are increasingly incorporating LMS training in faculty development programs to equip lecturers with skills in digital pedagogy and content creation (Olatunde and Nnadi, 2023). This professional up skilling is essential not only for improving the quality of online instruction but also for fostering innovation in curriculum delivery. Instructors who are adept at using LMS tools can design engaging courses that go beyond conventional textbooks, incorporating case studies, simulations, and peer-reviewed assignments.

Utilization of Massive Open Online Courses as an Adult Education Programme;

Massive Open Online Courses (MOOCs) have revolutionized access to education by leveraging digital technologies to provide large-scale participation and open access via the internet. Originating in the early 2010s, MOOCs have rapidly gained traction worldwide as innovative platforms that democratize learning by enabling anyone with internet access to enroll in courses offered by universities and institutions across the globe (Aluko, 2021). MOOCs typically offer free or low-cost courses, making higher education more accessible to underserved populations who may face barriers to traditional face-to-face learning, including geographic, financial, or social constraints (Okoye and Chukwuemeka, 2023).

MOOCs present significant opportunities for addressing longstanding educational challenges such as overcrowded classrooms, inadequate infrastructure, and limited access to quality tertiary education (Odeh and Ibrahim, 2022). Several Nigerian universities have begun integrating MOOCs into their academic programs, either through collaborations with global MOOC providers like Coursera and ed or through homegrown platforms tailored to local needs (Ibe and Nwankwo, 2023).Research also highlights the importance of localizing MOOC content to reflect Nigerian socio-cultural realities and labor market demands to enhance relevance and learner engagement (Ifeanyi and Oladipo, 2024). For instance, courses focusing on entrepreneurship, ICT skills, and sustainable development align well with Nigeria's development goals and youth employment needs. The Nigerian government has increasingly recognized the critical role of digital education platforms such as MOOCs in achieving the Sustainable Development Goals (SDGs), particularly SDG 4, which emphasizes inclusive and equitable quality education (Federal Ministry of Education [FME], 2023).

To this end, various policy frameworks have been introduced to promote the integration of Information and Communication Technologies (ICTs) into education, thereby creating an enabling environment for MOOCs. For example, the National Policy on Education (2022 revision) explicitly encourages the use of technology-enhanced learning and supports the development of online courses and digital resources to expand educational access across all levels (FME, 2022). At the institutional level, some Nigerian universities have established dedicated e-learning centers and forged partnerships with international MOOC providers to enhance their curriculum offerings. The University of Lagos and Ahmadu Bello University, for instance, have implemented blended learning models that incorporate MOOCs alongside traditional classroom instruction to provide flexible learning options for students (Ibe and Nwankwo, 2023). Such initiatives not only facilitate lifelong learning but also respond to the needs of working adults and non-traditional students, thereby broadening participation. The integrating MOOC certifications into the formal accreditation framework through collaboration with the National Universities Commission (NUC) and other regulatory bodies can increase the credibility and value of online courses (Nwosu, 2024). This move will motivate learners to participate actively and recognize MOOCs as legitimate avenues for professional and academic development of lifelong learning.

Massive Open Online Courses (MOOCs) have emerged as powerful tools in promoting lifelong learning among adults, who often seek flexible educational opportunities to improve their skills while balancing work and family commitments. Lifelong learning, a critical aspect of human capital development, aligns with Nigeria's economic aspirations, particularly in enhancing employability and entrepreneurship among youth and adult learners (Olatunji and Adeyemi, 2023). MOOCs provide accessible platforms for continuous skills upgrading, allowing learners to acquire competencies in diverse fields such as information technology, business management, health sciences, and sustainable development. Where youth unemployment remains a persistent challenge, MOOCs offer a promising avenue for workforce development by equipping learners with job-relevant skills that are often absent in traditional curricula (Anyanwu and Eze, 2022). For example, MOOCs focusing on digital marketing, coding, and financial literacy have gained popularity among young entrepreneurs and graduates seeking to enter the gig economy or start small businesses. These courses enhance their competitiveness in an increasingly digitalized job market (Ibrahim and Musa, 2024). This acceptance helps bridge the gap between formal education and industry requirements, fostering a culture of lifelong learning and adaptability.

Methodology

A descriptive Survey research design was adopted for this study. The study was carried out in Nnamdi Azikiwe University, Awka, with the population of 123 sandwich students from 100-500 Level. No sampling was done as the population was considered manageable, the instrument for data collection was a researcher structured questionnaire titled; perception of sandwich students on the utilization of online learning platforms for effective adult education programmes (PSSUOLPEAEPQ). The responses categories indicated the level of agreement and disagreement. The responses categories were written thus: Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The instrument was validated by two research experts. Data for the study were administered and retrieved by the researcher, assisted by two research assistants (course representatives), through a Google Form questionnaire. The data retrieved was analyzed using mean ratings and at the end Items that had mean scores that are 2.50 and above were considered agree while a mean score below 2.50 was considered disagree.

Results and Discussion

The analysis of data collected from the respondents. The results are presented in tables in accordance with the research questions and analyzed with percentages and means.

Research Question 1: What are sandwich students' perceptions of the utilization of Learning Management Systems (LMS) as an online learning platform for effective adult education programmes?

Table 1: Mean ratings of respondents on the sandwich students' perceptions of the utilization of Learning Management Systems (LMS) as an online learning platform for effective adult education programmes N-123

S/N	Util	X	DECISION
	ization of Learning Management Systems (LMS).		
1	Using LMS makes it easier to access learning materials anytime, anywhere.	2.57	Agreed
2	The LMS can be easy to navigate for academic activities such as downloading materials and taking quizzes.	3.61	Agreed
3	The LMS can be effective platform for submitting assignments.	3.02	Agreed

4	The LMS can used to track academic progress, including grades/ feedback from instructors.	3.09	Agreed
5	LMS can foster forum to enhance academic engagement with instructor.	3.35	Agreed
6	The use of Learning Management Systems (LMS) enhances accessibility to learning materials for sandwich students.	3.43	Agreed
7	LMS supports self-paced learning, allowing sandwich students to balance education with other responsibilities.	3.11	Agreed
	Mean of Means	3.16	Agreed

Table I presented the mean ratings on the sandwich students' perceptions of the utilization of Learning Management Systems (LMS) as an online learning platform for effective adult education programmes. This result indicated that items 1 to 7 were above decision rule of 2.50 with a grand mean score of 3.16 however the results showed that sandwich students generally agreed the utilization of Learning Management Systems (LMS) as an online learning platform for effective adult education programmes in Nnamdi Azikiwe University, Awka. The result indicated that respondents agreed on utilization of Learning Management Systems (LMS) as an online learning platform for effective adult education programmes.

The findings showed that using LMS makes it easier to access learning materials anytime, anywhere, LMS can be easy to navigate for academic activities such as downloading materials and taking quizzes, LMS can be effective platform for submitting assignments and The LMS can used to track academic progress, including grades/ feedback from instructors. This findings aligned with the study of Adebayo, (2022), highlighted that Nigerian universities and polytechnics increasingly leverage LMS platforms such as Moodle, Blackboard, and Google Classroom to support both face-to-face and remote learning environments. These systems allow students to access course materials, submit assignments, participate in discussions, and receive feedback. The study also revealed that LMS can foster forum to enhance academic engagement with instructor, the use of Learning Management Systems (LMS) enhances accessibility to learning materials for sandwich students and also LMS supports self-paced learning, allowing sandwich students to balance education with other responsibilities. This result is related the study of Chukwu and Amadi, (2022). Who emphasized that LMS providers are optimizing their systems for mobile access, enabling learners to study anytime and anywhere.

Research Question 2: What are sandwich students' perceptions of the utilization of Massive Open Online Courses (MOOCs) for effective adult education programmes?

Table 2: Mean ratings of respondents on the sandwich students' perceptions of the utilization of Massive Open Online Courses (MOOCs) for effective adult education programmes N-123

S/N	Utilization of Massive Open Online Courses (MOOCs).	X	DECISION
8	The accessibility of MOOCs makes learning easier for adult learners in sandwich Programmes.	3.50	Agreed
9	MOOCs provide access to high-quality learning materials that support academic success.	3.49	Agreed
10	MOOCs open alternative learning resource when traditional course materials are insufficient.	3.56	Agreed
11	The flexibility of MOOCs allows better time management for academic studies.	3.34	Agreed
12	MOOCs improves research skills in specific subject areas.	3.49	Agreed
13	MOOCs help sandwich students develop relevant skills that improve career opportunities.	3.35	Agreed
14	The interactive features of MOOCs (e.g., discussion forums, peer assessments) enhance sandwich students' engagement.	3.56	Agreed
Mean of Means		3.47	Agreed

Table 2 presented the mean ratings on the sandwich students' perceptions of the utilization of Massive Open Online Courses (MOOCs) for effective adult education programmes. This result revealed that items 8 to 14 were above decision rule of 2.50 and with a grand mean of 3.47; hence sandwich students' agreed on the sandwich students' on the utilization of Massive Open Online Courses (MOOCs) for effective adult education programmes in Nnamdi Azikiwe University, Awka. The result from the above showed that the respondents agreed on the utilization of Massive Open Online Courses (MOOCs) for effective adult education programmes. The results revealed that accessibility of MOOCs makes learning easier for adult learners in sandwich Programmes and also MOOCs provide access to high-quality learning materials that support academic success. This findings is related to the work of Okoye and Chukwuemeka (2023) in there study they revealed that MOOCs typically offer free or low-cost courses, making higher education more accessible to underserved populations who may face barriers to traditional face-to-face learning, including geographic, financial, or social constraints. The findings also showed that MOOCs open alternative learning resource when traditional course materials are insufficient and the flexibility of MOOCs allows better time management for academic studies.

The current findings aligned with the findings of Nwosu (2024), who noted that the integrating MOOC certifications into the formal accreditation framework through collaboration with the National Universities Commission (NUC) and other regulatory bodies can increase the credibility and value of online courses. This result also showed that MOOCs improves research skills in specific subject areas, MOOCs help sandwich students develop relevant skills that improve career opportunities and also interactive features of MOOCs (e.g., discussion forums, peer assessments) enhance sandwich student engagement. This findings is supported with the study of Anyanwu and Eze, (2022), in there study they noted that MOOCs offer a promising avenue for workforce development by equipping learners with job-relevant skills that are often absent in traditional curricula.

Conclusion

The study concludes that sandwich students in Nnamdi Azikiwe University perceive online learning platforms-LMS and MOOCs as effective tools for adult education programmes. These platforms improve accessibility, foster engagement, encourage self-paced learning, and support skill development, ultimately enhancing academic outcomes.

Recommendations

Base on the findings of the study, the following recommendation were made

1. Universities should invest in the infrastructure and training needed for optimal use of LMS, and MOOCs.
2. Policy makers should work with the National Universities Commission (NUC) to integrate MOOC certifications into formal qualifications.
3. Internet access and affordability should be improved for learners in underserved areas.

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