

ROLE OF ARTIFICIAL INTELLIGENCE IN ENGLISH LANGUAGE ACQUISITION AND PEDAGOGY AMONG SECONDARY SCHOOL STUDENTS AND TEACHERS IN EDO STATE

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Abstract

The present study empirically investigated the role of Artificial Intelligence (AI) in English language acquisition and pedagogy in Nigeria. Employing a descriptive survey design, the research gathered data from 320 participants, comprising English language teachers and students, who were identified through stratified random sampling across the five local government areas of Edo Central Senatorial District, Edo State. The main data-collection instrument was a validated structured questionnaire, which was further complemented by focus group discussion. Data analysis drew on both descriptive measures (mean scores, standard deviations, and frequency distributions). Results indicate that AI-powered platforms, notably ChatGPT and Duolingo, yielded meaningful gains across speaking, writing, and reading domains (mean = 3.74, SD = .61). The study further established that most aspects of English language pedagogy including Phonetics, Grammar, and Reading Comprehension were perceived to be taught more effectively with AI platforms. Despite these gains, significant ethical concerns around data privacy, over-dependence on AI tools, and algorithmic bias were identified. The authors recommended among others that Nigerian educational policymakers should endeavor to develop a national AI integration framework for secondary English language education that specifies content standards, data privacy protocols, and usage guidelines for AI tools.

Keywords: Artificial Intelligence, English Language, Language Acquisition, Pedagogy.

Introduction

The coming together of Artificial Intelligence (AI), English Language acquisition, and pedagogy is one of the most important developments in education today, especially in multilingual countries like Nigeria. As a nation of over 200 million people with more than 500 indigenous languages, Nigeria holds a unique sociolinguistic position in which English functions not merely as a foreign or second language but as the official medium of instruction, governance, and national integration (Nwana, 2025). This structural centrality of the English language in Nigerian public life makes the question of how it is acquired and taught a matter of urgent educational and policy significance, of which AI has a role to play in English Language acquisition and pedagogy by providing learners and teachers with access to personalized, interactive, and technology-mediated learning opportunities.

Artificial Intelligence refers to computer-based systems designed to perform tasks that ordinarily require human cognitive abilities. These systems can process information, identify patterns, learn from data, generate responses, and supporting decision-making processes (Bali et al., 2024). In language education, AI manifests through a range of tools, including intelligent tutoring systems, chatbots, speech recognition software, natural language processing (NLP) engines, and adaptive learning platforms such as Duolingo, Rosetta Stone, and ChatGPT. These technologies can analyze learner performance data, generate personalized instructional content, provide immediate corrective feedback, and facilitate repeated practice. Such capabilities have expanded the possibilities for language learning beyond the conventional classroom and have created opportunities for learners to receive assistance at their own pace. They also provide teachers with resources for lesson preparation, assessment, instructional material development, and differentiated learning (Kristiawan et al., 2024). The rapid proliferation of these tools has generated considerable optimism about their capacity to democratize access to quality English language education, particularly in resource-constrained contexts like Nigeria where teacher-to-student ratios remain a persistent challenge (Olorunmade, 2025).

English language acquisition involves the gradual development of learners' ability to understand and use English effectively in different communication situations. This process includes the growth of listening, speaking, reading, and writing competencies as well as the mastery of vocabulary, grammatical structures, and appropriate language use (Hazaymeh et al., 2024). Language acquisition theories provide foundational lenses through which AI-mediated learning can be understood and evaluated. For instance, Krashen's Input Hypothesis posits that acquisition proceeds most effectively when learners encounter comprehensible input pitched just above their current proficiency level. Similarly, Long's Interaction Hypothesis underscores the primacy of communicative interaction in acquisition, suggesting that AI-driven conversational tools such as chatbots and virtual interlocutors may provide opportunities for interaction and negotiation of meaning that support language development (Long, 2017; Olabode & Adedokun, 2025). These theoretical positions suggest that AI can create conditions that may be conducive to English language acquisition when its content and interactions are appropriately aligned with learners' proficiency levels and instructional needs.

However, the availability of AI tools does not necessarily mean that they are equally effective across all aspects of English language learning. The perceived effectiveness of AI depends on the extent to which learners and teachers consider these technologies capable of addressing particular language-learning and teaching needs. AI applications may be perceived as particularly useful for activities such as grammar practice, vocabulary development, writing assistance, reading comprehension, and conversational practice because they can provide immediate responses, generate examples, and allow learners to practice repeatedly. At the same time, their perceived effectiveness may vary across language skills and instructional areas. For example, activities involving pronunciation and phonetics may require accurate modelling of speech sounds, auditory discrimination, and corrective interaction that cannot always be adequately replicated through text-based AI applications. Teachers may also differ in their perceptions of AI depending on their familiarity with the technology, pedagogical competence, access to digital resources, and understanding of how AI-generated content can be incorporated into classroom instruction. Examining perceived effectiveness is therefore important because acceptance and meaningful classroom use of AI are influenced not only by what the technology can technically do but also by how teachers and learners experience and evaluate its usefulness.

Pedagogy is the science and art of teaching itself. Effective English language pedagogy in Nigeria must navigate complex terrain: contending with mother-tongue interference from hundreds of indigenous languages, wide variation in learner proficiency across urban and rural contexts, and constraints in teacher professional development and instructional resources (Nwana, 2025; Rajak et al, 2024). AI presents several pedagogical affordances that are directly relevant to these challenges. By enabling personalized learning pathways, AI systems can address the diversity of learner needs that a single teacher managing a large class cannot adequately serve (Chandra et al., 2024). AI tools can support teachers through lesson planning assistance, generation of instructional materials, grammar and writing feedback, assessment support, and access to professional development resources (Nykyyporets et al, 2025). Their perceived pedagogical effectiveness is therefore an important consideration in determining whether AI can complement rather than displace the role of the English language teacher. The teacher remains central to interpreting AI-generated information, selecting appropriate instructional materials, monitoring learners' progress, and ensuring that technology is used in ways that serve clearly defined educational objectives.

Alongside these potential benefits, the integration of AI into English language education raises important ethical concerns. The increasing use of AI systems involves the collection, processing, and sometimes storage of users' information, thereby creating concerns about data privacy and the protection of learners' personal information. There are also concerns about the accuracy and reliability of AI-generated responses, particularly where learners may accept generated information without critically evaluating it. Over-dependence on AI may reduce learners' opportunities to develop independent thinking, problem-solving, writing, and communicative abilities if technology becomes a substitute for active learning rather than a support for it. Responsible integration therefore

requires teachers and learners to understand both the opportunities and limitations of AI and to use these technologies as complementary resources within sound pedagogical practices.

Despite the theoretical promise and growing global evidence base, empirical documentation of AI's role in English language acquisition and pedagogy in the Nigerian educational system remains sparse. Much of the existing Nigerian literature on the subject is conceptual, expository, or anecdotal, leaving critical gaps in evidence regarding learner and teacher perceptions, the specific sub-skills most amenable to AI-driven improvement, and the ethical concerns that accompany AI integration (Bali et al., 2024; Nwosu, 2024). This study addresses this gap by providing empirical evidence on the role of AI in English language acquisition and pedagogy. Therefore, this study investigates the role of AI in English language acquisition and pedagogy in Edo State. Specifically, the study sought to examine: (i) determine the perceived extent to which AI tools contribute to English language skill acquisition; (ii) examine teachers' perceptions of the effectiveness of AI platforms in teaching selected areas of English language pedagogy, including phonetics, grammar, and reading comprehension; and (iii) identify the ethical concerns associated with the use of AI in English language education.

Review of Related Literature

Artificial Intelligence (AI) is a branch of computer science that focuses on building systems that can perform tasks that ordinarily require human intelligence including natural language processing, speech recognition, machine learning, and decision-making (Bali, Garba, Ahmadu, Takwate, & Malgwi, 2024). In education, AI technologies enable computers and machines to simulate human comprehension and problem-solving, empowering applications to see, understand, learn, and make recommendations in real time (Kristiawan et al., 2024). The recent advancements in generative AI (gen AI) have further expanded the scope of AI-powered applications in language education. Bali et al. (2024) analyzed emerging trends in AI for education and identified key transformations in how English is taught and learned. Similarly, Nwosu (2024) documented the role of AI in educational broadcasting for pedagogical dissemination across scholastic levels in Nigeria, underscoring its potential to scale quality language education beyond urban centres. Empirical investigations have further strengthened these claims by demonstrating measurable improvements in learners' outcomes. For example, Olabode and Adedokun (2025) found that students who engaged with AI-powered feedback systems performed significantly better in English language tasks than those who relied solely on traditional teaching methods. Similarly, Nykyporets et al. (2025) reported that AI-driven pedagogical strategies significantly enhanced learners' vocabulary acquisition, grammatical accuracy, and overall communicative competence. In addition, a meta-analytical study by Rashid et al. (2025) established that the integration of machine learning tools in language instruction leads to improved academic performance and learner motivation across diverse educational contexts. These findings collectively reinforce the argument that AI is not merely a supportive tool but a significant contributor to improved language acquisition outcomes. Beyond performance outcomes, studies have highlighted the role of AI in promoting interactive learning. Kristiawan et al. (2024), in their systematic review, observed that AI-powered chatbots and conversational agents provide learners with opportunities for continuous interaction, thereby supporting the development of speaking and listening skills. Similarly, Obidovna (2024) argued that AI facilitates immersive learning experiences by simulating real-life communication scenarios, that are essential for language mastery. This aligns with the view of Pitychoutis and Al Rawahi (2024), who posited that AI supports the integration of multiple intelligences in language instruction by combining visual, auditory, and interactive learning modes. Taken together, these studies indicate that AI enhances not only cognitive learning outcomes but also the experiential dimensions of language acquisition.

Theoretical Framework

This study is anchored on Krashen's Input Hypothesis, a theory of second language acquisition propounded by Stephen Krashen, a well-known linguist and educational researcher. Krashen introduced this theory as part of his broader Monitor Model to explain how individuals naturally and

effectively acquire a second language. The central idea of the Input Hypothesis is that language acquisition occurs most effectively when learners are exposed to 'comprehensible input' (CI), language that is slightly above their current level of competence. This level is often described as “ $i + 1$,” where “ i ” represents the learner’s current knowledge and “ $+1$ ” represents the next level of difficulty (Li et al, 2022). The relevance of Krashen’s Input Hypothesis to this study lies in its emphasis on the provision of comprehensible and appropriately challenging language input, which AI-powered tools can facilitate through personalized content and interactive language practice. Thus, the theory provides an appropriate framework for examining the perceived role of AI in supporting English language acquisition and pedagogy among secondary school learners.

Methods

The study adopted a descriptive survey research design. This design was judged most suitable because it facilitated the systematic collection of data from a large, representative sample to document current perceptions and experiences of AI use in English language acquisition, without introducing experimental manipulation of variables (Creswell & Creswell, 2018).

A mixed-methods approach was operationalized, integrating quantitative questionnaire data with qualitative evidence from focus group discussions to produce a nuanced understanding of the phenomenon under investigation. The target population encompassed English language teachers and secondary school students drawn from across the five Local Government Areas in Edo Central Senatorial District, Edo State. A total of 320 respondents were sampled through stratified random sampling: 120 English language teachers and 200 Senior Secondary School (SSS) students in SSS II and SSS III classes, drawn from both public and private secondary schools.

Of the 320 questionnaires distributed, 308 were returned and deemed analytically usable, representing a 96.3% return rate. The 308 usable questionnaires comprised all 120 teacher questionnaires (100% return rate) and 188 of the 200 student questionnaires (94% return rate). Schools were stratified by geographical location (urban or rural) and institutional type (public or private) to ensure adequate representativeness. The primary data-collection instrument was a researcher-constructed structured questionnaire titled: AI in Language Acquisition and Pedagogy Scale (ALAPS). The ALAPS comprised four sections: (A) Demographic particulars; (B) Perceived contribution of AI tools to English language skill acquisition, comprising 15 items; (C) Perceived effectiveness of AI platforms in English language pedagogy, comprising 12 items; and (D) Perceived ethical concerns associated with the use of AI in English language education, comprising 10 items. All items were rated on a four-points scale (Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1), with a criterion mean of 2.50 serving as the threshold for decision-making. For the perceived contribution and ethical concerns sections, mean scores of 2.50 and above were interpreted as “Agree,” whereas for the perceived effectiveness of AI platforms in English language pedagogy, mean scores of 2.50 and above were interpreted as “Effective.”

Face and content validity were established through a review by three independent experts; two from the field of Measurement and Evaluation and one from English language education. Instrument reliability was assessed via a pilot administration involving 30 respondents excluded from the main sample, using Cronbach's alpha. The reliability coefficients were as follows: Section B = .81, Section C = .78, and Section D = .75, all indicative of strong internal consistency.

To complement the quantitative strand, four focus group discussions (FGDs) were conducted; two with groups of teachers and two with groups of students, each comprising between eight and ten participants. All FGD sessions were audio-recorded, transcribed in full, and subjected to thematic analysis. Emergent themes were subsequently used to triangulate and contextualize the quantitative findings. Questionnaires were distributed in person by trained research assistants at the participating schools. Informed consent was obtained from all participants before data collection. Of the 320 questionnaires distributed, 308 were returned and deemed analytically usable, representing a 96.3% return rate.

Descriptive statistics were employed to address research questions one to three. While the qualitative data from the FGDs were analyzed thematically.

Results

Demographic Characteristics of Respondents

Of the 308 valid respondents, 120 (39.0%) were English language teachers and 188 (61.0%) were students. All teacher questionnaires were returned; the 12 missing questionnaires were all from the student stratum. Female respondents accounted for 58.4% ($n = 180$) and males for 41.6% ($n = 128$). Among the teachers, 65.8% had 6–15 years of teaching experience. Regarding AI tool familiarity, 71.4% of students and 58.3% of teachers reported using at least one AI language tool weekly, with ChatGPT (62.3%) and Duolingo (48.1%) being the most commonly used tools.

Research Question 1: To what extent do secondary school students perceive Artificial Intelligence tools as contributing to the acquisition of English language skills in Edo State?

Table 1

Mean Ratings of the Perceived Contribution of AI Tools to English Language Skill Acquisition ($n = 308$)

S/N	Item	Mean	SD	Decision
1.	AI tools improve speaking skills	3.74	.61	Agree
2.	AI tools improve writing skills	3.68	.67	Agree
3.	AI tools improve reading comprehension	3.55	.72	Agree
4.	AI tools improve vocabulary acquisition	3.81	.58	Agree
5.	AI tools improve pronunciation/phonetics	3.47	.79	Agree
	Grand Mean	3.65	.67	Agree

The grand mean of 3.65 ($SD = .67$), which is above the criterion mean of 2.50, indicates that respondents agreed that AI tools contribute meaningfully to the improvement of English language skills.

Research Question 2: To what extent do English language teachers perceive Artificial Intelligence platforms as effective for teaching selected areas of English language pedagogy, including phonetics, grammar, and reading comprehension, in Edo State?

Table 2

Teachers' Perceptions of the Effectiveness of AI Platforms in English Language Pedagogy

S/N	Area of English Language Pedagogy	Mean	SD	Decision
1.	Grammar instruction	3.73	.62	Effective
2.	Reading comprehension	3.66	.65	Effective
3.	Phonetics instruction	3.41	.83	Effective
	Grand Mean	3.58	.70	Effective

Teachers' perceptions of AI's effectiveness in teaching key areas of English language pedagogy were assessed. The overall mean rating for AI's effectiveness in pedagogy was 3.58 ($SD = .70$). Respondents rated AI most effective for Grammar instruction (mean = 3.73, $SD = .62$) and Reading Comprehension (mean = 3.66, $SD = .65$), while Phonetics instruction received the lowest but still positive mean rating (mean = 3.41, $SD = .83$). Qualitative findings from FGDs corroborated these results; one teacher participant noted:

"When I use ChatGPT to generate grammar exercises tailored to students' weaknesses, I save enormous preparation time and the students engage more. But for phonetics, I still find that my live demonstrations are more effective than the AI."

This suggests that while AI is broadly effective in pedagogy, its utility may vary by sub-discipline, particularly for skills requiring an embodied, physical demonstration.

Research Question 3: What ethical concerns do secondary school students and English language teachers perceive to be associated with the use of Artificial Intelligence in English language education in Edo State?

Table 3

Mean Ratings of Perceived Ethical Concerns Associated with the Use of AI in English Language Education (n = 308)

S/N	Ethical Concern	Mean	SD	Decision
1.	Over-dependence on AI tools reduces independent learning	3.71	.64	Agree
2.	AI tools compromise learners' data privacy	3.63	.68	Agree
3.	AI tools contain cultural/linguistic biases	3.57	.74	Agree
4.	AI limits critical thinking development	3.49	.78	Agree
	Grand Mean	3.60	.72	Agree

The grand mean of 3.60 indicates that respondents were broadly concerned about ethical issues in AI-mediated language learning. Over-dependence (mean = 3.71) and data privacy (mean = 3.63) were the most pressing concerns.

Discussion

The findings of this study demonstrate that AI tools hold significant promise for English language acquisition and pedagogy in Edo State. Consistent with Krashen's (1985) Input Hypothesis, AI platforms appear to create conditions for comprehensible input by tailoring content difficulty to learners' proficiency levels, thereby promoting incremental language growth. The finding that grammar and vocabulary were perceived as the areas most improved by AI aligns with Chandra et al. (2024), who documented AI-driven improvements in grammar correction and vocabulary expansion through adaptive exercises. Conversely, the relatively low effectiveness rating for phonetics mirrors FGD insights, suggesting that embodied phonological instruction, requiring tactile, acoustic, and facial-expression cues, may not yet be fully replicable by current AI tools. This has implications for the design of AI-driven phonetics tools, particularly for Nigerian learners navigating the mother-tongue interference.

The strong agreement on ethical concerns, particularly over-dependence and data privacy, echoes the concerns raised by Kovalenko and Baranivska (2024) and Asad et al. (2024). The positive perception of AI effectiveness among teachers suggests a favourable disposition towards the integration of AI into English language education, provided that appropriate regulatory and ethical safeguards are established. This finding offers a useful baseline for policymakers to craft AI integration frameworks for Nigerian secondary education. The absence of a significant perceptual gap between teachers and students is a notable finding in the Nigerian education system, where generational digital divides are often assumed to be significant. This suggests that AI language tools have achieved meaningful penetration across age groups, likely driven by the widespread adoption of mobile-first AI platforms accessible via smartphones.

Conclusion

This study empirically established that AI tools significantly contribute to English language skill acquisition and effective pedagogy among secondary school students and teachers in Edo State. Specifically, AI platforms improve speaking, writing, reading, vocabulary, and to a lesser extent, phonetics instruction. A significant positive relationship existed between the frequency of AI tool usage and self-reported English language performance. Both teachers and students held similar positive perceptions of AI's pedagogical utility, suggesting broad stakeholder readiness for AI integration in Nigerian language education. However, significant ethical concerns centred on over-dependence, data privacy, and algorithmic bias must be addressed to realize AI's full transformative

potential. These findings reinforce the need for evidence-based policies and structured AI integration frameworks within the Nigerian educational system.

Recommendations

Based on the findings, the following recommendations are advanced:

1. Nigerian educational policymakers should develop a national AI integration framework for secondary English language education that specifies content standards, data privacy protocols, and usage guidelines for AI tools.
2. English language curricula should be revised to complement AI-based learning with teacher-led phonetics instruction, where AI tools have been shown to be less effective than human instructors.
3. AI platforms deployed in Nigerian schools should comply with data protection standards consistent with the Nigeria Data Protection Act (NDPA, 2023), and schools should implement digital literacy programs to educate students about data privacy.
4. Teacher professional development programs should include training on AI-assisted pedagogy to prevent over-dependence and maintain critical thinking as a core learning outcome.

References

- Bali, B., Garba, E. J., Ahmadu, A. S., Takwate, K. T., & Malgwi, Y. M. (2024). Analysis of emerging trends in artificial intelligence for education in Nigeria. *Discover Artificial Intelligence*, 4(1), 110.
- Chandra, K. R., Muthumanikandan, M., Kathyayini, S., Akhila, H. G., Pathak, P., & Shivaprakash, S. (2024). The impact of artificial intelligence tools and techniques for effective English language education. *Nanotechnology Perceptions*, 20, 897–903.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
- Hazaymeh, O., Al-Jawarneh, A., Jarrah, M., & Battah, M. (2024). The concept of language and its acquisition stages. *Journal of Asian Multicultural Research for Social Sciences Study*, 5(3), 1–6.
- Jawed, M., Ali, K., & Ahmed, T. (2025). Exploring the connection between presence and absence of Krashen's theory on learner's input and affective filters: A triangulation approach. *Journal of Arts and Linguistics Studies*, 3(2), 1811–1839.
- Kovalenko, I., & Baranivska, N. (2024). Integrating artificial intelligence in English language teaching: Exploring the potential and challenges of AI tools in enhancing language learning outcomes and personalized education. *European Social-Legal and Humanitarian Studies*, (1), 86–95.
- Kristiawan, D., Bashar, K., & Pradana, D. A. (2024). Artificial intelligence in English language learning:

- A systematic review of AI tools, applications, and pedagogical outcomes. *The Art of Teaching English as a Foreign Language (TATEFL)*, 5(2), 207–218.
- Li, S., Hiver, P., & Papi, M. (Eds.). (2022). *The Routledge handbook of second language acquisition and individual differences*. Routledge.
- Long, M. H. (2017). *Problems in second language acquisition*. Routledge.
- Nwana, E. N. P. N. (2025). Perceived impact of artificial intelligence, digital tools, and pedagogical innovations in directed writing in secondary schools in Eastern Nigeria. *Kontagora International Journal of Educational Research*, 2(2), 72–84.
- Nwosu, S. N. (2024). Artificial intelligence in educational broadcasting: Tool for dissemination of effective pedagogy across scholastic levels in Nigeria. In *Educational broadcasting in Nigeria in the age of artificial intelligence*, 143–158. Springer Nature.
- Nykyporets, S. S., Melnyk, O. D., Piddubchak, S. Y., Melnyk, M. B., & Krutchenko, O. O. (2025). The efficacy of AI-driven pedagogical strategies for foreign language acquisition in higher education. *Society and National Interests*, 2(10), 24–36.
- Obidovna, D. Z. (2024). Advancing pedagogical approaches: Leveraging artificial intelligence technologies to enhance the integration of English and Latin language instructional methods. *Central Asian Journal of Multidisciplinary Research and Management Studies*, 1(2), 19–23.
- Olabode, A. A., & Adedokun, J. A. (2025). Evaluating the usage and impact of artificial intelligence for real-time feedback on English language tasks and students' performance in Colleges of Education. *Beyond Babel: BU Journal of Language, Literature and Humanities*, 9(1), 140–152.
- Olorunmade, J. E. (2025). Perceived dynamics of artificial intelligence in the generation of calquing in language pedagogy: A study of selected language educators in Federal University of Education, Zaria. *Zaria Journal of Educational Studies (ZAJES)*, 25(2), 84–92.
- Pitychoutis, K. M., & Al Rawahi, A. (2024). Smart teaching: The synergy of multiple intelligences and artificial intelligence in English as a foreign language instruction. *Forum for Linguistic Studies*, 6(6), 249–260.
- Rajak, L., Chauhan, S., & Bara, S. (2024). Transforming English pedagogy with artificial intelligence: Enroute to enhanced language learning. In *Artificial intelligence: A multidisciplinary approach towards teaching and learning*, 216–241. Bentham Science Publishers.

Rashid, A., Zafar, N., Mir, B., Asim, S., Sheikh, M. G., & Jahan, M. (2025). Artificial intelligence and smart pedagogy: Machine learning in digital media for language education. *Metallurgical and Materials Engineering*, 31(2), 7–22.