

INVESTIGATING THE CONSTRAINTS TO AI TOOLS APPROPRIATION FOR ENGLISH LANGUAGE EDUCATION IN NIGERIA: AN EMPIRICAL STUDY

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Abstract

The increasing potential of technology in the twenty-first century, especially with the introduction of artificial intelligence (AI) whose applications have spread across diverse disciplines, including language education, and have been leveraged to address challenges in various fields, has produced remarkable positive results. AI technology offers possibilities for enhancing language teaching and learning efficiency, including self-directed learning, improved learner engagement, and enhanced teacher-learner interaction, among other benefits. Despite these numerous educational advantages, several factors hinder its adoption in English language education. Consequently, this empirical study examines the key factors that constrain the appropriation of AI for English Language education in the Owerri Educational Zone of Imo State, Nigeria. For data collection, a survey questionnaire was used to determine teachers' awareness and the extent of AI application in teaching the English language. Findings reveal low awareness of AI tools, as well as skepticism about their potential to enhance teaching and learning. In response to this challenge, this study recommends adequate AI training for teachers, focusing on the use of AI for teaching language contents, designing lesson plans, and improving instructional efficiency, all of which are critical for enhancing teaching and learning. The study contributes to knowledge on AI literacy.

Keywords: AI, teaching, learning, English language education

Introduction

Technology has significantly impacted every discipline, creating innovative, convenient and faster means of accomplishing tasks. Although the Covid-19 pandemic disrupted academic progress; nonetheless, it popularized artificial intelligence (AI) for educational purposes and provided beneficial interventions in diverse human endeavours. In the field of education for instance, the pandemic drew attention to online learning as a panacea for the lapse in physical classroom activities. Edinoh, Onah and Ogunbowale (2025) describe AI as a computer machine possessing human intelligence designed to perform tasks. AI powered online platforms ensured the sustenance of learning in the face of the physical distancing and lockdown regulations emanating from the pandemic. The educational intervention of AI hence paved way for improved approaches to teaching and learning. Its application offers benefits that include assisting language teachers with tasks such as automated grading, analysis of language use, as well as communicating user's learning strengths and weaknesses. Relatedly, AI leverage saves time, assists in the development of enriched language instruction and offers a more convenient teaching experience realized through well-organized grading and inputs. On the other hand, language learners are provided opportunities for individualized and interactive language learning accessible through applications such as chatbot – with its capacity to hold both textual and interactive dialogue with human users; as well as complementing classroom learning exposures. With these AI benefits, the learner is exposed to various ways of improving learning of the target language, achieves fluency acceleration, and increased language learning motivation.

Some various AI models include intelligent tutoring systems (ITS), virtual assistants, automated grading systems and many other innovations that promote quality learning exposure and acceleration of English Language competence through individualized contents, simultaneous feedback, and modifiable learning routes (Hussain, Rana, Aziz, Baloch, Jamil and Arif, 2024). AI's adaptive learning feature has the objective of aiding individualized learning in such a way that meets the learning needs, pace and level of the learner. These platforms are equally effective for providing prompt response to knowledge inquiries.

AI reliable tutors guide learners towards self-supported learning exposures with openness to explanations and further inquiries while evaluations reveal student's achievement level to tutoring exposures. The prediction of student's critical weak learning areas directs teachers towards sections requiring remedial assistance thus enabling a proactive solution. The ability to grade and provide feedback on students' assignments is yet another benefit of adopting AI in language education. Such feedback reflects learners' performances and areas seeking

improvement. The interactive potential of AI enforces learning engagement and equally plays out actual life situations for users. Rather than abstract presentations, AI captures real world environments and course of events to pave way for enhanced comprehension, active participation, learning motivation, interesting and effective learning. Real world settings are thus employed to illustrate authentic scenarios, engender critical thinking, knowledge retention and recall. Consequently, AI tools serve enhanced teaching effectiveness, increased learners' motivation and improved learning outcomes.

These benefits hence underlie the imperativeness for language educators to appropriate AI tools for effective teaching and to keep abreast of global educational trends. Again, they need to partner with students in leveraging these tools for improved language learning experience. Teachers' crucial role of exposing and directing learners to AI powered language learning activities in alignment with their specific learning goals and to support their engagement in independent learning remains largely unfulfilled. Stemming from this, teachers must act as guides; directing students to AI instructions in line with students' learning needs. Relatedly, through exposures to AI language learning instructions, students achieve enhanced language skills specifically - listening, speaking, reading and writing.

Research Objectives

This research seeks basically to identify:

- a. how the teacher factor cripples AI integration in language education,
- b. ways in which poor funding in schools frustrate AI integration in language education,
- c. the role of technology limitation in bridging AI implementation in language education,
- d. the extent to which Nigeria's infrastructural deficiency incapacitates AI integration in language education,
- e. how the poor socio-economic background of Nigerians militate against AI appropriation in language education,
- f. ways in which fear of AI overdependence and the privacy risk associated with AI use constitute barriers to AI appropriation for language education.

Research Questions

The following research questions guide the study:

- a. How does the teacher factor cripple AI integration in language education?
- b. In what ways does poor funding in schools frustrate AI integration in language education?
- c. What is the role of technology limitation in bridging AI implementation in language education?
- d. To what extent does Nigeria's infrastructural deficiency incapacitate AI integration in language education?
- e. How does the poor socio-economic background of Nigerians militate against AI appropriation in language education?
- f. In what ways do the fears and skepticism associated with AI use constrain its appropriation for language education?

Literature Review

AI remains a significant innovation in education when assessed from its transformation of teaching and learning approaches that meet the unique learning needs, style and pace of students derivable from its adjustable features while equally boosting engagement and competence in the target language. There is thus a dire need for teachers to leverage AI in designing individual student's learning route; aligned with its ingenious evaluation technique and instant feedback response considered beneficial in improving language proficiency. Also, language contents can be adjusted to match learner's achievement level. This practice has significantly recorded positive learning results and fosters learning motivation (Syarifudin, 2023). AI leverage helps to improve communicative competence among learners, provokes critical thinking, creativity, reinforced interpersonal relationship and instills problem-solving skills. With these exposures, improved learning outcomes and increased teacher-learner rapport are attainable (Edinoh, Onah and Ogunbowale, 2025). Relatedly, its ability to design and deliver language learning contents, mark and grade assessments, and provide learning feedback buttresses its relevance in language education (Ajepe and Yusuf, 2024).

Despite these remarkable benefits, Nigeria faces challenges with the application of AI in its educational settings just like other nations have peculiar AI challenges. For instance, while the leverage of AI for educational activities such as the employment of Brainco's headbands targeted at monitoring learners' attentiveness by China's Ministry of Education, and the utilization of Chat GPT relevant for checking grammar have been productive; fears have equally been expressed over the reliance on AI for academic practices such as evaluation, grading, and course designing stemming from doubts as regards its correctness and authenticity. More so, ethical concerns associated

with AI, poor awareness of AI and its rich potentials; its shortcoming in one-on-one learning is worrisome (Jie and Kamrozzaman, 2024).

The role of teachers in advancing AI integration in language education is quite crucial especially when x-rayed from their role as facilitators; providing guidance and encouraging learners to leverage AI. However, poor digital literacy among teachers constitutes a worrisome challenge in language education. Many teachers lack digital skills and so cannot navigate through AI tools even where they have the enabling gadgets are available. This limitation prevents them from initiating innovative classroom activities just as such teachers deny learners the opportunity of exposure to AI and its learning benefits (Edinoh et al, 2025). Teachers especially those in rural settings account for a greater number of those lacking information and communication technology (ICT) skills. Likewise, the older population of teachers depicts change resistance. They resist technology in teaching and rather remain stuck with old teaching practices (Chidozie, 2024). In lieu of this, conferences, seminars and workshops on AI application in education are crucial for aligning teachers towards the part of digital and AI literacy skills (Edinoh et al, 2025).

Again, effective implementation of AI in education requires adequate funding. Unfortunately, funding is often either completely lacking or inadequate especially in Nigerian public schools. Gadgets, digital instructional materials and internet connection are imperative for AI usage; and for the realization of improved lesson delivery, including positive learning outcomes. However, the dearth of these basic facilities in Nigerian schools excludes the nation from many that have keyed into innovative educational trends. In other words, the nation lags in relation to global educational pace (Edinoh et al, 2025). Also, the non- implementation of AI in the Nigerian classroom is more common in economically disadvantaged and rural settings, with its associated unstable electricity, poor internet connection and unaffordability of smart phones by majority of students, amongst other impediments. Government's poor response towards funding of schools accounts also for the further widening of the educational achievement gap between learners in urban and those in rural locales as schools in the hinterlands feel the impact most. The implication hence is that AI tools application in education has fared better in urban areas but has met a brick wall in facilities deficient rural areas, thus, increasing the disparity in educational achievement between residents of these locales (Hussain, Rana, Aziz, Baloch, Jamil, and Arif, 2024; Edinoh et al, 2025).

Technological limitations constitute another factor bridging AI integration in the educational sector. The lack of technological gadgets and resources in Nigerian schools poses a major inhibiting factor to technological integration in the classroom. Schools fortunate to have technological resources most times turn out to suffer related challenges that include inadequacy or the available ones being in a dysfunctional or obsolete state. The poor educational achievement of students in rural communities would perhaps receive a boost with AI appropriation, however, the total absence or low presence of basic technological facilities mars this initiative (Hussain, Rana, Aziz, Baloch, Jamil, and Arif, 2024; Edinoh et al, 2025). Wanju and Wonjin (2025) while advocating passionately for AI-supportive resources in educational settings, equally stressed the need for intensive professional trainings for teachers on AI use which they view as measures to encourage AI competence and its easeful integration in the classroom. The writers expressed optimism on enhanced lesson delivery with availability of AI-enabling infrastructure and AI-empowered teachers.

More so, socio-economic level plays a role in locking or unlocking access to AI usage among Nigerians. The predominant poor socio-economic background of Nigerians cripples AI implementation in education. The poor economic family background of students' makes them incapable of affording the necessary resources for accessing AI educational tools (Hussain et al, 2024). To support this, internet service connection is only guaranteed through data subscription which Nigerians are finding unbearably expensive especially in the face of the current economic hardship. The exorbitant data charges by network service providers hinder many Nigerians from accessing AI tools and other e-learning platforms needed to complement classroom learning. In this way, many teachers and students are deprived access to this innovation. Likewise, the exorbitant cost of mobile devices such as smartphones and tablets; desktops and laptops makes them affordable among the rich only. Hence, the high cost of required resources for accessing AI poses an obstacle to its usage (Anyaeibu and Ezeife (2023). Derived from this, children from economically advantaged homes have better opportunities to benefit from AI and other learning enhancement technologies both at home and in the school than their peers from low income families who are likely to be cut off both at home and in the school. Many public schools which admit more students from poor homes lack basic educational infrastructure unlike private schools that boast better educational facilities. The family background disparity places children from rich families at an advantage over those from poor family backgrounds, and creates unequal self-actualization opportunities among citizens (Edinoh et al, 2025).

Among the indices of Nigeria's underdevelopment is epileptic power supply which appears to have its solution far from sight. Resulting from this challenge, teachers and students who live especially in rural territories are either completely cut off from power supply or experience irregular power. With this scenario, it becomes obvious

that such teachers and learners are either unable to use a phone or are bound to experience difficulty in leveraging AI tools despite its awareness. The opportunity of experiencing educational innovations becomes lost even as teachers are made to remain stagnated with traditional teaching methods (Chidozie, 2024). Stable power supply, internet connection, gadgets, AI enabling and conducive school environment which constitute required resources for AI usage have remained largely non-existent in schools especially in remote areas. Resultantly, the benefits of AI including teaching and learning convenience, rewarding learning outcomes, and the attainment of educational goals elude both teachers and learners. Without enabling infrastructure, teachers become incapacitated to employ AI in education (Edinoh et al, 2025). The regular power outage in Nigeria accounts for the poor response to e-learning as many individuals are denied the opportunity of using their gadgets to access e-learning platforms (Anyaeibu and Ezeife, 2023).

Furthermore, there is the fear among teachers of overdependence on AI and its consequences such as the triggering of academic indolence, academic dishonesty and inertia. AI technologies have ushered in an academic era where students present academic tasks effortlessly done through AI technologies. AI's intervention not only makes academic tasks easier but equally takes up the performance of tasks itself. Thus, assignments which ordinarily would have been executed through initiative and hard work are shifted to AI technologies, consequently killing the motivation to work hard. By relieving users the burden of academic tasks, teachers and students are likely to be rendered indolent. More so, the dependence on AI for solving academic tasks may result to overreliance by teachers and learners; thus impeding core educational skills including critical reasoning and creativity skills. The paramount importance of these educational skills for the realization of positive educational outcomes thus raises plausible fear of academic laziness. Another consequence of ditching critical thinking and self-effort for AI dependent academic assistance is AI-assisted cheating in examinations and assignments. Students often submit essay assignments produced via AI while equally engaging in examination malpractice through AI-assisted cheating. In contrast with technology rich nations, students in nations with lower technological development exploit the deficiency of plagiarism detectors to engage AI- powered tools for doing their assignments and to cheat in examination; thus gaining undeserved grades (Ajepe and Yusuf, 2024).

Again, most AI driven tools at times request or gain unauthorized access to users' personal information. This creates security tension and raises fear of privacy intrusion. The possibility of violation of privacy of information rights of users could discourage AI integration (Jie and Kamrozzaman, 2024). While the transformative contributions of AI in different sectors such as health, agriculture, education and many others are deeply appreciated, there is need to marry its benefits with privacy rights protection. With situations where AI systems pry into personal data such as racial associations, gender, economic background and others, worry arises over the motive for the collection and use of such information as well as the privacy risk this constitutes. In lieu of this, AI developers must be mindful of the need for personal data protection (Joshi and Kharola, 2024).

Language marginalization and non-native AI contents create bias and skepticism on its accuracy and reliability. Wanju and Wonjin (2025) frown on the exclusive use of English for AI tools which frustrate non-English speaking users. The fashioning of AI technologies to international languages such as English, Chinese, French and others invariably places speakers of local languages including the Nigerian languages at a disadvantaged position, and limits maximum harnessing of its potentials (Ajepe and Yusuf, 2024). In other words, although AI technologies target a global audience, yet the packages are suited more for audiences disposed to languages of international status. In lieu of this, AI derived translations may not suffice as misleading interpretations could arise. As regards its unlocalized contents, algorithms and other packages are actually untailored to the Nigerian socio-cultural milieu. In view of this, users in Nigeria may be made to deal with AI illustrations that do not actually fit into the existential peculiarities of the Nigerian people, just as the possibility of contents that fail to take account of a people's custom and tradition is envisaged. It is in view of this, that there is need to fill this yearning for indigenized contents that adequately capture a valid representation of the Nigerian educational, cultural and social practices, while equally putting into consideration the peculiar needs of Nigerians (Edinoh et al, 2025).

Methodology

A mixed research approach, employing both qualitative and quantitative data is adopted for the study. While qualitative data is sourced from related literature to the study, quantitative data is derived through an online survey questionnaire. The questionnaire contains 13 question items that seek to determine teachers' AI awareness level as well as the possible factors constraining AI integration in English language education rated through a 4-point scale of 'strongly agree', 'agree', 'strongly disagree' and 'disagree'. Reliability and validity of the question items were achieved through a pre-test administered on four language teachers from the School of Languages, Benjamin Uwajumogu (State) College of Education, Ihite-Uboma, Imo State before the actual administration on secondary school teachers drawn from Imo State Secondary School Education Board. Online method of administration was adopted as the questionnaire was posted on the WhatsApp group platform for English language teachers of Owerri

Educational Zone who constitute staff of Imo State Secondary Education Management Board. 140 teachers out of 178 responded to the questionnaire which indicates a 79% participation. Simple percentage was used for data analysis.

Analysis of Data and Results

TABLE 1: FREQUENCY (F) AND PERCENTAGE FREQUENCY (%F) OF CONSTRAINTS TO AI INTEGRATION IN ENGLISH LANGUAGE EDUCATION

The table shows the question items, the frequency (F) of responses on teachers' awareness of AI and its potentials in language education, as well as the calculated percentage frequency (%F).

S/N	QUESTIONNAIRE ITEMS	SA	%F	A	%F	SD	%F	D	%F
1	Teachers lack awareness of Artificial Intelligence (AI) existence	42	30%	70	50%	7	5%	21	15%
2	Teachers lack knowledge of AI potentials for teaching language contents	42	30%	63	45%	7	5%	28	20%
3	Teachers lack knowledge of AI use	49	35%	56	40%	7	5%	28	20%
4	Teachers prefer traditional teaching methods	42	30%	84	60%	7	5%	7	5%
5	There is low digital literacy among teachers; hence there is a dire need for AI-focused training for language teachers	70	50%	42	30%	7	5%	21	15%
6	Insufficient budget accounts for non-implementation of AI use in Nigerian schools	70	50%	63	45%	7	5%	0	0%
7	Technological limitations and infrastructural incapacitation (epileptic electricity, poor internet connection, etc.) cripple AI use in language education	56	40%	77	55%	7	5%	0	0%
8	Poor socio-economic background of teachers and students frustrate AI integration in language education	56	40%	56	40%	14	10%	14	10%
9	Exorbitant cost of digital devices and data subscription charges hinder minimize AI leverage	70	50%	63	45%	0	0%	7	5%
10	Teachers nurse the fear that overreliance on AI could hinder critical thinking and creativity skills	56	40%	70	50%	7	5%	7	5%
11	Teachers are skeptical of the accuracy and reliability of AI for educational purpose	35	25%	42	30%	14	10%	49	35%
12	Teachers worry over access to their personal data (privacy breach concerns) by AI	28	20%	77	55%	21	15%	14	5%
13	Teachers hesitate over AI use because its language marginalization and use of foreign contents.	35	25%	63	45%	21	15%	21	15%

Table 1 above shows frequency of responses and the calculated frequency percentage of the questionnaire items related to the various research questions. The findings indicate hindrances to AI integration in English Language education which include: low AI awareness and poor knowledge of its capabilities and application in language education buttressed through results in questionnaire items 1, 2, 3 and 4. These findings validate the ideas of Hussain et al, 2024; and Jie and Kamrozzaman, 2024. Also, data from questionnaire item 5 show teachers' poor digital literacy which births resistance to innovative educational approaches such as AI, thus corroborating the findings of Edinoh et al, 2025. Again, the same data from questionnaire item 5 shows an overwhelming affirmation to the dire need for AI-focused training for teachers which endorses the recommendation of Edinoh et al, 2025. In respect to data derived from questionnaire items 6 reveals the failure on the part of government to encourage AI integration in Nigerian schools is evidenced in lack of funding for AI implementation confirm the conclusion

of Edinoh et al, 2025. Likewise, its reluctance to provide enabling technological resources for smooth AI usage for educational advancement is supported by data from question item 7 which agrees with the opinion of Edinoh et al, 2025; Chidozie, 2024; and Anyaegbu and Ezeife, 2024. In addition, the results of questionnaire items 8 and 9 authenticate the role of economic limitation in restricting access to gadgets and resources for AI usage as buttressed by Edinoh et al, 2025; Hussain et al, 2024; and Anyaegbu and Ezeife, 2024. Equally, the likelihood of inhibiting critical thinking and creativity skills brought about by overdependence on AI captured by item 10 resonate the position of Ajepe and Yusuf, 2024 and Edinoh et al, 2025. Following this also is the skepticism on its accuracy and reliability which item 11 captures and which Edinoh et al, 2025 validates. Furthermore, the results in item 12 and 13 depict the shortcomings associated with AI itself which discourage its usage. First is the fear of its breach of user's privacy which is in alignment with the result of item 12 and in consonance with the idea of Jie and Kamrozzaman, 2024; and Joshi and Kharola, 2024. Relatedly, its language contents considered unconnected to the Nigerian social realities waters down its relevance as indicated in the findings of item 13 and aligns with the report of Edinoh et al, 2025, and Wanju and Wonjin, 2025.

Conclusion

Educational goals are largely similar across contexts; consequently, nations strive to adopt favourable global practices in education to improve their approaches and methods and to achieve better outcomes. In recognition of the educational potential of artificial intelligence (AI), particularly in facilitating language learning, this paper advocates for support for its integration into language education at all levels of the educational system in Nigeria. Given the numerous potentials of AI technology for language learning – including enhanced teaching and learning efficiency, self-directed learning, improved learning engagement, and strengthened teacher-learner interaction - the government must take a proactive role in creating awareness among teachers and supporting them through targeted training on its application. This should be complemented by the provision of the necessary infrastructure to ensure the effective and sustainable utilization of AI for improved English language education.

Recommendations

- a. Regardless of the cons associated with AI, it is beneficial for the development of language skills and for enhanced learning achievement.
- b. To achieve AI integration in English language education in Nigeria, there is need for digital literacy realizable through adequate AI trainings for Language teachers at all educational levels. Teachers require exposure to AI for teaching efficiency and better learning outcomes.
- c. It behooves on language teachers to transfer AI literacy skill to language learners stemming from the importance of this knowledge for navigating this digital era. Students need to be directed towards AI learning routes and the independent learning they offer with the goal of boosting learning interest and the ability to tackle their academic task, thus promoting problem-solving skills among them.
- d. Government can support teachers' exposure to digital training and AI-tech integration in the classroom through the provision of AI supportive infrastructure; establishment of digital resource centres in schools and ensuring reliable internet connectivity in schools.
- e. Funding is crucial for AI integration in schools; therefore government must play its role of allocating adequate budget for educational needs and ensuring schools' infrastructural development.

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