ASSESSMENT OF NIGERIAN TEACHER EDUCATORS ON PROFESSIONAL DEVELOPMENT NEEDS FOR EFFECTIVE INTEGRATION OF LARGE LANGUAGE MODELS IN TEACHING AND LEARNING

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ABSTRACT

This study investigates the of Nigerian teacher educators' perception of professional development needs for effective integration of large language models (LLMs') in teaching practice. Four specific research questions guided the study, and one hypothesis was tested. The population comprised teacher educators from Michael Okpara University of Agriculture, Umudike (MOUAU), and Alvan Ikoku Federal University of Education (AIFUE). Data were collected using a structured questionnaire, which was validated and tested for reliability using Cronbach's alpha, yielding a reliability coefficient of 0.89. Descriptive statistics, including mean and standard deviation, were used to analyze the data. The major findings indicate a generally positive perception of LLMs' benefits among Nigerian teacher educators, though significant gaps in knowledge and skills were identified, necessitating comprehensive professional development. One key recommendation is to implement continuous, context-specific professional development programmes that include hands-on workshops and collaborative learning opportunities.

Assessment, Nigerian teacher educators, perception, professional development needs, effective I ntegration, large language models, teaching practice

INTRODUCTION

Large Language Models (LLMs) such as OpenAI's GPT-4 represent a leap forward in artificial intelligence, demonstrating the ability to generate human-like text, comprehend nuanced language, and provide informative responses based on vast datasets. These capabilities have opened up numerous applications in the field of education, offering transformative potential for teaching and learning practices.

LLMs can tailor educational content to meet individual student needs, thereby promoting personalized learning experiences. They can analyze student data to identify learning gaps and provide customized feedback, enhancing the overall learning process (Holmes et al., 2019). For instance, an LLM can generate practice questions suited to a student's current proficiency level or suggest additional resources for areas needing improvement.

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LLMs can function as virtual tutors, offering explanations, answering questions, and guiding students through complex problems. This can be particularly useful in large classrooms where individual attention from teachers is limited (Popenici & Kerr, 2017). These models can also support students outside of school hours and provide continuous learning opportunities.

Educators can leverage LLMs to create instructional materials, such as lesson plans, quizzes, and interactive activities. This can save time and allow teachers to focus more on direct student engagement (Alam, 2020). Large Language Models (LLMs) can also assist in curating relevant educational resources from vast online databases, ensuring that teachers have access to up-to-date and accurate information. In multilingual classrooms, LLMs can provide real-time translation services, helping students who are not proficient in the primary language of instruction to better understand the material (Chiu, 2021). This is particularly relevant in Nigeria, where numerous languages are spoken, and language barriers can hinder effective teaching and learning. The Models can streamline administrative tasks by automating processes such as grading, scheduling, and managing communications with students and parents. This reduces the administrative burden on teachers and allows them to allocate more time to instructional activities (Holmes et al., 2019). The integration of LLMs into the Nigerian educational system presents unique opportunities and challenges. Nigerian teacher educators play a critical role in this process, and their perceptions of professional development needs are essential for successful implementation.

In classrooms with varied learning levels, LLMs can support differentiated instruction by providing resources and activities that cater to different abilities and interests. This is particularly relevant in Nigerian classrooms, where the range of student abilities can be vast (Uwadiae, 2020). By utilizing LLMs, teachers can ensure that all students receive appropriate challenges and support, thereby fostering a more inclusive learning environment. The models can automate numerous administrative tasks such as grading, attendance tracking, and report generation. This automation can significantly reduce the administrative burden on teachers, allowing them more time to focus on instructional and student-centered activities (Popenici & Kerr, 2017).

For Nigerian educators, who often face large class sizes and limited resources, this reduction in administrative tasks can enhance overall teaching efficiency and effectiveness.

LLMs can also support teacher professional development by providing access to a wide range of educational resources, research, and best practices. Teachers can use LLMs to stay updated with the latest developments in educational theory and practice, thus continuously improving their teaching strategies (Darling-Hammond et al., 2017). Additionally, LLMs can offer on-demand training and professional learning modules, tailored to the specific needs of Nigerian educators. In a country like Nigeria, where educational inequities are prevalent, LLMs can play a role in bridging the gap. By providing high-quality educational content and resources, LLMs can support under-resourced schools and offer students in remote or disadvantaged areas access to learning materials that they might otherwise lack (Uwadiae, 2020). This can help level the playing field and ensure more equitable educational opportunities for all students.

Teacher educators play a pivotal role in the integration of new technologies into educational practices. Their perceptions, readiness, and professional development significantly influence how effectively these technologies are adopted and utilized in classrooms. In the context of Nigeria, assessing the professional development needs of teacher educators for the effective integration of Large Language Models (LLMs) is crucial for enhancing teaching and learning outcomes. Teacher educators are instrumental in bridging the gap between emerging technologies and classroom practices. They serve as role models and mentors, demonstrating how new technologies can be effectively integrated into teaching. Their attitudes towards technology can significantly influence their willingness to adopt and advocate for new tools (Ertmer & Ottenbreit-Leftwich, 2010). Positive perceptions and a proactive stance towards technology are essential for fostering a culture of innovation within educational institutions.

One of the primary responsibilities of teacher educators is to provide training and support to pre-service and in-service teachers. This includes equipping teachers with the necessary skills and knowledge to use new technologies, such as LLMs, effectively.

Professional development programmes are designed to address specific technological competencies, pedagogical strategies, and the practical application of these technologies in diverse classroom settings (Darling-Hammond et al., 2017). In Nigeria, where access to technology can vary widely, it is particularly important for teacher educators to be adept at using LLMs in ways that are feasible given local constraints. This might include training on offline capabilities or low-bandwidth applications of LLMs, ensuring that educators can make the most of available resources (Uwadiae, 2020).

Teacher educators also play a critical role in identifying and addressing barriers to technology adoption. These barriers can include a lack of infrastructure, insufficient training, and resistance to change (Hew & Brush, 2007). By understanding these challenges, teacher educators can develop targeted strategies to overcome them. For example, in contexts where internet access is limited, teacher educators might explore and promote the use of downloadable educational resources or advocate for infrastructure improvements. To ensure that the integration of LLMs and other technologies is effective, ongoing professional development is essential. It therefore becomes necessary for teacher educators to advocate for and participate in continuous professional development that keeps them abreast of the latest technological advancements and pedagogical approaches. This professional growth enables them to model best practices and provide up-to-date training for their peers and students (Desimone, 2009). In Nigeria, where educational technology integration is still developing, this ongoing professional development is even more critical. Teacher educators need to stay informed about global trends while also adapting these innovations to the local context. This dual focus ensures that technological integration is both cutting-edge and contextually relevant.

Ultimately, the successful adoption of new technologies by teacher educators has a direct impact on student learning. When teacher educators effectively integrate LLMs into their teaching practices, they can enhance student engagement, provide personalized learning experiences, and improve educational outcomes (Holmes et al., 2019). By modeling these practices, they also inspire their students to embrace and effectively utilize technology in their own classrooms.

The integration of Large Language Models (LLMs) into teaching offers substantial benefits but also presents several challenges. Understanding these aspects is crucial for assessing the professional development needs of Nigerian teacher educators to effectively implement LLMs in their teaching practice. LLMs have the capability to tailor educational content to meet the individual needs of students. By analyzing students' responses and learning patterns, LLMs can provide customized feedback, suggest additional resources, and adapt instructional materials to suit different learning paces (Holmes et al., 2019). This personalized approach can enhance student engagement and improve learning outcomes, particularly in diverse and large classrooms typical in Nigeria. LLMs can assist in breaking down language barriers, and make education more accessible to students who speak different languages. They can provide real-time translations and explanations in multiple languages, which is particularly beneficial in multilingual contexts like Nigeria (Chiu, 2021). This feature supports inclusive education by ensuring that all students, regardless of their primary language, can access and comprehend educational content.

Large Language Models (LLMs) can automate various administrative tasks such as grading, attendance tracking, and generating reports. This automation frees up teachers' time, allowing them to focus more on interactive and student-centered teaching activities (Popenici & Kerr, 2017). For Nigerian educators who often manage large class sizes, this efficiency can significantly reduce workload and enhance productivity. LLMs can provide continuous professional development opportunities for educators by offering access to a vast array of resources, research articles, and best practices. Educators can use these models to stay updated with the latest developments in educational technology and pedagogy, enhancing their instructional strategies (Darling-Hammond et al., 2017). One of the significant challenges in integrating LLMs in Nigerian education is the digital divide. This disparity can limit the effective implementation of LLMs and exacerbate existing educational inequalities. The successful integration of LLMs requires a certain level of technical proficiency among educators. Many Nigerian teachers may not have the necessary

Knowledge and competence to effectively use LLMs in their teaching practices (Ertmer & Ottenbreit-Leftwich, 2010). Therefore, extensive training and professional development are needed to equip teachers with the required technical skills. Resistance to adopting new technologies can be a barrier to the effective use of LLMs. Educators may be hesitant to change their traditional teaching methods and incorporate new tools into their practices (Hew & Brush, 2007). Overcoming this resistance requires demonstrating the tangible benefits of LLMs and providing ongoing support to educators during the transition. The use of LLMs raises concerns about data privacy and ethical considerations. The data used by LLMs for personalized learning must be handled responsibly to protect students' privacy. There is also a need for clear guidelines and policies to address these concerns and ensure the ethical use of LLMs in education (Holmes et al., 2019).

Continuous professional development (CPD) is essential for educators to stay current with the latest advancements in educational practices and technologies. For Nigerian teacher educators, CPD is particularly crucial in the context of integrating Large Language Models (LLMs) into teaching practices. This ongoing learning process ensures that educators can effectively use these advanced tools to enhance educational outcomes. The rapid pace of technological advancements requires educators to continuously update their skills and knowledge. LLMs, such as OpenAI's GPT-4, represent cutting-edge technology that can significantly transform educational practices. To effectively integrate these models into their teaching, Nigerian educators must stay informed about the latest developments and best practices (Holmes et al., 2019). CPD programs focused on technology integration can help educators learn how to leverage LLMs to provide personalized learning experiences, automate administrative tasks, and enhance students' engagement.

Continuous professional development helps educators refine their pedagogical strategies. Effective use of LLMs in the classroom goes beyond technical proficiency; it requires an understanding of how to incorporate these tools into teaching methodologies to maximize their benefits (Darling-Hammond et al., 2017). CPD programs can offer training on innovative instructional strategies that utilize LLMs to support differentiated instruction, provide real-time feedback, and create interactive learning

environments. This ongoing training ensures that educators can adapt their teaching practices to meet the evolving needs of their students.

In Nigeria, the digital divide poses a significant challenge to the integration of new technologies in education. Continuous professional development can help educators develop strategies to mitigate the impact of this divide. Continuous professional development programmes can provide training on using low-cost or offline applications of LLMs, ensuring that all students have access to high-quality educational resources regardless of their technological limitations (Uwadiae, 2020). By addressing these disparities, Continuous professional development helps create a more equitable educational environment.

Continuous professional development is vital for building educators' confidence and competence in using new technologies. Many Nigerian educators may initially feel overwhelmed by the complexity of LLMs and other advanced tools (Ertmer & Ottenbreit-Leftwich, 2010). Continuous professional development programmes that offer hands-on training, peer collaboration, and ongoing support can help educators develop the necessary skills and confidence to effectively integrate these technologies into their teaching. This support is essential for overcoming resistance to change and fostering a positive attitude towards technological adoption. Emphasizing continuous professional development fosters a culture of lifelong learning among educators. This mindset is crucial for adapting to the ever-changing landscape of education and technology. By engaging in CPD, Nigerian teacher educators model the importance of lifelong learning for their students, demonstrating that education is a continuous journey rather than a finite process (Desimone, 2009). This approach helps prepare students for a future where they will need to continuously update their skills and knowledge to succeed.

Continuous professional development aligns with national educational goals by ensuring that educators are equipped to meet the evolving demands of the education sector. In Nigeria, the integration of LLMs and other advanced technologies is part of a broader effort to enhance the quality of education and prepare students for the digital age (Uwadiae, 2020). CPD programs that focus on technology integration support these goals by providing educators with the tools and knowledge they need to deliver high-quality education that meets international standards.

Numerous studies have examined the integration of technology in education, highlighting both the benefits and challenges associated with its implementation. These studies provide a foundation for understanding how technologies like Large Language Models (LLMs) can be integrated into teaching practices and the professional development needs of educators. Research has consistently shown that integrating technology in education can enhance learning outcomes by providing interactive and personalized learning experiences (Holmes et al., 2019). Technologies such as digital platforms, educational software, and artificial intelligence (AI) tools have been found to improve student engagement, facilitate differentiated instruction, and support collaborative learning (Zhao, 2020).

Despite these benefits, numerous challenges hinder the effective integration of technology in education. These challenges include inadequate infrastructure, lack of technical skills among educators, resistance to change, and insufficient professional development (Ertmer & Ottenbreit-Leftwich, 2010; Hew & Brush, 2007). In many contexts, including Nigeria, the digital divide further exacerbates these challenges, limiting access to technological resources for many educators and students (Uwadiae, 2020). Professional development is crucial for equipping educators with the skills and knowledge needed to integrate technology effectively. Studies have emphasized the importance of ongoing, context-specific professional development that addresses both technical and pedagogical aspects of technology use (Darling-Hammond et al., 2017; Desimone, 2009). Effective professional development should include hands-on training, collaborative learning opportunities, and continuous support to help educators apply new skills in their teaching practices (Guskey, 2002). Research has identified several effective strategies for professional development in technology integration, including the use of Professional Learning Communities (PLCs), mentoring and coaching, and tailored training programs that meet the specific needs of educators (Stoll et al., 2006; Vescio, Ross, & Adams, 2008). These strategies help build educators' confidence and competence, and foster a positive attitude towards technology adoption.

While previous studies provide valuable insights into the benefits and challenges of technology integration and the role of professional development, there are several gaps in the existing research that this study aims to address. Much of the existing research on technology integration and professional development has been conducted in developed countries with well-established technological infrastructure. There is a need for more context-specific research that addresses the unique challenges and opportunities in developing countries like Nigeria. This study aims to fill this gap by focusing on Nigerian teacher educators and their specific professional development needs for integrating LLMs.

While there is substantial research on the integration of general educational technologies, there is limited research on the specific integration of LLMs in teaching practices. LLMs, such as GPT-4, offer unique capabilities for personalized learning and automated support that are distinct from other educational technologies. This study seeks to explore how these specific tools can be effectively integrated into Nigerian classrooms. Previous studies often highlight the importance of professional development without conducting detailed needs assessments to understand the specific requirements of educators. This study aims to conduct a comprehensive needs assessment to identify the precise professional development needs of Nigerian teacher educators concerning LLMs. By doing so, it will provide targeted recommendations for professional development programs. There is a lack of research evaluating the long-term impact of professional development programs on technology integration in education. This study aims to address this gap by not only identifying professional development needs but also suggesting methods for evaluating the effectiveness of these programs in improving the integration of LLMs into teaching practices.

Research questions

1.   How do Nigerian teacher educators perceive their current preparedness for integrating Large Language Models (LLMs) into their teaching practices, and what gaps exist in their current professional development?

2.   What specific professional development needs do Nigerian teacher educators identify as critical for the effective integration of Large Language Models (LLMs) in their teaching practices?

3. What are the perceptions of Nigerian teacher educators regarding the benefits and challenges of integrating Large Language Models (LLMs) into their teaching practices?

4. What types of support and resources do Nigerian teacher educators believe are necessary to facilitate the effective integration of Large Language Models (LLMs) in their teaching practices?

RESEARCH METHODS

This study aimed to investigate teacher educators' perceptions of their professional development needs for effectively integrating large language models (LLMs) into their teaching practices. This is a descriptive research design. The study involved the School of Education at MOUAU, with a population of 136 academic staff, and AIUE, with a population of 709 academic staff. The entire academic staff of the School of Education at MOUAU was used as the sample due to the small population size. A purposive sampling technique was employed (participants are selected based on specific characteristics or criteria relevant to the study's objectives) for AIUE, selecting 191 academic staff from the School of General Education, resulting in a total sample of 327 teacher educators. The number represent 20% of academic staff in the two university. The Data were collected using a questionnaire titled "Teacher-Educators Questionnaire on Professional Development Needs for Effective Integration of Large Language Models in Teaching Practice" (TOPDILT). This 16-item questionnaire was designed by the researchers and validated by three experts from the Departments of Curriculum/Instruction and Computer Science Education and Robotics Studies at AIUE. The instrument consists of five parts: 1. Demographic information of respondents, 2. Perceptions of the benefits and challenges of integrating LLMs into teaching practices, 3. Specific professional development needs for effective LLM integration, 4. Current preparedness for integrating LLMs and 5. Gaps in current professional development and necessary supports and resources for LLM integration.

The questionnaire items used a four-point Likert scale: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), scored as 4, 3, 2, and 1, respectively. The instrument's face validity was confirmed by four experts from the relevant departments at AIUE, and it underwent trial testing with 36 lecturers outside the study population, achieving a Cronbach's alpha reliability coefficient of 0.85. The questionnaire was administered with the assistance of two trained research assistants, ensuring a 100% response rate. Data were analyzed using mean and standard deviation to address the research questions, with a decision rule that any mean score of 2.50 or above was accepted, while scores below 2.50 were rejected. Hypotheses were tested using the t-test statistic at a 0.05 level of significance.

Table 1: Average Perception Scores and Standard Deviations on Teacher Educators' Current Preparedness for Integrating Large Language Models (LLMs) into Their Teaching Practices and existing gaps in professional development

S/N	ITEM STATEMENT	MOUAU			ALVAN LECTURES		
		$\bar{x}$	SD	REM	$\bar{x}$	SD	REM
1	I feel confident in my current ability to integrate LLMs into my teaching practices.	3.87	0.75	Accept	3.80	0.78	Accept
2	There are significant gaps in my knowledge and skills that need to be addressed for effective LLM integration.	3.81	0.56	Accept	3.85	0.54	Accept
3	My current professional development has adequately prepared me to use LLMs in the classroom.	3.61	0.71	Accept	3.59	0.70	Accept
4	I need additional support and training to feel fully prepared to integrate LLMs into my teaching	3.61	0.84	Accept	3.63 3.71	0.81	Accept
	Average mean 3.72						

Table1. Shows that the average mean scores of MOUAU (3.72) and ALVAN (3.71), and the overall cluster mean of 3.7175, suggest that while there is some level of preparedness, significant gaps remain that need to be addressed. The standard deviations (MOUAU: 0.715, ALVAN: 0.7075, overall: 0.728) are relatively low, indicating consistency in responses among educators.

Table 2: Average Perception Scores and Standard Deviations on the Benefits and Challenges of Integrating Large Language Models (LLMs) into Teaching Practices

S/N	ITEM STATEMENT	MOUAU			ALVAN LECTURES		
		$\bar{x}$	SD	REM	$\bar{x}$	SD	REM
5	I need comprehensive training on how to use LLMs effectively in my teaching.	3.67	0.69	Accept	3.62	0.68	Accept
6	Professional development programs should include hands-on workshops for practical experience with LLMs	3.80	0.76	Accept	3.82	0.74	Accept
7	Training on incorporating LLMs into teaching methodologies is essential for enhancing student engagement	3.64	0.61	Accept	3.67	0.50	Accept
8	Strategies to mitigate the impact of the digital divide should be included in professional development programs	3.51	0.64	Accept	3.53	0.62	Accept
	Cluster Mean:	3.65					

Table2. Shows that the average mean scores of MOUAU (3.655) and ALVAN (3.66) indicate a generally positive perception of the benefits and challenges associated with integrating LLMs into teaching practices. The standard deviations (MOUAU: 0.675, ALVAN: 0.635) are relatively low, suggesting consistency in responses among educators within each group.

Presentation of result Table: 3: Prevailing responses of MOUAU and ALVAN lecturers regarding the perceived challenges that will be faced by teacher educators regarding the integration of green education into teacher education curricula

S/N	ITEM STATEMENT	MOUAU			ALVAN LECTURES		
		$\bar{x}$	SD	REM	$\bar{x}$	SD	REM
9	LLMs can significantly enhance student engagement and learning outcomes in my teaching practice.	3.47	0.65	Accept	3.50	0.68	Accept
10	Integrating LLMs into teaching can help address the diverse learning needs of students in my classroom	2.80	0.56	Accept	2.82	0.54	Accept
11	The use of LLMs can automate administrative tasks, allowing me more time for student-centered activities	2.51	0.41	Accept	2.59	0.40	Accept
12	The digital divide is a significant barrier to the effective use of LLMs in Nigerian classrooms	3.41	0.64	Accept	3.43	0.62	Accept
	Average mean	3.57	0.56		3.85	0.56	

Table3. Shows that the average mean scores of MOUAU (3.0475) and ALVAN (3.085) indicate generally positive perception of the potential benefits of integrating LLMs into teaching practices. The standard deviations (MOUAU: 0.565, ALVAN: 0.56) are relatively low, suggesting consistency in responses among educators within each group.

Table 4: Average Perception Scores and Standard Deviations on Gaps in Current Professional Development and Necessary Support and Resources for Effective Integration of Large Language Models (LLMs) in Teaching Practices

S/N	ITEM STATEMENT	MOUAU			ALVAN LECTURES		
		$\bar{x}$	SD	REM	$\bar{x}$	SD	REM
13	Access to online resources and follow-up workshops would facilitate the effective use of LLMs in my teaching.	3.87	0.85	Accept	3.85	0.83	Accept
14	Collaborative learning opportunities with other educators would enhance my ability to integrate LLMs.	3.80	0.86	Accept	8.82	0.84	Accept
15	Mentoring and coaching programs are necessary to support the integration of LLMs into my teaching practices.	3.71	0.81	Accept	3.59	0.78	Accept
16	Clear guidelines and policies on data privacy and ethical considerations are needed for using LLMs in education	3.64	0.74	Accept	3.61	0.72	Accept

Average mean 3.73

The average mean scores of MOUAU (3.755) and ALVAN (3.7175), and the overall cluster mean of 3.73625, indicate a strong general agreement on the necessary support and resources for integrating LLMs. The standard deviations are relatively low (MOUAU: 0.815, ALVAN: 0.7925, overall: 0.80375), indicating consistency in the responses among educators

DISCUSSION
The study's findings, as presented in the tables, reflect a generally positive perception among Nigerian teacher educators regarding the integration of Large Language Models (LLMs) into their teaching practices. This aligns with existing literature that underscores the potential benefits and challenges associated with educational technology integration. Table 1, highlights the positive perception of educators towards the potential benefits of LLMs. The mean scores of MOUAU (3.0475) and ALVAN (3.085) suggest that educators recognize the value of LLMs in enhancing student engagement and learning outcomes. This supports Holmes et al.'s (2019) assertion that technology can improve learning by providing personalized and interactive experiences. The consistency in responses, indicated by low standard deviations, further emphasizes a shared recognition of LLMs' potential across different institutions. However, the acknowledgement of the digital divide as a significant barrier (mean scores: MOUAU 3.41, ALVAN 3.43) aligns with Uwadiae's (2020) argument that infrastructural challenges limit the effective use of advanced technologies in Nigerian classrooms. This concern highlights the necessity of addressing disparities in technological access to ensure equitable educational opportunities. Table 2, shows a strong consensus on the need for comprehensive training and professional development to effectively integrate LLMs, with MOUAU and ALVAN both scoring high means (3.655 and 3.66 respectively). These findings are in line with Darling-Hammond et al. (2017), who emphasize that ongoing, context-specific professional development is crucial for effective technology integration. The need for hands-on workshops and training on incorporating LLMs into teaching methodologies underscores the importance of practical experience and continuous learning opportunities to enhance teacher competence and confidence.

Table 3, suggests that while educators feel somewhat prepared to integrate LLMs (mean scores: MOUAU 3.7253, ALVAN 3.717), significant gaps in knowledge and skills persist.

This indicates that existing professional development has been somewhat effective but is

insufficient for full preparedness, which aligns with Ertmer and Ottenbreit-Leftwich's (2010) findings that many educators lack the technical proficiency required for effective technology use. The identified need for additional support and training reinforces the argument for ongoing professional development to address these gaps. Table 4, highlights the perceived need for additional support and resources, such as access to online resources, follow-up workshops, collaborative learning opportunities, and mentoring programs. The high mean scores (MOUAU 3.755, ALVAN 3.7175) reflect a consensus on the types of support necessary for effective LLM integration. This aligns with Stoll et al. (2006) and Vescio, Ross, and Adams (2008), who advocate for professional learning communities and mentoring as effective strategies for professional development. Moreover, the need for clear guidelines on data privacy and ethical considerations echoes Holmes et al. (2019), underscoring the importance of addressing ethical concerns in the use of educational technologies.

CONCLUSION

The findings of this study indicate a positive perception among Nigerian teacher educators towards the integration of LLMs in teaching practices, alongside a recognition of significant challenges that need to be addressed. The alignment of these findings with existing literature underscores the importance of addressing infrastructural barriers, providing comprehensive professional development, and ensuring ethical use of technology to fully realize the benefits of LLMs in education. Addressing these areas will be crucial for enhancing teaching practices and improving educational outcomes in Nigeria.

RECOMMENDATIONS

Institutions of higher learning should establish ongoing, context-specific training that includes practical, hands-on workshops to build technical proficiency and pedagogical skills in using LLMs.
Government should develop strategies to provide reliable internet access and technological devices to all schools, ensuring equitable access to LLMs. Institutions of higher learning should Create Professional Learning Communities (PLCs) where

educators can share experiences, challenges, and best practices related to LLM integration.

Institutions of higher learning should set up mentoring programs where experienced educators can support their peers in learning and integrating LLMs into their teaching practices.

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