Assessing Sustainable Pedagogical Integration: Next-Generation Teacher Agency and AI-Visual Tools

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Abstract

This study assessed sustainable pedagogical integration by examining next-generation teacher agency and awareness of AI-enhanced visual tools, specifically AI-generated PowerPoint presentations. An intact class of 95 first-year English Education students enrolled in LED 111: Introduction to Digital Literacy and Pedagogy at a public university in Southwest Nigeria participated in a three-week intervention. Students were introduced to AI-generated PowerPoint tools using platforms such as Microsoft Copilot. Pretest and posttest data were collected via Google Forms. Descriptive statistics summarized trends in awareness, confidence, and perceived sustainability, while the Wilcoxon signed-rank test assessed significant differences in pre- and posttest scores. Open-ended responses were thematically analyzed using NVivo 14. Findings revealed a marked increase in awareness and positive perception of AI-generated PowerPoint post-intervention. Microsoft Copilot was the most frequently used tool. However, sustained use remained limited due to infrastructural challenges and a lack of ongoing institutional support. The triangulated results showed a shift from initial skepticism to advocacy, with students recommending broader curricular integration of AI tools. The study concludes that while brief exposure enhances awareness and short-term adoption, long-term sustainability requires curriculum reform and continuous capacity-building. It recommends embedding AI literacy into pre-service teacher education to foster scalable and sustainable digital pedagogy.

Keywords: AI-enhanced pedagogy; teacher education; digital literacy; generative PowerPoint;

Introduction

The advent of Generative Artificial Intelligence (GAI) in education is reshaping instructional delivery and redefining teachers' classroom management in an evolving digital age. As global

education systems increasingly embrace digital transformation, there is growing interest in how pre-service or next-generation teachers develop competence in integrating AI-powered tools into language pedagogy. AI-generated visual tools—particularly AI-generated PowerPoint presentations—are emerging as a dynamic component in contemporary teacher education. These tools offer the potential to transit from traditional lesson planning to a digital-based one, enhance student-teacher interaction, and foster more sustainable teaching practices. However, despite the technological promise, a critical gap exists in understanding how pre-service teachers in developing contexts perceive, adopt, and sustain the use of such tools in their teaching practice.

Like many regions in the Global South, Sub-Saharan Africa appears to be grappling with dual challenges of educational innovation and infrastructural limitations. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2022), while over 70% of teacher education programmes globally acknowledge the importance of digital literacy, fewer than 35% in low- and middle-income countries have embedded AI-based tools in their curricula. In Nigeria specifically, the 2020 Nigeria Digital Economy Policy highlights the integration of AI in education as a strategic national goal, yet implementation remains sparse in teacher training institutions. This disconnect between policy aspiration and pedagogical application raises urgent questions about how to prepare next-generation educators to become confident, competent, and critically aware users of AI-enhanced tools.

In alignment with its vision to modernise Nigeria's higher education system, the National Universities Commission (NUC) introduced the Core Curriculum Minimum Academic Standards (CCMAS), which came into effect in September 2023. The initiative was designed to encourage innovation and global competitiveness by mandating that 70% of each programme's curriculum be standardized while allowing institutions to develop the remaining 30% aligned with local realities

and institutional strengths. This framework has profound implications for teacher education, particularly in language education, where the integration of digital competencies has become essential. One outcome of this curricular reform is the introduction of innovative courses such as LED 111: Introduction to Digital Literacy and Language Pedagogy, a foundational course that equips pre-service teachers with the skills to navigate digital instructional tools and AI-enhanced teaching methods (Bamidele Olumilua University of Education, Science and Technology, Ikere-Ekiti, 2024, p.289).

The inclusion of CCMAS-based courses reflect the NUC's emphasis on producing next-generation teachers who are linguistically competent and technologically empowered to operate in 21st-century classrooms. By embedding digital literacy and AI awareness into language teacher education, universities are responding to both national policy and global shifts in educational practice, thereby ensuring that future educators are agents of sustainable pedagogical transformation. Similarly, the newly introduced Nigeria education policy for Junior secondary school education reflects a “curriculum for a smarter generation” where basic digital literacy and Digital Technologies are included in the curriculum for primary and junior secondary schools respectively (Federal Ministry of Education, 2025).

AI-generated PowerPoint tools—powered by platforms such as Microsoft Copilot, Tome AI, and Canva Magic Design—represent a shift in instructional design. These tools can automatically generate well-structured presentations based on minimal user input, thereby reducing lesson preparation's cognitive and temporal load (Anderson & Rainie, 2023). For pre-service teachers navigating a demanding academic curriculum alongside early exposure to classroom practice, such automation presents an opportunity to engage more effectively with content delivery. However, studies suggest that the integration of these technologies requires more than technical access; it

demands pedagogical adaptation, institutional support, and user confidence (Zawacki-Richter et al., 2019; Selwyn, 2020).

Globally, evidence is accumulating on the role of AI in transforming educational practices. A 2023 survey by HolonIQ reported that 84% of education leaders in OECD countries expect AI tools to become central to teaching by 2030. In contrast, a 2022 survey across 10 African teacher education institutions (Okafor & Makinde, 2022) found that fewer than 20% of teacher trainees had heard of AI-generated instructional tools, and only 8% had used them in coursework. This data highlights an urgent need for structured interventions to build awareness and agency among pre-service teachers in underrepresented regions. The *teacher agency* concept, with emphasis that teachers' capacity to make intentional pedagogical choices, becomes especially critical in the face of such emerging technologies (Biesta, Priestley, & Robinson, 2015).

Moreover, the pedagogical implications of AI tools are intimately tied to the principle of sustainability. Sustainable pedagogy encompasses the long-term integration of practices that are not only effective and adaptable but also accessible and equitable (Sterling, 2011). For AI-generated visual tools to be sustainable, pre-service teachers must become aware of their functionality and perceive their long-term instructional value and practicality. The indices for assessing students' awareness include their ability to use these tools with limited institutional resources, navigate ethical and contextual concerns, and foster student-centered learning environments.

In the Nigerian context, recent reforms in the teacher education curriculum underscore the necessity of embedding digital competencies. The National Commission for Colleges of Education (NCCE, 2020) has updated its minimum standards to include components of digital literacy. Similarly, the Nigerian Universities Commission (NUC, 2021) has emphasised the development

of 21st-century teaching skills in undergraduate education programmes. Yet, anecdotal evidence from field observations and academic reports continues to suggest that practical exposure to AI tools remains rare in most institutions. Moreover, there is a need for empirical studies that explore current awareness levels and examine the effectiveness of pedagogical interventions involving AI technologies in language education.

The integration of generative AI into language education is gaining traction in Nigeria, with various initiatives aimed at equipping educators with the necessary skills. The Federal Government, recognizing the transformative potential of AI in education, launched a five-week training program in February 2025 for 6,000 senior secondary school teachers across the nation. This initiative, supported by Google Research, Data Science Nigeria, and Olabisi Onabanjo University, aims to enhance teachers' proficiency in AI pedagogy, thereby improving teaching methodologies and learning experiences.

Complementing governmental efforts, non-governmental organizations are also playing a pivotal role. The Brain Builders Youth Development Initiative (BBYDI) organized workshops in North-Central Nigeria, focusing on empowering teachers with digital skills and AI integration strategies. These sessions emphasized AI's capacity to personalize learning, simplify assessments, and boost teacher productivity. Despite challenges such as limited internet access and high device costs, participating educators expressed optimism about AI's potential to revolutionize classroom instruction.

Empirical studies further shed light on pre-service teachers' attitudes towards AI. A study by Chigbundu and Oluwabiyi (2023) highlighted that while there is a substantial gap in digital skills among educators, comprehensive training programs can effectively bridge this divide, enhancing teachers' ability to integrate AI into their teaching practices. Another study emphasised the need

for universities to implement ethical frameworks and increase awareness of AI's risks to ensure responsible usage.

These developments underscore a growing recognition among Nigerian educators of the importance of embracing generative AI in language education. While challenges persist, the concerted efforts of governmental bodies, NGOs, and academic institutions indicate a positive trajectory towards integrating AI into teacher education programs, preparing the next generation of language teachers for a digitally-driven educational landscape.

This study responds to this gap by investigating the awareness, adaptation, and sustainability of AI-generated PowerPoint presentations among next-generation teachers in a Nigerian university. Specifically, the study focuses on 100-level students of English Education enrolled in a course titled *LED 111: Introduction to Digital Literacy and Pedagogy*. The course provides a relevant platform for introducing digital teaching tools as students begin their foundational training in instructional design. A three-week intervention was designed where participants were exposed to the basics of using AI-generated PowerPoint as an alternative to traditional instructional media such as blackboards and flashcards. The intervention was not merely technical in nature but integrated pedagogical modelling and collaborative learning, facilitated by a digital instructor and two research assistants.

This study is significant not only because of its empirical contribution to AI integration in teacher education but also because of its relevance to broader debates on equitable digital transformation in the Global South. By focusing on pre-service teachers—arguably the most adaptable and responsive group within the education workforce—this research addresses the formative stage where attitudes and practices around technology are shaped. It also contributes to the growing

discourse on sustainable digital pedagogy, calling attention to the intersection of technological innovation, pedagogical agency, and systemic support in teacher education.

This study is situated at the crossroads of educational innovation, capacity building, and contextual realities. It seeks to understand not just whether pre-service teachers can use AI-generated PowerPoint, but whether they see it as pedagogically valuable, practically sustainable, and professionally empowering. The outcomes are expected to inform curriculum developers, policymakers, and teacher education institutions seeking to equip next-generation teachers for the evolving demands of the digital age.

Review of Literature

Digital Literacy and Teacher Preparedness in Nigeria

The integration of digital literacy into teacher education has gained renewed urgency in Nigeria, especially following the disruptions caused by the COVID-19 pandemic. According to the Universal Basic Education Commission (UBEC), over 60% of Nigerian public school teachers lacked the digital literacy required for remote teaching, exposing the fragile state of ICT readiness in the education sector (Daily Post Nigeria, 2021). This gap highlighted the need for pre-service teacher training institutions to embed robust digital pedagogical components in their curricula.

Recent research supports this policy direction. Ogunbodede et al. (2023) emphasized that many Nigerian university lecturers still lack the digital competencies needed to support 21st-century learners. Similarly, Apata et al. (2025) argue that although Nigerian teachers are willing to adopt digital pedagogies, systemic deficiencies in infrastructure and policy weaken implementation outcomes. To address these gaps, the Federal Government set a target to achieve 95% digital literacy by 2030 (Naija News, 2024), while institutions such as the National Board for Technical

Education (NBTE) have initiated digital training programs for technical and vocational educators (NBTE, 2024).

AI Integration in Language Pedagogy

Artificial Intelligence (AI) is rapidly transforming educational practice across disciplines, and language education is no exception. Platforms such as Duolingo and Khan Academy now employ AI to personalise content and adapt instruction to learners' needs (Axios, 2025; Time, 2024). These developments reflect a broader global trend toward intelligent tutoring systems and automated content generation**.**

In the Nigerian context, Abubakar et al. (2024) found that tertiary-level pre-service teachers recognize the pedagogical value of AI, particularly in reducing workload and enhancing lesson quality. However, they reported a lack of institutional training and exposure to generative AI platforms such as Microsoft Copilot or Tome AI. Chigbundu and Oluwabiyi (2023) similarly observed that structured, experiential AI training significantly enhances teacher agency and confidence in applying AI-generated feedback and assessment.

These findings underscore the need for intentional integration of AI tools into pre-service language teacher education. As Oteyi and Dede (2024) suggest, modern teacher training should emphasize both linguistic proficiency and technological fluency, enabling future educators to teach with tools that reflect the realities of the digital classroom.

Curriculum Reforms and Digital Innovation in Teacher Education

The National Universities Commission (NUC) introduced the Core Curriculum Minimum Academic Standards (CCMAS) in 2023 to promote innovation and localized flexibility in Nigerian university curricula. This policy allocates 70% of curriculum content to national benchmarks and leaves 30% for institutional innovation (News Agency of Nigeria, 2023). One institutional

response to this opportunity is the introduction of courses such as *LED 111: Introduction to Digital Literacy and Language Pedagogy*, which aim to familiarize pre-service teachers with AI-enhanced visual tools for instruction (BOUESTI, 2024, p. 289).

This innovation reflects global trends in pre-service teacher preparation. Zawacki-Richter et al. (2019) stress that for digital technologies like AI-generated slideshows to be effective, they must be embedded in structured learning environments that allow experimentation and reflection. The inclusion of LED 111 exemplifies such integration, promoting hands-on engagement with tools like Microsoft Copilot, Canva, and Tome AI as part of professional preparation.

Next-Generation Language Teachers' Disposition toward Generative AI

A growing body of literature highlights shifting attitudes among Nigerian pre-service teachers regarding generative AI. Initial skepticism is often replaced by appreciation when trainees are given structured exposure to AI tools (Chigbundu & Oluwabiyi, 2023). Moreover, the 2025 federal initiative—backed by Google Research and implemented in collaboration with Data Science Nigeria—trained 6,000 teachers nationwide in AI pedagogy, signaling institutional recognition of AI's centrality in education (The Guardian, 2025).

Non-governmental organizations have also contributed to capacity-building. The Brain Builders Youth Development Initiative (BBYDI) trained North-Central teachers in AI use, with participants emphasizing its potential to improve assessments, personalize learning, and boost classroom productivity (TheCable, 2024). Despite these advances, infrastructural limitations and lack of sustained access to AI platforms remain barriers to long-term adoption and practice.

These insights mirror the qualitative findings in your study, where students transitioned from personal curiosity to system-wide advocacy. They also echo Biesta et al.'s (2015) framework of teacher agency, which links confidence to exposure, support, and reflective engagement.

Methodology

This study employs a mixed-methods approach to evaluate educators' perspectives on AI-powered PowerPoint tools for English Language classroom instruction. The population consists of 100-level students studying English Education in public universities in Southwest Nigeria, with an initial intact class of 98 participants (male and female) enrolled in LED 111: *Introduction to Digital Literacy and Pedagogy*. However, at the end of the pretest, 95 participants were able to take part in the posttest intervention. The study follows a structured research procedure in which students were introduced to PowerPoint Presentations as an instructional alternative to conventional teaching tools such as blackboards, whiteboards and flashcards. The intervention lasted for four weeks, with one digital instructor and two research assistants facilitating hands-on, interactive sessions. Participants were divided into six groups, each assigned a topic for a final presentation using AI-enhanced PowerPoint at the end of the fourth week. A pretest was administered before the intervention to measure changes in students' perceptions and competencies, followed by a posttest survey administered after the third week, both conducted via Google Forms.

A structured questionnaire (Google Form) was used for data collection, comprising demographic information, Likert-scale items assessing awareness, adaptation, and sustainability, and open-ended questions for qualitative analysis. Data analysis involved both descriptive and advanced statistical techniques to ensure a reliable assessment of the intervention’s impact. Furthermore, logistic regression analysis examines the relationship between educators' characteristics and their likelihood of adopting these technologies. The Wilcoxon signed-rank test complements this analysis by assessing changes in educators' confidence levels before and after training interventions. The study adhered to ethical research guidelines, ensuring informed consent from participants, maintaining data confidentiality, and upholding voluntary participation. This

methodological approach allows for a comprehensive assessment of next-generation teachers' agency in integrating AI-enhanced visual tools in teaching and learning, offering both empirical validation and deeper insights into sustainable pedagogical integration.

RESULTS

Table 1: Descriptive Statistics for Pretest and Posttest Results

Pretest (n = 95)	Posttest (n = 95)
No knowledge (40%), Limited knowledge (29.27%), Extensive knowledge (7.32), Moderate knowledge 23.16)	Moderate knowledge (50.53%), Extensive knowledge (26.32%), No Knowledge 1.05%)
Microsoft CoPilot (37.89%), Canva Magic Design (6.32%), Beautiful.ai (1.05%), None (46.32%)	Microsoft Copilot (80%), Tome.ai (5.26%), Canva Magic Design (1.05%), Beautiful.ai (1.05%), None 6.32%), Combined response (6.32%)
Never Created (91.58%)	Rarely (52.63%), Occasionally (37.89%), Regular use (9.47%)
Not assessed	Very confident (42%), Moderately confident (36.8%), Not Confidence 6.32%)
Strongly Agree (11.58%), Agree (58.95%), Neutral (11.58), Disagree (3.16%), Strongly Disagree (4.21%)	Strongly Agree (40%), Agree (46%), Neutral (4%), Strongly Disagree(4%), Disagree (1%)

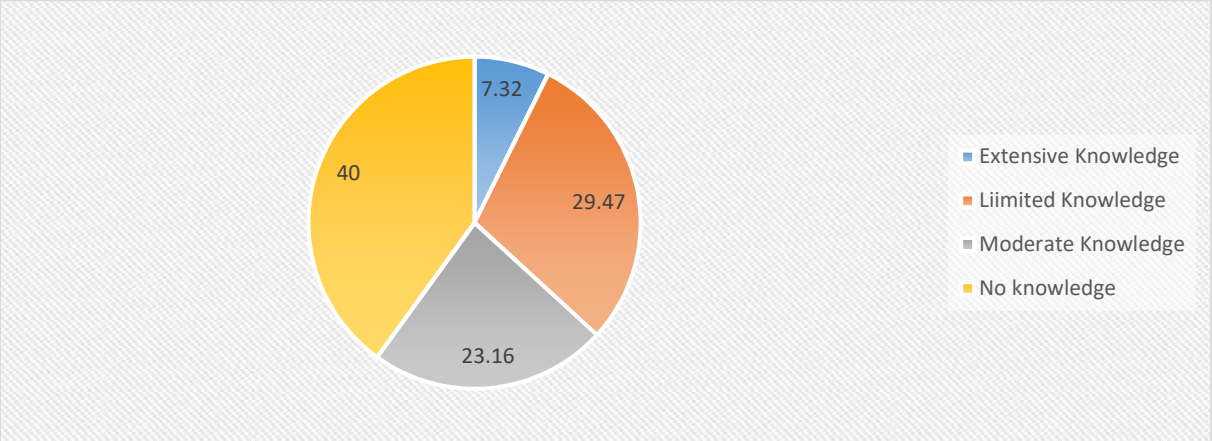

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Figure 1: The chart shows the proportion of the respondents' knowledge level before the test.

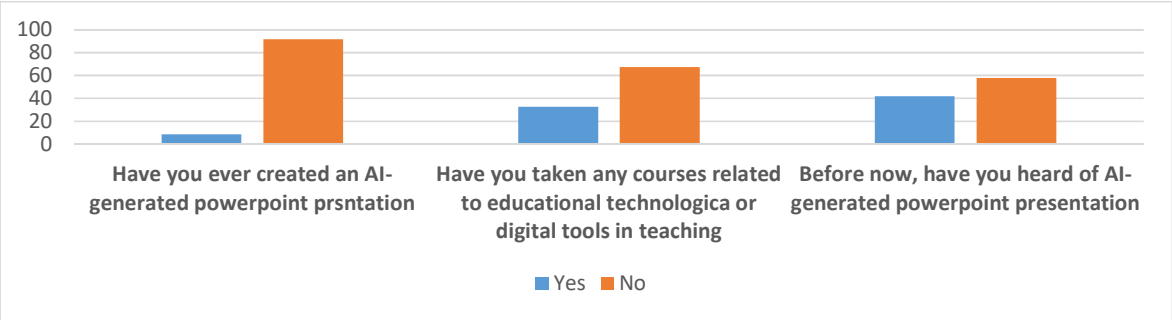

Figure 2: The chart shows the knowledge of the respondents about the usage of AI-generated PowerPoint

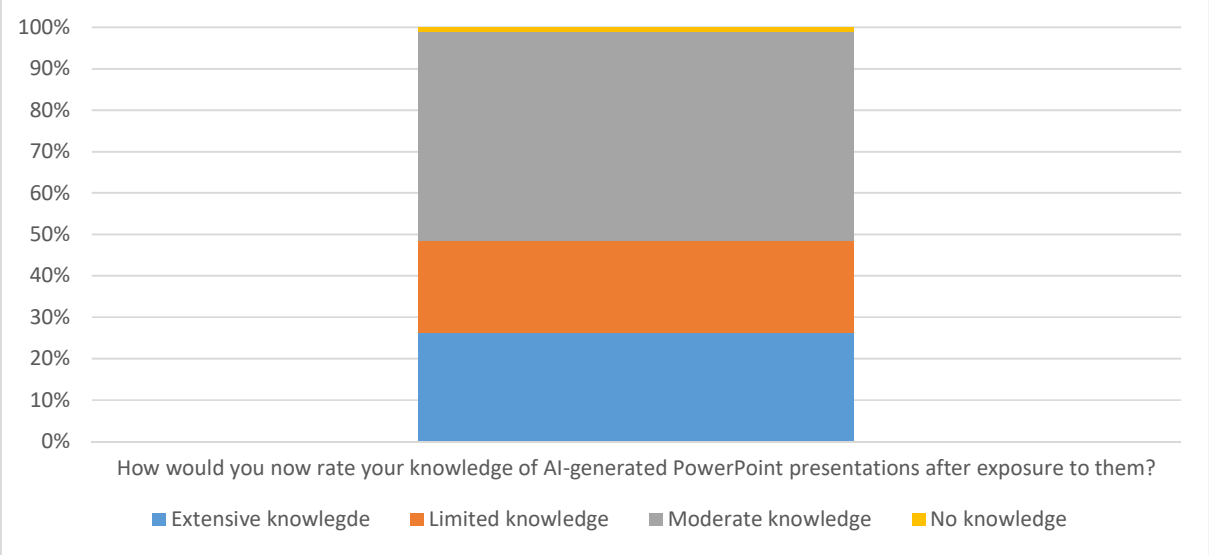

Figure 3: The chart shows the respondents' knowledge level after the test on a scale.

Discussion:

Table 1 provides data on the respondents' awareness of AI-generated PowerPoint tools. Similarly, Fig.1 shows participants' knowledge of AI-generated PowerPoint presentations before the intervention: 40% of respondents indicated having no knowledge, 29.47% claimed limited knowledge, 23.16% had moderate knowledge, and only 7.37% reported extensive knowledge. This shows a clear lack of in-depth knowledge.

Fig.2 reveals that the majority (46.32%) had not heard of any GAI tools for creating PowerPoint presentations. Microsoft Copilot was the most recognised for those, with 37.89%, followed by more negligible recognition of Canva Magic Design (6.32%) and Beautiful AI (1.05%).

Regarding the impact of AI-generated PowerPoints on teaching and learning, 58.95% agreed that they would improve teaching, with 11.58% strongly agreeing. A significant number, 86.32%, believed AI PowerPoint presentations would be useful when they began teaching, while only 4.21% disagreed.

Despite the awareness of these tools, the majority (91.58%) had never created an AI-generated PowerPoint presentation. Of those who hadn't, 38.95% cited lack of awareness as the main barrier, while 28.42% lacked access to AI tools, and 7.37% were concerned about inaccuracies.

Regarding the impact of AI-generated PowerPoints on teaching, 58.95% agreed that they would improve teaching, with 11.58% strongly agreeing. A significant number, 86.32%, believed AI PowerPoint presentations would be useful when they began teaching, while only 4.21% disagreed.

Table 1 and Figure 3 reflect data showing a generally positive shift in the respondents' awareness, usage, and acceptance of AI-generated PowerPoint presentations after their exposure.

A large majority of the participants (75.79%) reported having taken courses related to educational technology or digital teaching tools. After exposure to AI-generated PowerPoint presentations, more than half (50.53%) now rate their knowledge as moderate, while 26.32% feel they have extensive knowledge. Only 1.05% still reported not knowing, indicating a significant improvement in familiarity and understanding.

When asked about the AI tools they have used or explored, Microsoft Copilot stands out as the most used, with 80% of respondents indicating they’ve tried it. Other tools like Tome AI, Canva Magic Design, and Beautiful.ai had minimal engagement. Interestingly, only a small number

(6.32%) indicated that they had not used any tool, and the same percentage gave combined responses, suggesting some experimentation across multiple platforms.

Confidence levels in using AI-generated presentations are intense. Over 42% of the students said they felt very confident, while another 36.84% reported being moderately confident. Only a small fraction (6.32%) felt not confident at all.

Students highlighted several benefits. The most common responses included making teaching more interactive (32.63%) and improving lesson structure (24.21%). Others noted time-saving benefits and enhanced engagement, while 18.95% observed a combination of these advantages.

Following the training, half of the participants (50.53%) have already created AI-generated PowerPoint slides showing practical applications. However, the frequency of usage remains modest, with most using them rarely (52.63%) or occasionally (37.89%), and only 9.47% reporting regular use.

Challenges remain, with the most common issue being limited access to AI tools (reported by 43 respondents). Other concerns include the accuracy of generated content and difficulty in customizing slides to personal or educational needs.

Despite these challenges, the perception of GAI-generated presentations is overwhelmingly positive. Most students agree (48.42%) or strongly agree (42.11%) that AI-generated PowerPoint improves teaching. Only a small number disagreed or remained neutral.

In terms of long-term potential, nearly all respondents (94.74%) believe AI PowerPoint presentations are sustainable for future educators. For more effective integration, many participants highlighted the need for additional training (42.11%) and support through institutional policies, access to tools, and peer mentoring. The fact that 20% selected a combination of support options further underscores the need for a holistic approach to AI adoption in education.

Table 2: Cross-Tabulation of Students' Knowledge of AI-Generated PowerPoint (Pretest vs. Posttest)

Posttest Knowledge Level	Extensive	Limited	Moderate	No Knowledge
Pretest: Extensive	2	6	4	13
Pretest: Limited	2	9	4	6
Pretest: Moderate	3	12	14	19
Pretest: No Knowledge	0	1	0	0

Interpretation.

A Wilcoxon signed-rank test was conducted to determine whether students' knowledge of AI-generated PowerPoint improved following the instructional intervention. This non-parametric test was used due to the ordinal nature of the data and the related samples. The cross-tabulated results presented in Table 2 indicate shifts in the distribution of participants' self-reported knowledge levels from pretest to posttest phases.

The comparison between the pretest and posttest results reveals a significant improvement in the participants' knowledge of AI-generated PowerPoint presentations. Before the training, most participants rated their knowledge as moderate (14 participants), followed by those with limited knowledge (9 participants) and a smaller number who had extensive knowledge (6 participants). After the training, there was a noticeable shift: a more significant portion of participants now reported extensive knowledge (13 participants, up from just 2), and the number of participants with moderate knowledge increased (from 14 to 19).

The training had a powerful effect on those who initially did not know AI-generated PowerPoint presentations. Out of the participants who started with no knowledge (13 individuals), all but one

moved to a higher knowledge level, with many reaching extensive knowledge. Those with limited knowledge before the training also showed improvement, as nine shifted to moderate knowledge. Additionally, 4 participants at a moderate knowledge level before the training reported an increase in extensive knowledge after the intervention.

Table 3: Wilcoxon Signed-Rank Test Result for Pretest and Posttest Knowledge of AI-Generated PowerPoint

Test Statistic	V	p-value
Wilcoxon Signed-Rank	91	0.0016

Note. The significance level was set at $\alpha = 0.05$.

The Wilcoxon signed-rank test result revealed a statistically significant difference in students' self-reported knowledge of AI-generated PowerPoint presentations between the pretest and posttest phases, $V = 91$, $p = .0016$. The null hypothesis is rejected since the p-value is less than the significance threshold of 0.05. This indicates that the instructional intervention had a meaningful impact on students' awareness and understanding of AI-enhanced presentation tools.

Table 4: The table showing the logistic regression results.

Variable	**Estimate**	**Std. Error**	**p-value**
Intercept	0.6947	1.174	0.55
Have you taken any courses related to educational technology**?**			
Yes	1.701	0.519	0.001
How would you rate your knowledge of AI-generated PowerPoint presentations**?**			
Limited Knowledge	-1.527	1.229	0.213
Moderate Knowledge	-1.169	1.246	0.348
No knowledge at all	-2.291	1.221	0.061

What is your major area of study?			
English Education	-16.646	1599.8	0.992
Have you taken a course related to educational technology?			
Educational Technology	18.1624	1696.7	0.991

Discussion:

The regression model explores factors that influence respondents' knowledge of AI-generated PowerPoint presentations. The results show that one significant predictor is whether the respondent has taken a course related to educational technology or digital tools. On average, those who had taken such a course scored 1.701 points higher in knowledge than those who had not, and this effect is statistically significant ($p = 0.001$). The results suggest that formal exposure to educational technology substantially improves students' familiarity with AI-generated PowerPoint tools.

On the other hand, the self-rated levels of knowledge-categorized as Limited, Moderate, and No knowledge at all—show pessimistic estimates compared to the reference category (which we can infer is likely Extensive knowledge, though not explicitly listed). While all these categories show a downward trend in estimated knowledge, none are statistically significant at the 0.05 level. For instance, those who claimed not to know at all scored 2.291 points lower than those with extensive knowledge, with a p-value of 0.061, which is marginally above the typical threshold for significance.

Thematic Analysis of Qualitative Responses

The excerpts from participants' responses to items 14 and 15 on the questionnaire are presented as qualitative data. Based on the participants' responses before and after the intervention, thematic areas are identified and analyzed using Nnivo 14.

RESULTS

1. Pretest Themes (Before AI PowerPoint Exposure)

From the pretest responses, participants expressed anticipation, uncertainty, and scepticism regarding AI-generated PowerPoint. The key themes identified include the following:

a. Expectations:

i. **“** I have no idea of PowerPoint and AI “

ii. “My lecturers do not usually discuss PowerPoint for teaching or teaching practice."

iii. “The idea seems positive for computer literate student teachers."

iv. “ Old school lecturers will be helped in making teaching easy since we are computer literate generation”

v. " I never knew AI could be used for PowerPoint, but looking forward to using it "

b. Concerns about AI-PowerPoint Adoption:

i. *“For everybody to be known about it.”*

ii. *“Not at all.”* (Indicating uncertainty or resistance).

iii. “It’s strange to me."

2. Posttest Themes (After AI PowerPoint Exposure)

After the intervention, responses indicated tremendous enthusiasm and specific recommendations for improvement**.** Key themes include:

a. **Increased Acceptance and Enthusiasm:**
   i. *"It's making learning easier and faster and making students more adapted to or interested in it."*
   ii. *"PowerPoint should be used more regularly in schools; it improves and enhances the desire for learning."*
   iii. Students recognised the efficiency and engagement benefits of AI-generated PowerPoint.

b. **Need for Training and Awareness:**
   i. *"Creating awareness."*
   ii. *"AI-generated PowerPoint can be improved by teaching and educating the future teachers about it."*
   iii. Many participants now **requested structured training** to maximise AI's potential.

c. **Desire for Institutional Support:**
   i. *"As a student, I think AI-generated PowerPoint can be improved by integrating it into teacher education programs."*
   ii.

Interpretation of Qualitative Findings

The qualitative data, drawn from open-ended responses in the pretest and posttest surveys, revealed a notable evolution in participants' perceptions of AI-generated PowerPoint tools across three

thematic strands: skepticism to acceptance, growing demand for AI education, and a shift from personal curiosity to institutional advocacy.

First, the theme “Increased Acceptance and Enthusiasm “significantly transforms participants' attitudes. Respondents expressed caution, unfamiliarity, and distrust toward generative AI tools during the pre-intervention stage. However, following the hands-on exposure during the three-week intervention, posttest responses reflected an increased appreciation of AI-generated PowerPoint as a useful, engaging, and time-saving pedagogical aid. This attitudinal shift aligns with Biesta et al.’s (2015) conception of teacher agency as a process shaped by exposure, reflection, and structured support. The data suggest that participants transitioned from passive observers of technology to active experimenters, ready to integrate AI tools into future teaching practice.

Second, the “Need for Training and Awareness "theme underscores participants' realisation of their knowledge gaps and the institutional deficit in preparing pre-service teachers for AI-mediated pedagogy. While some students initially approached the intervention as an isolated digital literacy exercise, the post-intervention responses revealed a stronger desire for formal, curriculum-integrated training in AI-enhanced teaching. Participants advocated for continuous workshops, inclusion of AI tools in educational technology courses, and access to AI platforms beyond the intervention. The recommendation suggests a rising awareness of AI as a core teaching competency, not merely a technological add-on.

Lastly, the theme " Desire for Institutional Support " captures a movement from individualised exploration to broader educational visioning. Pretest responses tended to be introspective—reflecting personal interest, experimentation, or apprehension. By contrast, posttest feedback revealed systemic reflections, with participants recommending that departments and faculties

adopt AI-enhanced tools as standard instructional practice. This emergent macro-level thinking is indicative of developing professional identity and pedagogical foresight, which are key markers of next-generation teacher preparedness (Oteyi & Dede, 2024).

In sum, the qualitative data illustrate a progression from initial unfamiliarity to proactive endorsement, reflecting increased agency, confidence, and a desire for sustainable integration of AI tools into the language education curriculum. These findings complement the quantitative results, affirming that structured, context-aware interventions can shift perception, boost confidence, and catalyse long-term pedagogical change.

Discussion of Findings

This study explored the awareness, confidence, and sustainability of AI-generated PowerPoint integration among next-generation language teachers in a Nigerian public university. Through a combination of pretest-posttest surveys and qualitative responses, a triangulated interpretation of the findings reveals a progressive shift in students' attitudes, knowledge, and instructional dispositions towards the usage of AI-PowerPoint Presentations.

Quantitative data from the Wilcoxon signed-rank test showed a statistically significant improvement ($p < .01$) in students' self-reported awareness of AI-generated PowerPoint tools following the intervention. Therefore, brief, targeted exposure can significantly raise awareness levels, reflected in qualitative data, where participants described a movement from skepticism to appreciation. The transition from initial curiosity to engaged exploration reflects what Biesta, Priestley, and Robinson (2015) describe as the early development of teacher agency, wherein competence is formed through structured, reflective engagement.

Participants demonstrated increased confidence in using AI tools after the intervention, as indicated by higher mean scores in the posttest responses. Qualitative feedback substantiated this

finding, with participants stating that they now "felt equipped" to design visually engaging content using AI-generated slides. This confidence is central to fostering long-term integration, as affirmed by Oteyi and Dede (2024), who argue that pedagogical self-efficacy among pre-service teachers is a significant determinant of whether digital tools are sustained beyond training contexts.

A striking theme from the qualitative data was the shift in mindset—from individual experimentation to advocating for system-wide adoption of AI tools. While pretest responses reflected personal exploration, posttest responses included suggestions such as making the course compulsory and including AI-generated content creation in the language education curriculum. This evolution suggests a maturation of professional identity and aligns with the idea that next-generation teachers are not merely users of technology but potential agents of systemic change (Selwyn, 2020).

While the findings point to increased awareness and confidence, both quantitative and qualitative results highlight barriers to sustained use. Participants frequently mentioned the unavailability of AI platforms (e.g., Microsoft Copilot), lack of university-wide support, and absence of follow-up training. These challenges mirror those reported by Chigbundu and Oluwabiyi (2023), who found systemic limitations, including poor access to digital infrastructure and policy gaps, often hinder generative AI adoption in Nigerian higher education.

Finally, the findings of this study align with national curriculum reform under the Core Curriculum Minimum Academic Standards (CCMAS), which encourages institutions to develop innovative courses such as LED 111: Introduction to Digital Literacy and Language Pedagogy (NUC, 2023). The observed shift in students' disposition toward AI mirrors global projections, such as the HolonIQ (2023) survey that reported increasing institutional prioritization of AI in teacher education across OECD nations. Similarly, Authors (2021) posit that training and retraining

programs for students offering the LED111 course are expected to include digital literacy content as reinforcements for viewing and representing skills.

By demonstrating the effectiveness of a contextually designed intervention within a Nigerian university, this study contributes to the broader dialogue on how teacher education can be localized yet globally informed—merging digital innovation with local realities, a central tenet of both UNESCO (2022) and Nigeria's Digital Economy Policy.

References

Abubakar, U., Onasanya, S. A., & Ibrahim, H. A. (2024). Student perspectives and impact of AI integration in pedagogical practices in Nigerian tertiary institutions. Advances in Mobile Learning Educational Research, 4(2), 1135–1148. https://doi.org/10.25082/AMLER.2024.02.008

Anderson, J., & Rainie, L. (2023). The evolution of AI and the future of learning. Pew Research Center.

Apata, S. B., Adeniyi, J. T., Ajiwoju, J. A., & Adeosun, K. K. (2025). Digital transformation in teaching: The preparedness of in-service teachers in Nigeria for the Fourth Industrial Revolution (4IR). British Journal of Contemporary Education, 5(1).

Axios. (2025, April 4). The CEO says AI is "hugely transformational" for Duolingo and education.https://www.axios.com/2025/04/04/axios-event-pittsburgh-local-ai-duolingo-education

Bamidele Olumilua University of Education, Science and Technology, Ikere-Ekiti. (2024). University handbook, 2024–2029: Vol. No 1 (First) (p. 289). BOUESTI Printing Press.

Bello, O., & Ajao, A. O. (2024). Digital literacy and skills development in Nigeria: Policies, barriers and recommendations. Journal of African Innovation and Advanced Studies, 5(2).

Biesta, G., Priestley, M., & Robinson, S. (2015). The role of beliefs in teacher agency. Teachers and Teaching, 21(6), 624–640. https://doi.org/10.1080/13540602.2015.1044325

Chigbundu, U., & Oluwabiyi, T. (2023). Leveraging artificial intelligence for enhanced assessment and feedback mechanisms in Nigeria's higher education system. International Journal of Research and Innovation in Social Science, 7(9), 123–130.

Daily Post Nigeria. (2021, February 5). 60 per cent of Nigerian teachers lack functional digital literacy - UBEC. https://dailypost.ng/2021/02/05/60-percent-of-nigeria-teachers-lack-functional-digital-literacy-ubec/

Authors, (2021). Language Teachers and Digital Literacy: Assessing Viewing and Representing as Language Skills International Journal of Education, Learning and Development, Vol. 9, No.3, pp.1-10, 2021, http://dx.doi.org/10.2139/ssrn.3814763

Federal Ministry of Education. (2025, September 3). *Lighter load, stronger minds: FG overhauls curriculum for a smarter generation* [Press release]. Nigerian Ministry of Education. https://education.gov.ng/wp-content/uploads/2025/09/FG-OVERHAULS-CURRICULUM.pdf

HolonIQ. (2023). Global education outlook 2030. https://www.holoniq.com

Izevbigie, H. I., Olajide, O., Olaniran, O., & Akintayo, T. A. (2025). The ethical use of generative AI in the Nigerian higher education sector. World Journal of Advanced Research and Reviews, 25(3), 847–853.

Naija News. (2024, December 7). FG aims to empower 50 million citizens with digital literacy by 2027. https://www.naijanews.com/2024/12/07/fg-aims-to-empower-50-million-citizens-with-digital-literacy-by-2027/

National Commission for Colleges of Education. (2020). Minimum standards for NCE teacher education programmes.

National Universities Commission. (2023). Core Curriculum Minimum Academic Standards (CCMAS). Abuja: NUC Press.

National Universities Commission. (2023, August 23). Implementation of new varsity curriculum begins September 2023 – NUC. News Agency of Nigeria (NAN). https://nannews.ng/2023/08/23/implementation-of-new-varsity-curriculum-begins-september-2023-nuc/

NBTE. (2024, February 19). NBTE launched an online workshop to introduce digital literacy competency for TVET teachers. https://web.nbte.gov.ng/digital%20literacy

News Agency of Nigeria. (2023, August 23). Implementation of new varsity curriculum begins September 2023 – NUC. https://nannews.ng/2023/08/23/implementation-of-new-varsity-curriculum-begins-september-2023-nuc/

Nigerian Universities Commission. (2021). Benchmark minimum academic standards for education degree programmes.

Ogunbodede, K. F., Ewata, T. O., Kumar, A., & Okediji, O. G. (2023). Digital competencies and the 21st-century skills of university teachers in Nigeria. European Journal of Interactive Multimedia and Education, 4(2), e02305. https://doi.org/10.30935/ejimed/13966

Okafor, C., & Makinde, T. (2022). Perception and use of AI tools among teacher trainees in West Africa. African Journal of Educational Technology, 14(2), 45–58.

Oteyi, J. V., & Dede, D. (2024). Rethinking teacher education in Nigeria: A new paradigm for the digital generation. Rivers State University Journal of Education, 27(1), 122–131. https://rsujoe.com.ng/index.php/joe/article/view/208

RegTech Africa. (2023, August 29). Nigeria: NUC introduces cutting-edge tech courses into Nigerian university curriculum. https://regtechafrica.com/nigeria-nuc-introduces-cutting-edge-tech-courses-into-nigerian-university-curriculum/

Selwyn, N. (2020). Should robots replace teachers? AI and the future of education. Polity Press.

Sterling, S. (2011). Transformative learning and sustainability: Sketching the conceptual ground. Learning and Teaching in Higher Education, 5(11), 17–33.

The Guardian Nigeria. (2025, February 25). FG trains 6,000 teachers in AI pedagogy. https://guardian.ng/news/fg-trains-6000-teachers-in-ai-pedagogy/

TheCable. (2024, December 4). NGO trains north-central teachers on integrating AI into classroom learning. https://www.thecable.ng/ngo-trains-teachers-on-integrating-ai-into-classroom-learning/

Time. (2024, September 15). Kristen DiCerbo. https://time.com/7012801/kristen-dicerbo/

UNESCO. (2022). Re-imagining our futures together: A new social contract for education. https://unsdoc.unesco.org/

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – Where are the educators? International Journal of Educational Technology in Higher Education, 16(1), 1–27. https://doi.org/10.1186/s41239-019-0171-0