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ARTIFICIAL INTELLIGENCE AND ITS IMPACT
ON THE DEVELOPMENT OF CORE LANGUAGE
COMPETENCIES AMONG L2 LEARNERS IN NIGERIA

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ABSTRACT

This paper investigates the transformational influence of Artificial Intelligence (AI) on language learning, framed within the theoretical perspective of Krashen's Input Theory. It explores how AI technologies impact the development of core language competencies among second language (L2) learners, mainly focusing on reading, writing, speaking, and listening skills. By synthesizing existing literature and discussing empirical studies, the paper delves into AI's potential opportunities and challenges in language education, particularly within the Nigerian context. It examines how AI-powered language learning tools, such as ChatGPT, contribute to language acquisition and proficiency and evaluates their effectiveness in creating language-rich environments conducive to learning. The study also addresses concerns surrounding bias, accessibility, and ethical implications associated with integrating AI in language education,

proposing recommendations for educators, policymakers, and developers to ensure responsible implementation.

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Keywords: *Artificial Intelligence (AI), Krashen's Input Theory, language competencies, second language (L2) learners*

INTRODUCTION

Technology is constantly reshaping our way of doing things, be it thinking or learning. As these technologies evolve, so too do our understanding and approach toward learning, problem-solving, collaboration, and research. In the past, the traditional learning mode was revolutionized by introducing ICT tools such as projectors and digital resources such as whiteboards and e-books.

Moreover, another revolutionary sweep unfolds through the introduction of intelligent learning resources. Among these cutting-edge technologies is Artificial Intelligence (AI).

Artificial Intelligence (AI) is one of the most transformational technology advancements of the 21st century. Its influence extends across various domains, profoundly shaping industries, economies, and societies worldwide. Among its myriad applications, AI's impact on developing core language competencies holds significant promise and challenges.

This introduction delves into the intersection of AI and language competencies, exploring how AI technologies revolutionize language learning, understanding, and communication. Language, the cornerstone of human interaction and knowledge transmission, has always been a focal point of scientific inquiry and technological innovation. With the advent of AI, this exploration has reached unprecedented heights, opening avenues for both augmentation and transformation of language competencies.

Fueled by vast datasets and sophisticated algorithms, AI-powered language processing systems have enabled machines to comprehend, generate, and manipulate language with remarkable fluency and precision. Artificial intelligence (AI) has progressively become integrated into various facets of education, including language learning. Concerns have emerged regarding the potential bias inherent in algorithms utilized in AI-driven educational tools, which draw from

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historical data, potentially impacting the acquisition of fundamental language competencies among second language (L2) learners (Al-Matari, 2023).

Recent studies have delved into the effects of AI-based technologies, such as Chat-GPT, on the academic writing skills of L2 learners, showcasing the potential advantages of AI in bolstering students' learning endeavours (Navaie et al.; T. I., 2024). The proliferation of digital technology in education has instigated shifts in the foundational skills expected of young individuals, thereby influencing language education and the cultivation of core language proficiencies among L2 learners (UNESCO, 2023).

Furthermore, technology has proven instrumental in developing L2 pragmatic competence, enriching language learners' socio pragmatic awareness and multiliteracy proficiencies (González-Lloret, M., 2019). Incorporating AI into language education tools holds promise for advancing digital literacy skills among educators and learners globally (Makeleni et al.; M. A., 2023).

AI-driven language learning platforms leverage adaptive algorithms to deliver targeted instruction, adapting content and pacing based on learners' progress and preferences. By harnessing the power of machine learning, these platforms offer immerse experiences that simulate real-world language use, enhancing comprehension and communication skills.

Additionally, AI tutors equipped with natural language understanding capabilities provide personalized feedback and guidance, augmenting traditional language instruction. AI is revolutionizing personalized support for teachers on a large scale, fostering learning without bias, reshaping priorities for learners, and enhancing the quality of both learning and assessment (Al-Matari, 2023).

However, using and relying on AI has potential problems for educators and their learners. Due to these potential problems, educators, policy-makers, and developers must approach its integration carefully, considering its limitations and implications.

As educational institutions delve into the potential of Artificial

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Intelligence (AI) as a learning tool, one prominent AI tool, ChatGPT (Generative Pre-training Transformer) has garnered both admiration and criticism. This technology offers exciting possibilities for educators and researchers, particularly in academic writing support for students.

Open AI's GPT model, with its remarkable ability to replicate human-like writing through extensive text training and Natural Language Processing (NLP) capabilities, serves as the foundation for ChatGPT's simulation of human interactions.

However, amidst the enthusiasm surrounding the integration of AI in education, critical questions emerge regarding the effectiveness, ethical implications, and potential drawbacks of using ChatGPT and similar AI tools in the learning process. (Navaie, F. R., Panwar, K., & Asino, T. I., 2024).

STATEMENT OF THE PROBLEM

Integrating Artificial Intelligence (AI) technologies into language learning environments for L2 (second language) learners in Nigeria poses opportunities and challenges. While AI-driven tools can potentially improve core language competencies like reading, writing, speaking, and listening among L2 learners, we still need to learn how AI impacts language acquisition.

Questions arise regarding the accessibility, affordability, cultural relevance, and genuine effectiveness of these tools for Nigerian learners.

This study aims to dig into the complex implications of AI technologies on developing core language skills among L2 learners in Nigeria. By filling in these research gaps, we hope to shed light on how AI can shape the country's language learning future.
Objectives

THE OBJECTIVES OF THIS STUDY ARE:

1. To evaluate how AI-powered language learning tools and platforms contribute to acquiring and improving listening, speaking, reading, writing, vocabulary, grammar, and pragmatics skills among Nigerian learners.
2. To identify areas where AI can effectively support language learning in Nigeria and where

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traditional methods may still be more beneficial or necessary.

METHODOLOGY

This study employs a literature review methodology to investigate the impact of artificial intelligence on language learning among L2 (second language) learners in Nigeria. A search will be conducted in academic databases, journals, conference proceedings, and relevant publications to identify scholarly works about AI in language learning, language acquisition theories, educational technology, and the Nigerian context.

Keywords such as "artificial intelligence," "language learning," "educational technology," "Nigeria," and related terms will be used to refine the search. The identified literature will be synthesized and analyzed to understand the current state of knowledge and identify trends, gaps, and debates in the field.

The literature review will involve synthesizing and analyzing published studies, reports, and scholarly articles to gain insights into the impact of artificial intelligence on language learning among L2 learners in Nigeria. This process will include categorizing and organizing relevant literature according to key themes, such as the effectiveness of AI-driven language learning tools, challenges and opportunities in AI adoption, and policy implications.

The findings from the literature review will inform the formulation of research questions and the theoretical framework guiding the study. By identifying gaps and debates in the existing literature, the research questions will be designed to address specific aspects of the impact of artificial intelligence on language learning among L2 learners in Nigeria.

The theoretical framework will draw upon relevant theories and concepts from language acquisition, educational technology, and sociocultural perspectives to provide a theoretical lens for interpreting the study findings.

Conducting an extensive review of existing literature on AI in language learning, language acquisition theories, educational technology, and the Nigerian context will provide

valuable insights into the topic. By synthesizing and analyzing published studies, reports, and scholarly articles, researchers can gain diverse perspectives, explore complex issues, and generate rich qualitative data to deepen our understanding of the impact of artificial intelligence on language learning among L2 learners in Nigeria.

THEORETICAL FRAMEWORK
Krashen's Input Theory

The Input Hypothesis, a component of Krashen's Theory of Second Language Acquisition (SLA), posits that language acquisition occurs when learners are exposed to comprehensible input slightly beyond their current level of proficiency. According to Krashen, language learning is facilitated when learners receive meaningful input to understand and use to build their linguistic competence.

Krashen (1981) posits that learners acquire structure not by focusing on structure but by understanding the messages containing new structure. The Input theory also asserts that we need to teach speaking directly. Instead, speaking fluency emerges on its own over time. As stated by this view, the finest way to "teach" speaking is to provide" comprehensible input." It states that early speech is typically not accurate; grammatical accuracy is a thing that develops over time as the acquirer hears and comprehends more input, which will arise once the acquirer feels prepared.

This state of readiness, however, arrives at varying times for different people. Another part of the Input Theory argues that the "best" input does not be "grammatically sequenced." It should not deliberately aim at I + 1, the language acquirer level of competence plus the next immediate step along the development continuum.

Krashen (1985, p.3) claims that people acquire language earlier by comprehending input in the target language that is a little beyond the learner's current level of competence.

The L2 instructor should constantly communicate meaningfully using roughly tuned expressions and create occasions for the learner to access i+1 structures to comprehend and communicate meaning. For example, the instructor can give

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more prominence to listening and reading comprehension tasks.

In particular, this theory hypothesizes that the target language acquirer understands the message in the input when there is effective communication. Thus, i+1 will automatically be provided in just the right quantities. Acquirers will receive comprehensible input, which contains grammatical structures just beyond them if they are in contexts involving genuine communication, and these structures will be constantly provided and automatically reviewed. Therefore, if students follow the general meaning of a discussion, i + 1 will be provided for all of them with different i+ I for different students.

The implication is that with natural, comprehensible input, students need not worry about missing a class and thereby missing the topic taught forever. The topic could come up repeatedly in class discussions and reading. So, there is no need to worry about contextualizing a different structure in every unit because the topic is embedded in every lesson. The focus is always on aiding learners in understanding messages rather than grammatical rules. In other words, input for acquisition does not need to focus only on I + 1; it only needs to contain it. Thus, i + 1 will be naturally provided and reviewed when the acquirer is given enough comprehensible input.

Krashen posits that formal instruction offers learners a sufficient base to make the most of the 'real world' and thus continue acquiring language. However, this model needs to speculate about how much exposure to optimal, comprehensible input is needed for learners to successfully transition from the controlled and supportive classroom setting to the more personal and disinterested atmosphere of the outside world.

Several similarities are revealed by applying Vygotsky and Krashen's theories to the teaching of L2.

For instance, both Vygotsky and Krashen put great emphasis on the function of interaction in SLA because, in line with Krashen's input hypothesis, language acquisition occurs when learners interact in the setting of the target language that is rich in comprehensible input of that target language.

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The significant distinction between them is that Krashen emphasizes comprehensible target language one-way input, while interactionists acknowledge the import of two-way communication in that target language (Ariza & Hancock, 2003).

Even though interactionists accept that comprehensible input is a critical component in language acquisition, their stress is on exactly how this input is made comprehensible to the learner (Lightbown & Spada, 1998, p. 29).

In the context of AI-driven language learning tools, the Input Hypothesis can be used to analyze how these technologies facilitate the delivery of comprehensible input to L2 learners in Nigeria.

AI-powered language learning apps, virtual tutors, and chatbots can adapt content and exercises based on learners' proficiency levels, providing scaffold input tailored to their needs. By examining how AI technologies facilitate the delivery of comprehensible input and promote language acquisition among L2 learners, researchers can assess the effectiveness of these tools in enhancing core language competencies such as reading, writing, speaking, and listening.

Additionally, the Input Hypothesis can help analyze the role of AI technologies in creating language-rich environments that immerse learners in meaningful linguistic input, thereby supporting their language development.

By integrating the Input Hypothesis into the study's theoretical framework, researchers can explore how AI technologies contribute to the creation of optimal learning environments for L2 learners in Nigeria, fostering their linguistic growth and proficiency over time.

DISCUSSION
Impact of AI technology on reading competence

Reading proficiency in early childhood development is fundamental, involving the capacity to analyze and manipulate the structural elements of oral language (Tunmer et al., 1984). The research underscores that language difficulties often underlie challenges in reading acquisition, underscoring the necessity of comprehending the linguistic foundation of literacy and associated disorders (CATTS, 2003).

Moreover, investigations stress the pivotal role of input quality in fostering language acquisition during early childhood, with caregiver input being particularly influential (Rowe et al., 2019). Empirical evidence suggests that children's linguistic competence upon school entry significantly influences their initial reading progress, underscoring the imperative of understanding early literacy development (Rayner et al., 2001).

The intersection of artificial intelligence (AI) technologies with reading proficiency has garnered scholarly interest across various disciplines. For instance, Zerfass et al. (2020) conducted a cross-national study among European communication professionals to evaluate their knowledge and utilization of AI technologies in communication management, highlighting associated challenges.

Their quantitative investigation, involving 2,689 practitioners, addressed several research questions concerning AI awareness, its perceived impact on communication management, identified implementation challenges, and perceived risks.

The findings indicated a limited understanding of AI among communication professionals, with expectations of broader impacts on the profession compared to individual or organizational workflows. Challenges such as insufficient competencies at the individual level and organizational uncertainties were identified as critical impediments.

Similarly, Rusmiyanto et al. (2023) emphasized AI's role in enhancing English language learners' communication skills, emphasizing the significance of language acquisition and effective communication.

Recent research has also explored AI's influence on reading proficiency development, mainly through AI-powered language translation and accessibility tools, which empower users to engage with technology responsibly (Wei, 2023).

Moreover, AI has demonstrated considerable potential in English language instruction, particularly in grammar, vocabulary, reading comprehension, and writing skills (Rusmiyanto et al., 2023). The concept of AI literacy, encompassing the requisite skills for proficient AI

technology use, is essential for leveraging AI's potential in language development (Crabtree, 2023).

Furthermore, AI-driven personalized learning platforms have shown promise in enhancing reading, writing, and comprehension skills in English language courses, exemplifying AI's transformative capacity in language education (Gibson, 2023).

Across instructional design, AI applications such as personalized learning, adaptive learning, intelligent tutoring systems, natural language processing, gamification, predictive analytics, content creation, assessment and feedback, learning analytics, and resource allocation are reshaping learning experiences, tailoring them to individual needs, and optimizing instructional processes (Gibson, 2023).

As educators adapt to digital and blended learning environments, developing AI competencies and twenty-first-century skills is imperative for fostering students' language proficiency.

IMPACT OF AI TECHNOLOGY ON WRITING COMPETENCE

Recent research has delved into how AI technology impacts writing skills, mainly focusing on its effects on language learners. Various studies indicate that AI tools can significantly enhance English language learners' communication abilities (Rusmiyanto et al., 2023).

These tools demonstrate promise in improving general writing proficiency and specifically aiding those learning English as a foreign language (Wei, 2023).

Moreover, they have been noted to facilitate academic writing endeavors, making the process more accessible and motivating for individuals grappling with English language acquisition (Song & Song, 2023).

Furthermore, AI technologies extend their benefits to technical writers by providing valuable suggestions to enhance the quality of their writing outputs (FloodGates, 2024).

Investigations into student perceptions regarding AI-supported writing assistance have revealed a generally positive outlook, suggesting widespread acceptance and appreciation of AI's role in enhancing

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writing capabilities (Chan & Hu, 2023).

Additionally, the adaptability of AI tools enables them to tailor support to meet the specific needs of each learner, thereby streamlining the process of English language acquisition (Al-Matari, 2023).

Notably, research has highlighted the efficacy of AI, such as ChatGPT, in bolstering the academic writing skills of English as a Second Language (ESL) students, showcasing the potential of AI-driven technology to impact language learning outcomes (Mahapatra, 2024) positively.

In summary, the emerging literature underscores the profound influence of AI technologies on developing writing skills as a critical language competency, particularly in fostering improved communication, academic writing proficiency, and technical writing abilities in the English language.

IMPACT OF AI TECHNOLOGY ON SPEAKING COMPETENCE

In second language acquisition, proficiency in oral communication is of significant importance. Scholars have undertaken investigations into various facets of this domain, such as the linguistic utilization patterns of individuals learning French as a second language, mainly focusing on the usage of pronouns like "nous" and "on" during discourse (Rehner et al., 2003).

Additionally, research has explored the efficacy of utilizing mobile devices to facilitate speaking and listening practice, both synchronously and asynchronously, particularly within the framework of online instructional contexts (Kukulska-Hulme et al., 2008).

Contemporary pedagogical paradigms prioritize the inclusion of comprehensive oral instruction within language curricula (Burns et al., 2013). Moreover, there is ongoing discourse within academic circles regarding the transition towards competency-based language teaching methodologies in tertiary education

to enhance language instruction practices. Furthermore, empirical studies have examined the learning strategies employed by individuals to enhance their speaking proficiency, revealing discernible

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discrepancies between high and low-performing speakers (Gani et al., 2015).

This underscores the evident need for improvement in English speaking skills. Proficiency in spoken communication transcends the confines of language classrooms and holds relevance across diverse academic disciplines. Additionally, for non-native English-speaking nursing students, leverage resources such as podcasts and podcasts can significantly augment their communication competencies within medical contexts (Rogan & San Miguel, 2013).

Looking toward future advancements, the growing discourse surrounds the potential utilization of social robots to facilitate language learning, which includes both primary and secondary language acquisition endeavours. However, this emerging avenue warrants further empirical investigation to ascertain its efficacy and limitations (Berghe et al., 2019). In sum, the imperative of proficient oral communication in a second language is unequivocal, and the academic discourse surrounding this topic highlights the myriad methodologies and technological tools available to aid individuals in achieving proficiency.

IMPACT OF AI TECHNOLOGY ON LISTENING COMPETENCE

Listening proficiency is an integral aspect of acquiring a second language, with research spotlighting the pivotal role of instructional methods in facilitating the effective processing of linguistic input by L2 listeners.

Vandergrift (2004) underscores the necessity of instructing students in effective listening techniques, signalling a call for further investigation in this domain. Su et al. (2012) advocate a test-focused approach to teaching listening comprehension skills to EFL students, offering strategies like skimming, scanning, guessing, and inferring to navigate listening comprehension queries adeptly. Concurrently, competency-based language education, particularly in higher education, emphasizes corrective feedback and alignment with a competency-oriented model in tertiary institutions. Ikeda (2019) examines the application of Content and Language Integrated Learning

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(CLIL) in Japan, displaying a novel maths CLIL curriculum at a primary school to bolster language acquisition through content integration.

Recent scholarship has also witnessed a surge in interest in evaluating listening exertion within Audiology and Cognitive Sciences, with pupillometry emerging as a valuable tool for gauging the cognitive effort involved in listening tasks (Naylor et al., 2018).

Thus, the existing literature underscores the criticality of effective listening instruction in language learning, elucidating diverse approaches and strategies to augment listening proficiency among language learners.

The advent of AI technologies has sparked considerable interest in its impact on cultivating listening skills as language proficiency. Recent research reveals the significant influence of AI technologies on language acquisition, particularly in bolstering speaking proficiency among English language learners (Wei, 2023). These technologies furnish personalized learning experiences, prompt feedback, and tailored support, ultimately enhancing learners' linguistic adeptness.

Furthermore, AI-driven language learning tools have honed students' listening, speaking, reading, and writing proficiencies (Bećirović et al., 2021). Investigations also delve into the potential ramifications of AI on refining English speaking abilities, underscoring the pivotal role of innovative technology in augmenting oral proficiency.

Moreover, AI technologies have been harnessed to elevate students' English writing skills, exemplifying their potential to enhance diverse language competencies (Wang et al., 2023).

In sum, integrating AI technologies into language learning presents promising prospects for enhancing listening skills as a language competency. Through furnishing personalized learning experiences, immediate feedback, and tailored assistance, AI technologies promise to fortify language proficiency and nurture essential language skills. As technological advancements persist, the impact of AI on language acquisition is poised to burgeon, offering novel avenues for learners to enhance their linguistic competencies (Reis, 2024).

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CONCLUSION

The theoretical framework of Krashen's Input Theory provides valuable lenses for understanding the impact of Artificial Intelligence (AI) on language learning. Through personalized learning experiences and adaptive algorithms, AI-powered language learning platforms offer tailored support to meet the diverse needs of learners, aligning with the principles of comprehensible input and socio-cultural interaction.

However, concerns regarding bias, accessibility, and ethical implications necessitate careful consideration when integrating AI technologies. Educators, policy-makers, and developers must collaborate to ensure that AI enhances, rather than replaces, traditional instructional methods, fostering language proficiency and socio-cultural awareness among learners. As AI advances, its potential to revolutionize language education in Nigeria and beyond remains promising, offering new avenues for learners to thrive in an interconnected world.

RECOMMENDATIONS

1. Educational institutions in Nigeria should be encouraged to integrate AI-powered tools and technologies into their language curriculum. This could involve collaboration with AI developers and educators to design tailored solutions that address Nigerian students' specific needs and challenges.

2. Teacher education programs should include AI literacy and pedagogy training. Equipping educators with the knowledge and skills to effectively leverage AI in language teaching can enhance the quality of instruction and support student-learning outcomes.

3. The government should aid in the development and dissemination of accessible and affordable AI-powered language learning tools that cater to diverse linguistic backgrounds and socio-economic contexts in Nigeria. This could involve initiatives to subsidize or provide free access to AI tools for underserved communities.

4. There should be increased funding for research and development initiatives focused on AI in language education in Nigeria. This includes support for interdisciplinary research

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projects, technology incubators, and innovation hubs that drive the advancement of AI-driven solutions for language learning.

5. Ethical guidelines and regulatory frameworks should be developed to govern the responsible use of AI in language education in Nigeria. These guidelines should address data privacy, algorithmic bias, transparency, and accountability to ensure that AI-powered language tools uphold ethical standards and respect learners' rights.

6. Government agencies, educational institutions, private sector companies, and civil society organizations should collaborate to promote adopting and scaling AI-driven language education initiatives in Nigeria. Public-private partnerships facilitate resource sharing, knowledge exchange, and sustainable development efforts.

7. There should be robust monitoring and evaluation mechanisms to assess the effectiveness and impact of AI interventions in language

8. education. This includes regular assessments of student learning outcomes, user satisfaction surveys, and feedback mechanisms to inform continuous improvement efforts.

9. Capacity-building initiatives and awareness campaigns should be promoted to raise stakeholders' awareness about AI's potential to enhance language competencies in Nigeria. This could involve workshops, seminars, and outreach programs for educators, policy-makers, parents, and students.

10. Nigeria, through her government, agencies, and institutions, should collaborate with international partners, organizations, and networks engaged in AI and language education research and development. By leveraging global expertise and resources, Nigeria can benefit from best practices,

11. innovative solutions, and cross-cultural perspectives to advance its language education agenda.

Implementing these recommendations can help Nigeria unlock the transformative potential of AI in developing core language competencies, ultimately contributing

to the country's socio-economic development and global competitiveness.

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