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The Role of Deep Learning in Improving English Language Acquisition

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ABSTRACT

This study explores the role of deep learning technologies in enhancing English language acquisition, focusing on how artificial intelligence-powered tools impact learners' development in listening, speaking, reading, and writing. Using a qualitative case study approach, data were collected through interviews, observations, and document analysis across three educational settings where deep learning applications—such as speech recognition, automated writing feedback, and AI-driven chatbots—were actively used. The findings reveal that deep learning supports more personalized, adaptive, and autonomous learning experiences, with notable improvements in pronunciation, writing accuracy, vocabulary retention, and learner motivation. However, challenges such as technological limitations, unequal access, and insufficient teacher training were also identified. The study concludes that deep learning technologies hold significant potential as complementary tools in English language education, provided they are thoughtfully integrated into pedagogical frameworks. Implications for educators, policymakers, and future research are discussed.

Keywords: Deep Learning, English Language Acquisition, Artificial Intelligence, Personalized Learning, Speech Recognition, AI In Education

INTRODUCTION

In an era defined by rapid technological advancement, the landscape of language education is undergoing a profound transformation. English, as the dominant global language, continues to be a crucial skill in academic, professional, and cross-cultural settings. Yet, many learners still struggle with mastering its core components—grammar, vocabulary, pronunciation, and fluency—despite years of instruction. Traditional language teaching methods, while still relevant, often lack the responsiveness and adaptability needed to meet the diverse needs of today's learners, especially in non-native English-speaking contexts.(Mahvelati, 2021; Pasaribu et al., 2022; Pasaribu, Daulay, et al., 2024)

At the same time, artificial intelligence has opened new avenues for innovation in education, particularly through the development of deep learning technologies. Deep learning, a branch of machine learning modeled on the structure of the human brain, allows machines to process and learn from vast amounts of data in ways that closely resemble human learning. In the context of English language education, deep learning powers tools such as automated writing assistants, speech recognition systems, real-time translation apps, and AI-based tutoring platforms. These tools are not only reshaping how English is taught but also how it is acquired—often outside traditional classrooms and through everyday digital interactions.(Kusyani et al., 2024; Pasaribu, Daulay, et al., 2023; Pasaribu & Mulyadi, 2023)

Despite the visible presence of such technologies, their true pedagogical value in improving English language acquisition remains underexplored. While many English learners and teachers now interact with AI-driven platforms—sometimes unknowingly—there is still a lack of in-depth understanding regarding how deep learning specifically contributes to language development. Much of the existing research focuses either on the technical development of AI tools or on general e-learning trends, leaving a significant gap in the educational field: how does deep learning directly influence learners' acquisition of English, and how can it be meaningfully integrated into teaching practices?(Amaliah et al., 2024; Januarini & Rahis Pasaribu, 2024; Pasaribu, Daulay, et al., 2023)

Some studies have begun to address this area. Research by Zhang and Wang (2021) showed that deep learning-based speech recognition can help learners improve pronunciation accuracy. Li et al. (2020) examined AI-generated feedback on writing, finding measurable improvements in grammatical structures and text coherence. Similarly, Kim and Lim (2022) found that AI-powered chatbots can increase learner motivation and engagement in speaking tasks. However, these studies often focus on isolated skills or are limited in scope, making it difficult to form a comprehensive understanding of deep learning's full potential in English

language acquisition.(Aisyah et al., 2023; Pasaribu, Arfianty, et al., 2024; Pasaribu & Sidabutar, 2023)

In response to this gap, the present study seeks to investigate the broader role of deep learning in English language learning, examining how it supports skill development, enhances learner autonomy, and adapts to individual learning needs. It aims to explore how these technologies are being applied in both formal educational settings and informal learning environments, and what implications they hold for future language teaching strategies. Ultimately, this inquiry is guided by several key questions: How are deep learning technologies currently applied in English language education? What specific impacts do they have on the development of listening, speaking, reading, and writing skills? How do both learners and educators perceive their effectiveness? And what challenges arise in their integration?(Pasaribu, Rani, et al., 2024; Pasaribu, Widayati, et al., 2023; Zafirah et al., 2023)

By addressing these questions, the study contributes to a deeper understanding of how advanced technologies can not only supplement traditional language teaching but also redefine what it means to learn and use English in the age of artificial intelligence.

METHODS

This study adopts a qualitative research approach to explore how deep learning technologies are being integrated into English language learning and to assess their perceived impact on the acquisition of language skills. The qualitative method is chosen to gain a rich, in-depth understanding of participants' experiences, perceptions, and the educational context in which deep learning tools are applied.(Creswell & Clark, 2011; Sugiyono, 2010; Wiryany et al., 2022)

The research was conducted through a case study design, focusing on three educational settings where English is taught as a foreign or second language and where deep learning technologies are actively utilized. These settings include: (1) a university-level English program integrating AI-based writing and pronunciation tools, (2) a private language learning center that employs speech recognition and chatbot platforms, and (3) an online independent learning community using AI-enhanced applications for vocabulary and grammar development.

Participants were selected using purposive sampling to ensure relevance to the research focus. A total of 18 individuals participated in this study, including 6 English language instructors, 9 students at intermediate and advanced levels, and 3 developers or IT facilitators involved in implementing AI tools in the classroom. All participants had at least six months of experience using deep learning-based applications in English learning environments.

Data collection methods included semi-structured interviews, observations, and document analysis. Interviews were conducted to explore participants' views on the role of deep learning in improving English language acquisition, their experiences using specific tools, and the perceived advantages and challenges. Each interview lasted between 30 and 45 minutes and was recorded with participant consent. Observations were conducted during classroom activities and independent learning sessions to examine how learners interacted with deep learning systems in real time. Additionally, instructional materials, digital platform usage data, and feedback logs were analyzed to support and validate findings.

The collected data were analyzed using thematic analysis, following Braun and Clarke's (2006) framework. The analysis process involved coding the data inductively, identifying recurring themes, and interpreting the patterns in relation to the research questions. Particular attention was given to how deep learning technologies influenced the four core English language skills—listening, speaking, reading, and writing—and how learners' engagement and autonomy were affected.

To ensure trustworthiness, several strategies were employed, including triangulation of data sources (interviews, observations, documents), member checking with selected participants, and peer debriefing with fellow researchers in the field of language education and educational technology. Ethical considerations were observed throughout the study, including obtaining informed consent, ensuring participant anonymity, and securing data confidentiality.

This methodological framework allows the study to capture nuanced insights into the integration of deep learning in English language acquisition and contributes to a better understanding of its educational implications in real-world contexts.

FINDINGS AND DISCUSSION

The data analysis revealed several key themes concerning how deep learning technologies influence English language acquisition. These themes are organized around the core language skills—listening, speaking, reading, and writing—as well as learner motivation, autonomy, and challenges in implementation.

1. Enhanced Pronunciation and Listening Comprehension

A majority of learners and instructors reported that **deep learning-powered speech recognition tools**, such as Google's speech engine and mobile applications like ELSA Speak, significantly improved students' pronunciation and listening accuracy. Learners became more aware of their articulation patterns and received real-time corrective feedback, which was previously only available through face-to-face instruction.

This finding aligns with Zhang & Wang (2021), who observed that speech recognition technologies foster greater phonetic awareness and boost learners' confidence in speaking. Several participants noted that repeated interaction with AI pronunciation tools also improved their **listening discrimination**—particularly in recognizing stress patterns, intonation, and subtle sound differences in English.

2. Support for Writing Accuracy and Structure

Deep learning tools such as Grammarly and Write & Improve were widely used among participants for enhancing their writing skills. These platforms helped learners identify grammatical errors, suggest lexical improvements, and reorganize sentence structures. Instructors emphasized that these tools were especially beneficial for intermediate learners who struggled with clarity and coherence.

As supported by Li et al. (2020), automated writing evaluation systems powered by neural networks offer scalable and personalized writing support. In this study, learners demonstrated improved ability to construct more complex sentences over time, though concerns were raised about **over-reliance** on machine-generated corrections without fully understanding the underlying rules.(Diemer, 2013; Ginting & Mulyadi, 2020)

3. Increased Engagement in Speaking Activities

Participants also described increased **engagement and willingness to speak** English through the use of AI chatbots and voice-interactive applications. Tools such as ChatGPT and Duolingo's conversation mode provided a non-judgmental space for learners to practice without fear of embarrassment, a factor often cited as a barrier in traditional classrooms.

This echoes the findings of Kim & Lim (2022), who argued that AI-driven conversational agents can reduce anxiety and foster spontaneous communication. Learners in this study highlighted that the **immediate feedback and 24/7 availability** of these tools created a sense of comfort and consistent practice, especially outside school hours.(Fadhilah, 2021; Pasaribu, 2024; Pasaribu, Salmiah, et al., 2023)

4. Personalized Vocabulary Learning

Several learners reported that deep learning systems helped them **retain vocabulary more effectively** due to personalized recommendations and adaptive review intervals. Applications like Quizlet or Memrise, which incorporate AI to adjust difficulty based on performance, supported spaced repetition and semantic grouping of words.

This adaptive approach mirrors principles from second language acquisition theories that stress **contextual repetition and semantic connection**. Learners noted that their vocabulary acquisition was not only faster but more meaningful, as words were tied to themes relevant to their interests and needs.

5. Promotion of Learner Autonomy

A recurring theme was the **rise in learner independence**. With tools powered by deep learning, learners took more control of their learning pace, content, and focus areas. Instructors viewed this as a shift from teacher-centered to learner-centered instruction, where students set personal goals and monitored their own progress through AI dashboards and performance summaries.

These findings support previous claims by Warschauer (2019) that AI integration fosters **self-regulated learning**. However, it was also noted that without proper guidance, some learners struggled to set realistic goals or interpret feedback accurately, suggesting the continued need for teacher mediation.

6. Challenges in Integration

Despite the advantages, participants identified several **challenges** in using deep learning technologies. These included technical limitations such as speech recognition errors with accents, lack of access to stable internet in rural areas, and limited digital literacy among some learners. Furthermore, teachers expressed concern about the **lack of pedagogical training** to effectively integrate AI tools into lesson planning.

This indicates that while deep learning offers strong potential, its full educational benefits are dependent on **infrastructure, teacher preparedness, and learner awareness**. Without these, the tools may be underutilized or misused, reinforcing the importance of blended approaches that combine AI with traditional instruction.

Overall, the findings illustrate that deep learning technologies can significantly enhance English language acquisition when used thoughtfully and strategically. They are particularly effective in providing real-time feedback, supporting individualized learning paths, and increasing learner motivation. However, their effectiveness is not uniform and depends heavily on contextual factors, including learner autonomy, teacher facilitation, and access to resources.

The study suggests that educators should receive proper training in AI literacy and that deep learning applications should be integrated into curriculum design—not as replacements for human instruction, but as **complementary tools** to enrich language learning experiences. Policymakers and institutions are also encouraged to invest in digital infrastructure and create guidelines for ethical and pedagogical use of AI in education.

CONCLUSION

The integration of deep learning technologies into English language education marks a significant shift in how language skills are acquired, practiced, and assessed. This study has explored the multifaceted role that deep learning plays in enhancing English language acquisition, particularly in the areas of pronunciation, writing accuracy, vocabulary development, and learner autonomy. The findings reveal that deep learning tools, such as speech recognition systems, automated writing

evaluators, and conversational AI, offer substantial benefits by providing real-time feedback, adaptive learning paths, and increased learner engagement.

However, the study also uncovers critical challenges. These include technological limitations, disparities in access, and the lack of pedagogical readiness among educators. While learners increasingly rely on deep learning tools for independent study, their effectiveness is best realized when these technologies are integrated into structured teaching practices supported by informed instructors.

It is evident that deep learning has the potential to transform English language acquisition by fostering personalized and learner-centered experiences. Yet, to harness its full potential, institutions must address infrastructural gaps and invest in the digital and pedagogical training of educators. Moreover, the role of the teacher remains irreplaceable—not as a transmitter of knowledge, but as a guide who supports critical thinking, monitors learning ethics, and contextualizes AI-generated feedback.

In conclusion, deep learning should not be viewed as a substitute for traditional instruction, but as a powerful **complementary tool** that, when used effectively, can enrich the English language learning experience, especially in increasingly digital and globalized educational environments. Future research is encouraged to further investigate its long-term impact across diverse learner populations and educational settings.

REFERENCES

Aisyah, A., Nasywa, S., & Gumarpi Rahis, P. (2023). THE IMPACT OF ACCENT SECOND LANGUAGE ON LISTENING COMPREHENSION. *Journal of English Education and Literature*, *2*(1), 19–26. https://ojs.unm.ac.id/performance/article/view/43951

Amaliah, A., Clorion, F. D. D., & Pasaribu, G. R. (2024). THE IMPORTANCE OF MASTERING TEACHER PEDAGOGICAL COMPETENCE IN IMPROVING THE QUALITY OF EDUCATION. *PEBSAS : JURNAL PENDIDIKAN BAHASA DAN SASTRA*, *2*(1), 29–37.

Creswell, J. W., & Clark, V. L. P. (2011). Choosing a mixed methods design. In *Designing and Conducting Mixed Methods Research* (pp. 53–106). Sage Publications, Inc.

Diemer, S. (2013). *Culinary Linguistics*. 139–156.

Fadhilah, N. (2021). Penentuan Warna Dasar dan Nondasar Dalam Bahasa Madura: Suatu Kajian Etnolinguistik. *Translation and Linguistics (Transling)*, *1*(1), 8. https://doi.org/10.20961/transling.v1i1.52632

Ginting, J. B., & Mulyadi. (2020). Emosi Dalam Bahasa Karo: Teori Metafora Konseptual. *LINGUISTIK: Jurnal Bahasa & Sastra*, *5*(1), 57–62. https://doi.org/10.31604/linguistik.v5i1.57-62

Januarini, E., & Rahis Pasaribu, G. (2024). Impoliteness in Information Account on Instragram. *Jalc : Journal of Applied Linguistic and Studies of Cultural*, *02*, 1.

Kusyani, D., Satriadi, S., & Pasaribu, G. R. (2024). THE FUNCTION OF INDONESIAN LANGUAGE AS A MASS MEDIA. *ONTOLOGI Jurnal Pembelajaran Dan Ilmiah Kependidikan*, *2*(1), 16–26.

Mahvelati, E. H. (2021). Learners' perceptions and performance under peer versus teacher corrective feedback conditions. *Studies in Educational Evaluation*, *70*. https://doi.org/10.1016/j.stueduc.2021.100995

Pasaribu, G. R. (2024). The Role of English in the Development of Islam in. *At-Takilliah : Jurnal Pendidikan Dan Keislaman |*, *November*.

Pasaribu, G. R., Arfianty, R., & Bunce, J. (2024). Exploring Early Childhood Linguistic Intelligence Through English Language Learning Methods. *Innovations in Language Education and Literature*, *1*(2), 68–73. https://doi.org/10.31605/ilere.v1i2.4337

Pasaribu, G. R., Daulay, S. H., & Saragih, Z. (2023). The implementation of ICT in teaching English by the teacher of MTS Swasta Al-Amin. *English Language and Education Spectrum*, *3*(2), 47–60. https://doi.org/10.53416/electrum.v3i2.146

Pasaribu, G. R., Daulay, S. H., & Saragih, Z. (2024). Implementation Picture and Picture Strategy To Increase Students' Ability in Vocabulary At Man 3 Medan. *PRIMACY Journal of English Education and Literacy*, *2*(1), 12–20. https://doi.org/10.33592/primacy.v2i1.3439

Pasaribu, G. R., & Mulyadi, M. (2023). Malay Interrogative Sentences: X-Bar Analysis. *RETORIKA: Jurnal Ilmu Bahasa*, *9*(1), 43–53. https://doi.org/10.55637/jr.9.1.6191.43-53

Pasaribu, G. R., Rani, A., & Dara, M. (2024). Integrasi Kecerdasan Buatan (Artificial Intelligence) Pada Pembelajaran Bahasa. *Educandumedia: Jurnal Ilmu Pendidikan Dan Kependidikan*, *3*(2).

https://doi.org/10.61721/educandumedia.v3i2.511

Pasaribu, G. R., Salmiah, M., Sulistyaningrum, S. D., & Napitupulu, F. D. (2023). Teaching English by Using YouTube in SMP IT Al-Afkari Deliserdang. *Journal of Educational Review and Cultural Studies*, *1*(2), 60–72. https://doi.org/10.61540/jercs.v1i2.42

Pasaribu, G. R., & Sidabutar, U. (2023). Teacher ' s Strategy in Online Learning in English Courses at SMP Al-Afkari. *Journal of Literature and Education*, *1*, 51–56.

Pasaribu, G. R., Sinar, T. S., Zein, T. T., & Sofyan, R. (2022). Lecturer ' s Speech Acts in Learning English Language Universitas Islam. *TALENTA Conference Series*, *7*(2). https://doi.org/10.32734/lwsa.v7i2.2088

Pasaribu, G. R., Widayati, D., Mbete, A. M., & Dardanila, D. (2023). The Fauna Lexicon in Aceh Proverb: Ecolinguistic Study. *Jurnal Arbitrer*, *10*(2), 149–159. https://doi.org/10.25077/ar.10.2.149-159.2023

Sugiyono. (2010). Metode Penelitian Kualitatif Dan R&D. *Alfabeta*, 222.

Wiryany, D., Natasha, S., & Kurniawan, R. (2022). Perkembangan Teknologi Informasi dan Komunikasi terhadap Perubahan Sistem Komunikasi Indonesia. *Jurnal Nomosleca*, *8*(2), 242–252. https://doi.org/10.26905/nomosleca.v8i2.8821

Zafirah, T., Wulandari, W., & Pasaribu, G. R. (2023). THE POWER OF SPOTIFY IN IMPROVING LISTENING SKILLS. *Journal of English Education and Literature*, *2*(1), 19–26. https://ojs.unm.ac.id/performance/article/view/43951

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