



IMPACT OF ARTIFICIAL INTELLIGENCE ON LANGUAGE TEACHING AND LEARNING AMONG NIGERIAN UNDERGRADUATES: A CASE STUDY OF IMO STATE UNIVERSITY, OWERRI

NNODIM, NGOZI ANN¹

Department of English Language and Literary Studies¹,
School of Languages,

&

CHIJOKE SOROIBE²

Department of Igbo Language, School of Languages²,

Benjamin Uwajumogu (State) College of Education,
Ihitte-Uboma, Imo State, Nigeria^{1&2}.

Abstract

This study observes that there are numerous impacts of artificial intelligence (AI) on language teaching and learning among Nigerian undergraduates using Imo state university, Owerri as a case study. It notes that artificial intelligence (AI) has become an instrument for effective language teaching and learning in higher education institutions (HEIs) in Nigeria. This research was carried out in Imo State University, Owerri, Imo State, Nigeria. 24,480 Nigerian undergraduates from Imo State University, Owerri formed the population of the study while 448 (four hundred and forty eight) undergraduates were selected through a purposive sampling techniques for the study. 441 (four hundred and forty one) undergraduates gave valid responses. The chi square statistics was used for the analyses. The results of the study show the impact of artificial intelligence on language among Nigerian undergraduates is overwhelming and cannot be underemphasized. The findings equally highlight the effectiveness and efficiency of AI in equipping undergraduates with new language skills as well as positive impact on the language learning experiences by facilitating the acquisition of new language knowledge and skills among other findings. The study recommends among other things that only individuals with teaching qualifications should be engaged to use AI in teaching language in all levels of Nigerian educational system.

Keyword: Impact, Artificial Intelligence (AI), Language, Undergraduates and Higher Education Institutions (HEIs).

Introduction

Language teaching and learning in higher educational institutions (HEIs) has taken a new dimension with the introduction of artificial intelligence (AI). Nigerian undergraduates are gradually keying into and accepting the various innovations that have been introduced into the teaching and learning processes. Artificial Intelligence (AI) has been a topic of interest and investigation in various fields including language teaching and learning or the area of specialization often referred to as language education in higher educational institutions in

Nigeria (Mezieobi & Mezieobi, 2024). Artificial intelligence (AI) is a vast area concerned with development of intelligent computers capable of doing tasks that require human intelligence. According to Stanford Encyclopedia of Philosophy (2020) Siri, Alexa, Self-driving cars, Robo-advisors, talking bots, and email spam filler are some examples of Artificial Intelligence (AI).

The introduction of technology or technology-related devices in the teaching and learning of languages in HEIs has been accepted by both



staff and undergraduates. Nwosu (2020) stated that the COVID-19 era exposed the fact that technology or/and technology-related devices have been accepted by all levels of education for the teaching and learning of various subjects, courses, modules, and so on. According to Vashiya et al (2020) AI as a recent technology has proved efficient in many areas, including language teaching and learning and was very efficiently used during COVID-19 pandemic. AI helped in the control of the virus and it globally rescued educational system and jobs (UNESCO, 2020). Artificial Intelligence has impact on language teaching and learning, assessment, ethics, required skills and communication between undergraduates, teaching and non-teaching staff, and management. Artificial Intelligence (AI) can be used in the grading of students. Zouhaire (2023) in his study opined that Artificial Intelligence (AI) has the potential to revolutionize language teaching and learning by personalizing teaching methods to suit individual students' needs, providing prompt feedback, and automating administrative tasks. Artificial Intelligence (AI) is capable of creating opportunities to language educationists thereby helping them in focusing on development of language curriculum and providing quality instruction in language classroom whether formal or informal.

Artificial Intelligence (AI) as an innovation in world technology advancement, has called for effective and efficient teaching and learning in schools. Previous literatures suggests that Artificial Intelligence (AI) contributes to the development of new language skills to undergraduates, policy makers and other stakeholders in education and language education in particular and needs to consider the ethical implications of Artificial Intelligence (AI) (Nwosu, 2020; Zouhaier, 2023). By so doing, it can prepare language education undergraduates for the demands of communication within and outside Nigeria. According to Edtech (2020), in recent times, Artificial Intelligence (AI) has become a vital part of virtual world and unquestionably, plays an important role in language education. For example, the efficient uses of filtering emails,

advertising, applications, YouTubes, marketing, promotion of goods, and services and Virtual assistants such as Google, digital libraries, Google scholars, and other digital research engine in higher institutions worldwide (Garcia-Velez et Al 2021) in improving teaching and learning especially when it involves communicating in various languages.

The effectiveness and efficiency of language teaching and learning brought about by the introduction of AI is impressive but to some writers, like Ma and Siau (2018), AI is not effective and robust. It all means that Ma and Siau regarded Artificial Intelligence (AI) as fragile when it concerns a limited small, restricted and structured task like collecting data. Researchers regard Artificial Intelligence (AI) as effective and efficient and Robust when performing most or all cognitive tasks that are human especially tasks that are related to language teaching and learning or language education (Beight & Raddell, 2015). However, Artificial Intelligence (AI) plays an important role in language education pieces of research. Researchers see Artificial Intelligence (AI) as threat to human civilization and support the argument with what language experts in the field think about Artificial Intelligence (AI) (Ma & Siau, 2018). Undeniably, what was said about Artificial Intelligence (AI) is important. Therefore, the question now is how can Artificial Intelligence (AI) impact the language teaching and learning processes especially in language education classrooms, whether formal or informal? According to Taneri (2020), it is clear that Artificial Intelligence (AI) can have impact on language teaching and learning processes in language education especially in enrolment and curriculum. Ma and Siau (2018) opined that Artificial Intelligence (AI) will speed consistency and accuracy in language curriculum and registration. Furthermore, Zouhaier (2023) opined that human sciences and liberal arts majors will become more popular because these areas are less vulnerable to the field of Artificial Intelligence (AI) than other areas like language and language education in general. Considering teaching and learning of language education, there is no doubt that



Artificial Intelligence (AI) is replacing the lecturers or tutors in so many ways, such as blended learning and e-learning.

E-learning limits the language education lecturer because the undergraduate will interact with a Virtual classroom, be it blackboard, Moodle, Turnitin or any other platform (Zouhaire 2023; Mezieobi & Mezieobi, 2024). According to Roland (2023), AI is meant to change how individuals communicate, speak, teach, learn, work, live, make decisions and be ready for the era of technology advancement. Artificial Intelligence (AI) is therefore not all about its superficial effect, but about radical changes in the language teaching and learning process as a whole (Zouhaire 2023; Ezeigbo, 2023)). Language learning process is becoming interactive and engaging (Zouhaire 2023). In the recent research, e-learning provides the undergraduate with artistic and pedagogical features as well as incorporates and deals with countless types of content which react effectively to the undergraduates' needs (Zouhaire 2023). Although Artificial Intelligence (AI) is efficient and effective in covering languages and academic integrity issues, semantic, pragmatic and cognitive levels, in several cases, it needs the intervention of human mind to perform the last touch.

Artificial intelligence means different things to different individuals just like different individuals can speak different languages. Artificial Intelligence (AI) gives different undergraduates and language lecturers the connections about the topics needed by the subject matter and eases and inspires both undergraduates and language lecturers by addressing various learning styles like autonomous learning, visual learning, e-learning, audio-visual learning and deep learning. Similarly, Artificial Intelligence (AI) helps the language lecturer to choose and use learning methods that the undergraduate learners want and identifies the areas of improvement to be dealt with. The undergraduate learner can access input anytime and anywhere thereby encouraging autonomous learning. From the foregoing, it is clear that Artificial Intelligence

(AI) assists in teaching, learning, and assessment in the language education classroom.

Artificial Intelligence (AI) does not have impact only in language teaching and learning but in assessment and grading. Artificial Intelligence (AI) could be used on assignments and research projects through software like Turnitin against billions of resources in a very short time. It can help to check plagiarism, consequently, online rubrics and grading forms are added to assignments with criteria and scales, and final grades are automatically added to the submitted work with ease.

Artificial Intelligence (AI) helps provide feedback to the language lecturer and the undergraduate learners. It provides the learners easy access in a relaxed manner, anytime and anywhere, with more privacy and autonomy. The language lecturer and the undergraduate learner in language education classroom can record feedback accurately to facilitate, and improve language learning. Artificial Intelligence (AI) can be used to evaluate students' response and create a computer model that endorses rules inferred from the language lecturer's grading decisions (Anugom & Mezieobi, 2017).

Artificial Intelligence (AI) improves language learning but does not make final authoritative decisions. In addition, it creates more transparency, trust and quality control (Zouhaire, 2023; Ezeigbo, 2023). Previous pieces of research show that grading essay in language education with the use of artificial intelligence (AI) or technology-related devices is highly accurate in recording of results (Anugom & Mezieobi, 2017; Ezeigbo, 2023). Much deliberations have been made on the role of Artificial Intelligence (AI) in the language teaching and learning process but critical thinkers such as Eze (2021), and Uzoma (2022) have asked the following questions: What about bias in marking reports? Who will guarantee that Artificial Intelligence (AI) is fair and objective? What about human side of learning process and assignments? Will Artificial Intelligence (AI) consider the psychology of undergraduate learners when grading or assessing their



examination or test papers?

Artificial Intelligence (AI) impacts on the communication of undergraduates that experienced its use in the teaching and learning process. Artificial Intelligence (AI) will impact the interpersonal relationship and skills of the language lecturers and undergraduates especially outside the school's environments. It will replace so many misunderstandings of communications that involve routine tasks and structures that are easy to automate instead of unstructured communications that require complex cognitive interference (Wangl & Siau, 2017). Artificial Intelligence (AI) does not stop in grading but can be extended to be gateway to a future career in oratory, public speaking, and language teaching. Ma and Siau (2018) in their research at Oxford University, argued that within the next 20 years, 47% of jobs in the United State of America and 54% in Europe are at risk due to Artificial Intelligence (AI). This is also applicable to Nigeria. Other pieces of research conducted in Oxford University forecast that Artificial Intelligence (AI) will write high school essays by 2026, write best selling books by 2049, translate languages by 2024 and perform surgeries by 2053 (Jacobs, 2023; Thelini, 2022; Ubak, 2021).

The use of Artificial Intelligence (AI) in the teaching and learning of language encourages people to go into careers that promote use of languages. Zouhaier (2023) criticized these aspects arguing that when it comes to soft skills such as empathy, communication, collaboration, innovation, critical thinking, problem solving and leadership, Artificial Intelligence (AI) is not robust to human cognitive ability. According to Chin (2018), citizens of new world order require new skills including language skills. Some of these skills are adaptability, critical thinking, conflict resolution capabilities, and other cognitive skills. The impacts of Artificial Intelligence (AI) on language education increased the importance of adopting ethics in Artificial Intelligence (AI). Holmes (2018) believes that 'adaptive' or 'personalized' ethical language learning system are not entirely taken into consideration. He also stressed that there is

'moral vacuum' without guidelines, policies, regulations, or research done to stress the specific ethical issues raised by Artificial Intelligence (AI) in language education.

Cognitive Impact of Artificial Intelligence (AI) has made it a present-day reality that imitates humans in many functions such as buying, and selling, language translation, medical diagnostics and decision making. If humans interact, analyze, deduce, think logically and reason contextually, Artificial Intelligence (AI) performs these actions artificially based on powerful computers, high speed internet connections, algorithms and extensive real time data (Chin, 2018). According to Zouhaier (2023), Artificial Intelligence (AI) performs fixed and domain-specific task with unmatched language learning speed, extensive data, excellence, efficiency and unlimited computing capacity. On the contrary, humans learn flexibility, pose and solve issues creatively, think critically and innovate adaptively (Chin, 2018, Mezieobi & Mezieobi, 2023). Furthermore, humans empower Artificial Intelligence (AI) because cognitive intelligence that promotes Artificial Intelligence (AI) first and foremost is inherited or programmed by a human being (Zouhaier, 2023). New research on AI conversational tutors shows that these tools can provide authentic dialogue practice, though they also raise privacy and trust concerns among learners (Avouris, 2025).

Statement of the Problem

The teaching and learning of language education in higher educational institutions (HEIs) require a lot of improvements which will include exploring practical activities. Such improvements also consider the use of artificial intelligence in the teaching and learning of language education in theory and practice. In the recent time, Artificial Intelligence (AI) is becoming a major academic discourse. It is so important in the teaching and learning of language education in higher education institutions (HEIs) in Nigeria. Many researchers have dealt with Artificial Intelligence (AI), its influences on language education, the contributions of Artificial Intelligence (AI), but it is believed that many higher educational



institutions have not been using Artificial Intelligence (AI) in their teaching and learning of languages and other disciplines thereby not preparing undergraduates for future career in this world of Artificial Intelligence (AI). It should be noted that Artificial Intelligence (AI) is very important for language education undergraduates, or higher educational institutions will produce language education graduates who cannot fit into the current communicate effectively and efficiently in the Artificial Intelligence (AI) era.

Objectives of the Study

The general objective is to find out the impact of artificial intelligence on language teaching and learning among Nigerian undergraduates using Imo state university, Owerri as a case study, while the specific objectives are:

- 1) To investigate if artificial intelligence has impact on language teaching and learning among undergraduates.
- 2) To find out who is qualified to use artificial intelligence to teach language in higher education institutions.
- 3) To ascertain the impacts of artificial intelligence on language teaching and learning among undergraduates.

Research Questions

This study intends to find answers to the following research questions:

- 1) To what extent does artificial intelligence impact on language teaching and learning among undergraduates?
- 2) Who is qualified to use artificial intelligence to teach language in higher education institutions?
- 3) What are the impacts of artificial intelligence on language teaching and learning among undergraduates?

Hypotheses

The following tentative statements need to be statistically analyzed. They include:

1. There is no significant difference between the extend artificial intelligence (AI) impact on language teaching and learning among undergraduates.
2. There is no significant relationship

between the qualifications of lecturers that use artificial intelligence and its impact on teaching of language in higher education institutions (HEIs).

3. There is no significant difference between the impacts of artificial intelligence on language teaching and learning among undergraduates.

Literature Review

Conceptual Overview of Artificial Intelligence in Language Education:

Artificial Intelligence (AI) has emerged as one of the most transformative technologies in education, with language education being a major area of application (Wang et al., 2024). AI in language learning and teaching involves the use of computational models-particularly machine learning (ML), natural language processing (NLP), and large language models (LLMs)-to facilitate instruction, provide adaptive learning opportunities, and support assessment (Liang et al., 2021; Qiao et al., 2023). This conceptual overview outlines the meaning, applications, benefits, challenges, and future directions of AI in language education (Mustafa et al., 2024).

“AI in language education” (sometimes called AI-assisted language learning, AIALL, or AI-enhanced CALL) refers to the use of artificial intelligence methods - especially natural language processing (NLP), machine learning, and, more recently, large language models (LLMs) - to support teaching and learning of first, second, and foreign languages (Liang et al., 2021; Wang et al., 2024). Applications include intelligent tutoring systems (ITS), adaptive learning platforms, automated assessment and feedback (for writing, pronunciation, grammar), and conversational agents (chatbots) that simulate communicative practice (Qiao et al., 2023; Du, 2024; Mustafa et al., 2024).

AI in language education refers to the integration of intelligent systems into teaching and learning practices to enhance learners' acquisition of language skills (Liang et al., 2021). These systems can interpret speech, evaluate writing, provide real-time feedback, and personalize



instruction by analyzing learner data. Unlike traditional computer-assisted language learning (CALL), AI-powered systems adapt dynamically to learners' needs, creating individualized pathways for vocabulary, grammar, reading, listening, speaking, and writing skills (Mustafa et al., 2024).

AI in language education involves the use of intelligent computer systems to simulate human capabilities such as understanding, interpreting, and producing language. Tools such as Chatbots, Virtual Assistants (e.g., Siri, Alexa), intelligent language learning apps (e.g., Duolingo, Grammarly), and automated feedback systems exemplify how AI is now deeply integrated into teaching and learning processes (Chiu, 2021). According to Huang et al. (2019), AI-powered language learning systems can assess learners' proficiency levels, adapt content accordingly, and provide timely, personalized feedback—something conventional classrooms often struggle to deliver. These systems use big data analytics and deep learning algorithms to enhance learners' experiences, promoting self-paced and individualized learning pathways.

Short history and evolution.

Early phase (pre-2016 / rule-based CALL → ITS): Computer-assisted language learning began with programmed instruction and rule-based systems; intelligent tutoring systems (ITS) emerged to provide individualized sequencing and feedback. Meta-analyses and ITS research provided early evidence that well-designed tutoring systems can improve learning outcomes (Kulik & Fletcher, 2016; Nye, 2015).

Mid phase (2016–2020): Wider adoption of machine learning (ML) and natural language processing (NLP) enabled better automated scoring, error detection, and speech processing tools (e.g., for pronunciation). Researchers also began integrating adaptive algorithms to personalize learning paths (Kabudi et al., 2021; Qiao et al., 2023).

Recent phase (2020–2024): The arrival of powerful transformer-based large language models (LLMs) and improved speech/NLP

toolkits accelerated generative tutoring, conversational practice, automated feedback generation, and scaffolding that blends formative assessment with personalized content. Systematic reviews published between 2023 and 2024 have documented rapid growth and diversification of AI applications in language education (Du, 2024; Mustafa et al., 2024; Wang et al., 2024).

The Term Language

Language is an important facet of human existence. It is an avenue used for communication, exchange of ideas, expression of interest in something, and passion. For many of individuals, speaking is as natural as waking up each day: it is an unconscious action that human beings rarely notice they are even doing. As a result, human beings usually do not imagine their language as something that might wield power, fuel debate, or even cause conflict. Language can operate in all of these ways. In recent times, language affects many facets of human culture: religious, political, social, and economic. Many of these situations described are provocative. The banning of certain languages or mandating the use of one over another have produced tension and anxiety, charges of isolationism, and even allegations of racism and discrimination (Amberg & Vause, 2023).

In Nigeria and other parts of the world, language is foremost a means of communication, and communication almost always takes place within some sort of social context. This is why effective communication requires an understanding and recognition of the connections between a language and the people who use it. These connections are complex: for example, they tell you when to use slang with a friend or formal language with a boss, how to judge a candidate's campaign speeches, and whether to abbreviate an email (Amberg & Vause, 2023; Oku, 2022). All of these acts require knowledge of the language, as well as the cultural and social forces acting on that language.

In language, social context is a major factor that drives our language choices. Human beings make decisions every day, or have decisions



made about themselves by other people, based on the language they speak or use for communication (Ezenwa, 2021). Individuals frequently evaluate a person's education, socioeconomic level, background, honesty, friendliness, and numerous other qualities by how that person speaks. And when an individual wants to make a particular impression on someone else, that person consciously choose their language, just as individuals choose their hair styles or clothing.

Main AI technologies and how they map to language-teaching tasks

Natural Language Processing (NLP): Parsing, tagging, error detection, grammar correction, and semantic analysis are widely used in automated writing feedback and grading (Qiao et al., 2023).

Automatic Speech Recognition (ASR) + speech analytics: ASR technologies support automated pronunciation evaluation, fluency measurement, and oral practice scoring (Liang et al., 2021).

Intelligent Tutoring Systems (ITS): ITSs model learner states, adapt sequence and difficulty, and provide scaffolded hints and mastery learning pathways (Kulik & Fletcher, 2016; Nye, 2015).

Adaptive learning engines: These systems combine learner data, item response models, and machine learning (ML) to personalize content sequencing and practice frequency (Kabudi et al., 2021).

Conversational agents / chatbots & LLMs: Chatbots provide simulated dialogues, open-ended Q&A, and generative practice tasks; more recent large language models (LLMs) enable contextualized feedback and role-play scenarios (Du, 2024; Wang et al., 2024).

Automated assessment & analytics dashboards: AI supports formative and summative evaluation at scale, offering real-time analytics dashboards for teachers and learners (Mustafa et al., 2024).

Artificial Intelligence in Language Education Enhanced Language Skills & Learner

Achievement.

Artificial Intelligence (AI) has demonstrated significant benefits across language domains such as vocabulary, grammar, reading, writing, speaking, and pronunciation. For instance, AI-powered tools like **ChatGPT** enable learners to produce grammatically coherent texts and receive contextually relevant feedback, thereby enhancing writing and reading skills (Huang & Tan, 2023). Similarly, AI-based speaking apps such as **Orai** and **Lyra** have been shown to improve speaking performance, fluency, and coherence among English as a Foreign Language (EFL) learners (Yan, Li, & Lowell, 2025). AI-assisted image recognition technologies also foster vocabulary acquisition and reduce learner anxiety, though their effect on self-regulation is mixed (Huang & Tan, 2023).

Personalized, Immersive & Accessible Learning.

AI fosters a learner-centered, engaging, and universally accessible approach. AI algorithms personalize learning by tailoring exercises to learners' strengths and weaknesses, while providing real-time feedback and analytics (Busuu, 2023; AI-Language-Learning.com, n.d.). To further enhance motivation, many platforms integrate **gamification** elements such as interactive quizzes, storytelling, and achievement rewards (Yan et al., 2025).

In addition, AI is increasingly integrated with virtual reality (VR) and extended reality (XR), creating immersive environments where learners can interact in simulated cultural and linguistic contexts (Yan et al., 2025; Avouris, 2025). AI also supports inclusivity through tools like text-to-speech, multilingual chatbots, and accessibility features, which benefit learners with disabilities and those in underserved communities (WayWithWords, 2025; Times of India, 2025a).

Teacher Roles & Ethical Considerations

Although AI enhances learning, the teacher's role remains indispensable. AI provides scaffolding through exercises and automated corrections, but



educators mediate by setting goals, interpreting feedback, and fostering deeper meta-cognition to avoid superficial learning (Frontiers in Psychology, 2025a).

At the same time, the rise of large language models (LLMs) like ChatGPT requires rethinking traditional assessment approaches to ensure academic integrity, critical thinking, and AI literacy (Wikipedia, 2025b). Ethical challenges such as data privacy, algorithmic bias, unequal access, and the risk of excluding low-resource languages have also been raised, requiring transparent governance and inclusive design (Akinsemolu & Onyeaka, 2025).

Emerging Innovations & Real-World Implementations

Recent innovations showcase how AI is being applied in real-world educational contexts. **Preply**, for instance, integrates AI with human tutors, leading to measurable learner progress; one-third of learners advanced a CEFR level in just 12 weeks (Axios, 2025a). Similarly, **Duolingo** has incorporated GPT-4 into its “Duolingo Max” tier, offering AI-powered conversations and grammar explanations akin to having a personal tutor (Axios, 2025b; Wikipedia, 2025c).

Educators themselves are experimenting with AI to generate quizzes, tailor lessons, and engage students, while simultaneously working on strategies to prevent misuse (Wired, 2025). On a global scale, AI is also being used to preserve low-resource languages: IIIT-Hyderabad has developed AI-powered text-to-speech and translation tools for tribal languages such as Santali and Mundari (Times of India, 2025a), while the UAE is building the largest Arabic digital language resources and a native model called *Falcon Arabic* (Times of India, 2025b).

Theoretical Framework

The researchers examined the following theories:

The Universal Design for Learning (UDL) framework, developed by Rose and Meyer (2002), advocates for designing educational experiences that accommodate diverse learning needs by providing multiple means of engagement, representation, and expression. AI

technologies align with UDL by offering flexible content delivery, including text-to-speech features, personalized vocabulary instruction, and alternative assessment tools. For example, AI-driven platforms can adapt content for students with dyslexia, offer multimodal feedback, and support learners with different language backgrounds. Holmes, Bialik, and Fadel (2019) argue that AI's adaptability ensures equitable access to language learning, especially in linguistically diverse classrooms.

Cognitive Load Theory by (Sweller, 1988) provides insight into how instructional design can optimize learning by reducing unnecessary mental effort. AI-powered tools such as adaptive learning software manage learners' cognitive load by presenting information in manageable chunks and tailoring instruction to individual proficiency levels. For instance, systems like Grammarly and Write & Improve (by Cambridge English) reduce extraneous cognitive load by offering automated suggestions and corrective feedback, allowing students to focus on internalizing language rules. Khosravi, Kitto, and Knight (2020) affirm that intelligent learning environments can balance intrinsic and extraneous load, maximizing learning efficiency in language acquisition.

Relevant academic literature reviewed also include:

Adegbite, & Salawu (2021) examined, 'Exploring the Use of Artificial Intelligence Tools in English Language Instruction in Nigerian Universities'. This study examined how Nigerian language educators integrate AI tools like Grammarly, Google Translate, and AI-powered chatbots into their teaching methods. Using a mixed-methods approach, the research found that undergraduate students who used AI-supported tools for writing and language learning showed significant improvements in grammar, vocabulary, and writing coherence. It also highlighted challenges such as digital illiteracy among lecturers and lack of institutional support.

Umeh, & Ibrahim, (2022) investigated Artificial Intelligence and the Future of Language Learning: A Nigerian Undergraduate Perspective



Umeh and Ibrahim conducted a survey among undergraduates from five federal universities in Nigeria to assess how AI applications influenced language learning. Their results revealed that tools such as speech recognition, adaptive learning platforms, and AI tutors enhanced learners' engagement and autonomy. However, the study also noted that irregular electricity supply and data costs hindered the effectiveness of these tools. Okoro, J. N. (2023) conducted a research on, 'Evaluating the Pedagogical Impacts of AI-Powered Learning on English as a Second Language in Nigeria'. Okoro's work focused on evaluating how AI-enhanced pedagogical methods affected ESL (English as a Second Language) performance in Nigerian universities. The study employed quasi-experimental design with two undergraduate groups, one taught with AI support and the other with traditional methods. The AI group showed higher academic performance in reading and comprehension. The research advocated for the incorporation of AI-based platforms like Duolingo, Elsa Speak, and AI-enabled virtual classrooms in the curriculum.

Research Methodology

Design of the Study

The design adopted for this research is the descriptive survey design.

Area of Study

The area of this study was Imo State University (IMSU), Owerri, located in Imo State, Southeastern Nigeria. Established in 1981, IMSU is a prominent public university that offers a wide range of academic programs across faculties such as Arts, Education, Humanities, Social Sciences, and Sciences. The institution is known for its commitment to educational excellence, particularly in the fields of language, communication, and digital literacy. The choice of Imo State University as the study area is strategic for several reasons. First, the university hosts a diverse population of undergraduate students from various linguistic and socio-cultural backgrounds. This diversity provides a rich context for exploring how artificial intelligence (AI) tools are being integrated into language teaching and learning processes.

Second, the Department of English and Literary Studies, alongside the Department of Linguistics and Communication Studies, have increasingly adopted digital platforms and AI-assisted applications such as Grammarly, Google Translate, AI chatbots, and speech recognition software in their curriculum delivery. These developments make IMSU a suitable setting to investigate the transformative role of AI in language acquisition and pedagogy.

Population of the Study

The total number of undergraduates that study in Imo State University, Owerri is twenty four thousand, four hundred and eighty (24,480) (Students' Affairs unit, 2025).

Sample and Sampling Techniques

Four hundred and forty eight (448) undergraduates was selected through a purposive sampling technique for the study. Four hundred and forty one (441) undergraduates gave *valid* responses while 7 was still null and void.

Instrument for Data Collection

A structured self-administered questionnaire was used for data collection.

Administration of the Instrument

The researcher through the help of two (2) research assistants distributed one thousand, two hundred and forty eight (1248) copies of the questionnaire, waited for the questionnaires to be filled and retrieved them on the spot.

Method of Data Analysis

The chi-squared cross-tabulation was used in analyzing the data.

Data Analysis And Hypothesis Testing

Hypothesis Testing

The hypotheses were tested using chi-square at 0.05 level of significance. Any value less than 0.05 level of significance would not be used, therefore, the null hypothesis would be accepted. While in a case where the value is greater than 0.05 level of significance, the null hypothesis would be rejected.

H₀: There is no significant difference between



the extend artificial intelligence (AI) impacts

on language teaching and learning among undergraduates.

		Academic Achievement	Undergraduates' performance	Quality of Undergraduates	Adequate financing	Total	X^2	Sign
Quality Language Education through the use of Artificial Intelligence	Quality Language Lecturer	40	41	190	100	371		
	Available Teaching Materials	10	10	5	5	30		
	Appropriate teaching methods	4	3	4	9	20	61.696	0.000
	Use of Artificial Intelligence	8	2	6	4	20		
	Total	62	56	205	118	441		

The table above shows that the chi-square value at 61.696 with a significant value of 0.000 is less than 0.05 level of significance. This means that the null hypothesis is accepted.

H_{02} : There is no significant relationship between the qualifications of lecturers that use artificial intelligence and its impact on teaching of language in higher education institutions (HEIs).

Quality of Lecturers that use artificial intelligence (AI) in teaching language						Total	X^2	Sign
Effective Language communication	1	2	3	4	5	77	65.54	0.72
Well trained Language Lecturers	21	16	20	15	10	77		
Possess good interpersonal skills	12	15	25	20	10	82		
knowledge of Artificial Intelligence	17	14	35	10	15	86		
Possess teaching qualifications	14	12	15	15	15	61		
Others	5	12	35	20	5	77		
Total	1	3	29	20	5	58		
	60	72	159	100	50	441		



SPSS output Result

With the above table, the chi-square value of 65.54 and significant value of 0.72 showing that there is no significant relationship between the qualifications of lecturers that use artificial intelligence and its impact on teaching of language in higher education institutions (HEIs).

H₀: There is no significant difference between the numerous impacts of artificial intelligence on language teaching and learning among undergraduates.

Impacts of artificial intelligence (AI)							Total	X ²	Sign
Impacts of artificial intelligence	Quality	1	2	3	4	5	194	11.784	0.659
	Language	20	10	120	19	25	147		
	Education	20	40	60	22	5	147		
	Standard	12	30	22	18	20	100		
	Language								
	Education								
	Value-	52	80	200	59	50	441		
	oriented								
	Language								
	Education								
	Total								

SPSS output Result

Looking at the table above, chi-square value of 11.784 with a significant value of 0.659 shows that the null hypothesis is rejected.

Conclusion and Recommendations

The findings show that there are several impacts of artificial intelligence on language teaching and learning among undergraduates of Imo State University, Owerri. The quest to understand whether artificial intelligence (AI) is properly used in teaching and learning of language cannot be adequately ascertained through looking at the caliber of higher education institutions (HEIs) in Nigeria.

The findings highlight the effectiveness and efficiency of AI in equipping undergraduates with new language skills for their future communications within the shores of Nigeria and internationally.

The findings suggest that AI has positive impact on the language learning experiences by facilitating the acquisition of new language knowledge and skills. This research provides insights into the potential impacts of AI to

transform language education and contribute to the development of new language skills among Nigerian undergraduates. It has important implications for educationists, educators, policymakers, and other stakeholders in language teaching and learning. The study suggests that AI should be more extensively integrated in language teaching and learning and that higher education institutions (HEIs) need to consider the ethical implication of AI in the development, and implementation of their language programmes. By doing so, they can better prepare undergraduates for the demands of language speaking/communication in AI era which will have an impact on their communication ability in the international world. The Nigerian government and the Nigerian people need to put hands together to achieve effective and efficient use of artificial intelligence in the teaching and learning of language among undergraduates in higher education institutions in Nigeria.

Recommendations.

From the findings, it was recommended that:

- Only individuals with teaching qualifications should be engaged to use AI in teaching language in all levels of



- Nigerian educational system.
- Education policy makers should be individuals that have teaching qualifications and experiences and aware of the importance of AI.
- Foreign/international initiatives, reforms, ideas and ideologies on education should be tried and implemented in Nigeria to see how well they can fit into the Nigerian context.
- The government should invest in Nigerian education because quality, standard and functional language education breeds national development.
- Nigerian schools and students should be given priority attention by the Nigerian government and the general public.
- Practicing language teaching should be encouraged in all levels of Nigerian education.
- Innovations in education should be accepted and practiced, example is the use of AI in teaching and learning.
- Use of varieties should always be encouraged especially in this era of ICT, digitalization, modernization and globalization.
- Teaching in Nigeria should be declared a full profession like medicine, law, engineering, and so on.

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