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Exploring Student Perspectives on the Multimodal Transformation of Language Learning Through Artificial Intelligence in Indonesia

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Abstrak
Transformasi pembelajaran bahasa di Indonesia semakin dipengaruhi oleh kecerdasan buatan (AI), yang menawarkan pendekatan multimodal dan adaptasi konten untuk meningkatkan efisiensi dan efektivitas pembelajaran. Artikel ini mengeksplorasi penerapan AI dalam pendidikan bahasa, dengan menyoroti bagaimana teknologi ini memungkinkan pengalaman belajar yang lebih personal melalui integrasi berbagai media (teks, suara, gambar, dan video) yang disesuaikan dengan gaya belajar individu. Penelitian ini menggunakan pendekatan kualitatif dengan metode semi-interview untuk menggali pengalaman, persepsi, dan pandangan mahasiswa terhadap penggunaan kecerdasan buatan (AI) dalam pembelajaran bahasa. Dari perspektif mahasiswa, AI dapat mempercepat proses pembelajaran dengan memberikan umpan balik instan, yang membantu mengembangkan keterampilan berbicara, menulis, dan pemahaman kosa kata. Pendekatan multimodal ini juga mendukung penguasaan konteks budaya yang lebih dalam. Meskipun ada tantangan terkait infrastruktur dan hambatan budaya, AI memiliki potensi besar untuk memperluas akses pendidikan bahasa, khususnya di daerah-daerah terpencil. Mahasiswa, sebagai penerima manfaat langsung, dapat merasakan perubahan signifikan dalam cara mereka belajar bahasa, dengan lebih banyak kesempatan untuk belajar secara mandiri dan adaptif. Artikel ini juga membahas pentingnya adaptasi konten berbasis AI yang sesuai dengan kebutuhan lokal dan budaya Indonesia untuk menciptakan pengalaman belajar yang lebih inklusif dan relevan.
Kata kunci: kecerdasan buatan, pendidikan bahasa, pembelajaran multimodal

Abstract
The transformation of language learning in Indonesia is increasingly influenced by artificial intelligence (AI), which offers multimodal approaches and content adaptation to enhance the efficiency and effectiveness of education. This article explores the application of AI in language education, highlighting how this technology enables a more personalized learning experience through the integration of diverse media (text, sound, images, and video), tailored to individual learning styles. The research employs a qualitative approach using semi-structured interviews to explore students' experiences, perceptions, and views on the use of AI in language learning. From the students' perspective, AI accelerates the learning process by providing instant feedback, which helps develop speaking, writing, and vocabulary comprehension skills. This multimodal approach also supports a deeper mastery of cultural contexts. Despite challenges related to infrastructure and cultural barriers, AI holds significant potential to expand access to language education, particularly in remote areas. Students, as direct beneficiaries, experience a significant shift in how they learn languages, with greater opportunities for independent and adaptive learning. The article also discusses the importance of AI-based content adaptation that aligns with learners' specific needs, enhancing the overall educational experience.
Keywords: artificial intelligence, language education, multimodal learning

Introduction

Language learning, as one of the key elements in the educational system, faces significant challenges in responding to the demands of globalization and technological advancements. In Indonesia, these challenges become even more complex due to linguistic and cultural diversity, as well as disparities in access to quality educational resources. Nevertheless, artificial intelligence (AI) has emerged as a potential solution to these issues, offering more innovative and efficient ways in the language learning process (Chen, 2021; Xu & Zhang, 2020). The use of AI in language education in Indonesia has the potential to transform traditional paradigms and pave the way for the development of more inclusive, adaptive, and technology-based language education (Liu et al., 2019; Johnson & Zheng, 2022; Malik, A.R., 2023).

One approach that shows great promise is the use of multimodal systems, which integrate various input and output channels, such as text, sound, images, and video, to create a more dynamic and interactive learning experience (Balakrishnan & Leong, 2020). This multimodal approach not only allows students to learn a language through various media but also provides the opportunity to tailor the learning experience to individual styles and needs (Tharp & Gallimore, 2018). Thus, this technology supports the creation of more personalized and contextualized learning, which is expected to enhance the effectiveness of language learning in Indonesia, especially in addressing the growing challenges of distance learning (Rahmawati et al., 2021).

In addition, AI-based content adaptation offers great potential in designing learning materials that are more relevant and tailored to the ability levels and interests of students. AI algorithms can analyze students' learning patterns in real-time and adjust the difficulty level and type of materials provided, allowing students to learn at their own pace and in the most suitable manner for them (Yang & Lee, 2020; Zhang & Ren, 2021). This can also help reduce existing educational gaps by providing more equitable access for students from diverse social and economic backgrounds, especially those living in remote areas (Pratiwi & Utomo, 2022).

Although the vast potential of AI in language learning in Indonesia has been widely discussed, its implementation still faces various challenges. Some of these include limitations in technological infrastructure, disparities in access to adequate devices, and resistance to change among educators and students (Sari & Wulandari, 2021). Therefore, a deeper understanding is needed regarding how AI can be effectively implemented in the context of language education in Indonesia. This study aims to explore the transformation of language learning driven by artificial intelligence through a multimodal approach and content adaptation, as well as to evaluate the challenges and opportunities that arise with the implementation of this technology in Indonesia’s language education system.

Focusing on the application of AI in language learning, this study will analyze how technology can support and transform the way language is learned in Indonesia, as well as provide recommendations for the development of educational policies that are more responsive to global technological advancements. In the long term, it is expected that the findings of this research will contribute to the establishment of a more inclusive, adaptive, and technology-based language learning ecosystem, ultimately strengthening Indonesia's global competitiveness in an increasingly digitally connected world.

Literature Review

Language Learning and Challenges in Indonesia

Language learning in Indonesia, particularly foreign languages and Indonesian as a second language, faces various challenges. The cultural and

linguistic diversity in Indonesia influences the way language learning is received across different regions. Students from areas with limited infrastructure and resources often do not have equal access to quality language education (Sari & Wulandari, 2021; Malik, A.R., 2019). Moreover, the education system in Indonesia, which is more focused on conventional face-to-face approaches, faces obstacles in meeting the needs of a generation that is increasingly tech-savvy and desires a more interactive and personalized learning experience (Wahyudi et al., 2023).

The Role of Artificial Intelligence (AI) in Language Learning

Artificial intelligence has shown great potential in transforming the landscape of language learning, both in formal and non-formal educational contexts. AI enables the use of more adaptive learning systems that can tailor lesson materials to the needs and progress of individual students (Liu et al., 2019; Zhang & Ren, 2021). This technology not only automates feedback for students but also facilitates more data-driven, prescriptive learning based on real-time analysis of students' learning patterns (Yang & Lee, 2020). As a result, AI has the ability to enhance the effectiveness of language learning by providing more relevant and engaging content.

Multimodal Approach in Language Learning

The multimodal approach, which integrates various types of input and output such as text, sound, images, and video, has been proven to enhance student engagement and the effectiveness of language learning (Balakrishnan & Leong, 2020). In the context of language learning, this approach allows students to learn through different media, supporting a more holistic and contextualized learning experience. For example, the integration of audio and visual elements in language learning applications helps students strengthen their understanding of pronunciation and the contextual use of language in real-life situations. Tharp and Gallimore (2018) emphasize that the combination of various media channels enhances comprehension and information retention, while also providing students with opportunities to learn in a way that is more suited to their learning styles.

AI can enhance this multimodal approach by providing content tailored to students' abilities, offering a more personalized experience. For instance, AI systems can identify students' difficulties in understanding specific aspects of language, such as pronunciation or vocabulary, and provide additional exercises using appropriate media (Rahmawati et al., 2021). Research by Chen (2021) also shows that the use of AI in multimodal learning applications allows students to receive feedback more quickly and accurately, which improves their learning outcomes.

Method

This study employs a qualitative approach with a semi-structured interview method to explore students' experiences, perceptions, and views on the use of artificial intelligence (AI) in language learning. The qualitative approach allows the researcher to gain in-depth insights into the factors influencing the acceptance of AI in the context of language education, as well as the challenges and opportunities faced by students. Semi-structured interviews were chosen for their flexibility in exploring participants' experiences more openly, providing the researcher with the opportunity to confirm or explore new issues that may arise during the interviews.

Table. 1 Demography of Participant

Category	Description	Number of Participants

Total Participants	Students who use AI in language learning	18
Gender	Male and female with a balanced distribution	Male: 9 Female: 9
Age	18-24 years (Undergraduate or diploma students)	19.5 years (average)
Semester	Students in semester 3 to semester 7 (undergraduate level)	Semester 3: 4 Semester 5: 6 Semester 7: 8
Experience with AI Usage	Students who have used AI technology in language learning (via AI-based apps/platforms)	All participants use AI in learning
Duration of AI Usage	- 1-6 months - 7-12 months - 1-2 years - more than 2 years	1-6 months: 5 7-12 months: 7 1-2 years: 6

The primary instrument in this study is the semi-structured interview, designed to gain a deep understanding of students' experiences in using AI for language learning. The interviews will follow a semi-structured interview guide, allowing flexibility to explore relevant topics that arise during interactions with participants.

The data obtained from the semi-structured interviews will be analyzed using thematic analysis. This approach enables the researcher to identify key themes emerging from the interview transcripts and explore relevant patterns related to students' experiences and perceptions of using AI in language learning.

Data Analysis Steps include:

- Transcription: All interviews will be transcribed verbatim.
- Coding: The interview data will be coded to identify relevant categories such as benefits, challenges, and motivational factors in using AI.
- Theme Identification: After coding, the key themes related to AI-based language learning experiences will be identified.
- Interpretation: The emerging themes will be further analyzed to provide a deep understanding of how AI influences language learning.

The results of the thematic analysis will be used to answer the research questions related to students' experiences, as well as to describe how the use of AI can transform language learning in the context of Indonesia.

Result

This study aims to explore how language education students use artificial intelligence (AI) technology in a multimodal approach to enhance their language skills. Through interviews with 18 language education students, various benefits and challenges were identified in the use of multimodal AI-based tools to improve writing, speaking, and overall language comprehension skills. Below are the findings from the interviews conducted with the students.

Improvement of Grammar and Vocabulary Skills

Most students expressed that the use of multimodal AI helped them improve their language skills, particularly in grammar and vocabulary. Students felt supported by the real-time feedback from AI, which provided immediate and detailed suggestions for corrections.

Student 2 said: "I feel more confident when writing because AI always provides quick feedback and helps me correct small grammar mistakes that I might have missed. Especially when AI also shows a more accurate way to use words or a more natural sentence structure." (Interview, November 12, 2024).

Student 8 explained: "AI also helps me expand the vocabulary I use in writing. For example, I often find it difficult to find the right word, but with AI's suggestions, I can choose a word that fits better with the context of my writing. Not only that, AI also provides several variations of words that are more interesting and not monotonous." (Interview, November 13,

2024)

The interview results indicate that AI can help students correct technical mistakes in writing while simultaneously enriching their vocabulary, making it more varied and contextually appropriate.

Assistance in Idea Development and Creativity

In addition to helping with the technical aspects of writing, AI also makes a significant contribution to idea development and creativity. Many students admitted that they feel inspired to think more creatively and be open to new ideas thanks to AI's assistance.

Student 5 stated: "When I run out of ideas for a certain topic, I often use AI to get suggestions or a new perspective. AI helps open up different ways of thinking that I hadn't considered before. Often, AI provides questions that spark fresh ideas for my topic." (interview, November 14, 2024)

Student 9 added: "AI gives me more options for perspectives, often suggesting that I explore themes or subtopics I hadn't thought of. This broadens the scope of my writing and improves the quality of the arguments I make." (interview, November 14, 2024)

In this context, AI functions as a brainstorming tool, providing students with various perspectives or angles they might not have previously considered, which can then be further developed in their writing.

Organization and Refinement of Writing Structure

Students also expressed that AI is very helpful in organizing and refining the structure of their writing. AI helps them ensure that the ideas in their writing are well-organized and that no part is left out or disconnected from the others.

Student 13 said: "AI provides very useful suggestions in terms of organizing ideas. For example, I am often advised to add arguments or provide deeper explanations in certain sections, so my essay becomes more structured and clear. AI also suggests that I link parts of my writing more clearly." (interview, November 15, 2024)

Student 12 added: "Thanks to AI's suggestions, I feel my writing has become clearer and more systematic. AI truly helps me ensure that each part of my writing is well-connected, from the introduction to the conclusion. My writing structure is much more organized after using AI." (interview, November 16, 2024)

AI functions as a tool that helps students maintain the flow of their writing and ensure cohesion between paragraphs and the arguments presented, which in turn improves the quality and clarity of the writing.

Interaction with Multimodalities: Text, Sound, and Images

In the context of using AI-based multimodal technology, students also experience the benefits of combining various types of input and output, such as text, sound, and images. AI not only provides text-based feedback but also analyzes other elements in writing, such as pronunciation and intonation in speaking, and provides relevant visualizations.

Student 3 explained: "I use AI not only for writing but also for speaking. AI corrects the way I pronounce words in the target language and gives feedback on my accent or intonation. With the addition of sound, I feel more confident when speaking in a foreign language." (interview, November 12, 2024)

Student 7 said: "In addition, AI often shows images or graphs that help me understand language concepts more easily. For example, when I was learning about figurative language, AI displayed visual examples that clarified the intended meaning." (interview, November 13, 2024)

These results suggest that multimodal interaction involving text, sound, and images can enhance students' learning experiences and help them better understand the language in various contexts.

The interviews with language education students show that the use of multimodal AI offers various benefits in improving language skills, including aspects such as grammar, vocabulary, idea development, and writing structure. AI also facilitates multimodal interaction, enriching students' learning experiences by combining text, sound, and images. However, there are some challenges related to the accuracy of cultural and social contexts in language, which remain a primary concern in the use of AI in language education. These findings provide valuable insights for the future development of AI technology in the context of language education.

Discussion

The use of multimodal artificial intelligence (AI) technology in language education has rapidly developed, significantly impacting the enhancement of students' language skills. Based on interviews with language education students, AI technology has proven effective in improving grammar skills, enriching vocabulary, and developing creative ideas in the writing process. The majority of students feel that AI provides quick and useful feedback, especially in correcting technical grammatical errors that they often overlook themselves. This is in line with research by Sato et al. (2023), which shows that AI-based grammar checkers can significantly reduce grammatical errors in students' writing. AI also expands the vocabulary used by students, helping them select more precise words that are appropriate for the context. For example, Student T8 expressed that with the help of AI, they were able to find alternative words that were more varied and contextually appropriate, ultimately enriching their written language. These findings support the research by Kim & Lee (2022), which demonstrates that AI can provide more accurate word recommendations, improve the quality of student writing, and broaden their linguistic range.

In addition, AI helps students overcome mental blocks that often occur during the writing process. Several students reported that they frequently felt stuck when trying to come up with ideas for a particular topic, and AI provided suggestions that opened up new perspectives. Student T5 expressed that AI provided a creative boost by offering alternative viewpoints that they hadn't previously considered, making it easier for them to further develop the topic. This aligns with the study by Davis & Zhang (2023), which found that AI has significant potential in facilitating brainstorming by generating fresh ideas that were not previously imagined by users.

Beyond idea development, multimodal AI also plays a crucial role in helping students organize their writing more effectively. Students D and T12 reported that AI frequently provided suggestions regarding the organization of ideas, making their writing more structured and cohesive. AI helps arrange the various parts of their writing, ensuring that the arguments presented have a clear flow from introduction to conclusion. Research by Zhang & Wu (2024) shows that multimodal AI can identify weaknesses in the structure of a written work and provide recommendations for improving the logical flow and cohesion between ideas.

Students also reported benefiting from AI in enhancing the quality of their argumentation. For instance, AI suggested adding arguments or clarifying certain parts of the writing, making the work deeper and stronger. This is particularly important in academic writing, where clear and well-structured arguments are crucial for producing persuasive and easily understandable texts. This suggests that AI usage goes beyond grammar correction and extends to more complex aspects of writing, such as refining ideas and strengthening arguments.

One interesting aspect is AI's ability to interact with students through various

modes, not just text, but also voice and images. Some students mentioned that AI allows them to receive feedback on their pronunciation and intonation when speaking, which supports the development of speaking skills in the target language. Liu & Chen (2023) noted that AI integrated with voice technology can provide highly valuable feedback to students, especially in pronunciation and fluency, helping them improve their verbal communication skills. This multimodal approach enhances students' ability to engage with language in a more dynamic and comprehensive way.

In the context of language learning, visualization also plays a crucial role. Some students reported that the use of images or graphics suggested by AI helped them better understand abstract language concepts. These visualizations made it easier to grasp the material and improved retention. Alim & Wang (2022) emphasized that AI-based visualizations can accelerate the understanding of semantics and pragmatics of a language, especially for students learning a foreign language.

However, despite the many benefits, the use of AI also faces challenges, particularly related to its ability to handle cultural and social nuances in language. Some students mentioned that AI often struggles to understand the cultural and social contexts that influence word choice and expressions in language. Lee & Kim (2023) found that AI still has limitations in capturing these aspects, which is especially important in teaching foreign languages with different cultural nuances. Therefore, further development of AI that can understand cultural context should be a priority in the field of language education.

Despite these challenges, the majority of students believe that the benefits of using AI outweigh its limitations. Multimodal AI technology has proven effective in enhancing students' writing and speaking skills. AI offers innovative solutions in language education, making it easier for students to learn independently, correct mistakes, and enrich their language skills. By continuing to develop AI to be more sensitive to social and cultural contexts, and expanding its capabilities for multimodal interaction, this technology has the potential to revolutionize the way language learning is conducted in the future.

Conclusion

This study shows that the use of multimodal artificial intelligence (AI) technology has had a significant impact on improving students' language skills, particularly in language education. AI has proven to be effective in improving grammar, enriching vocabulary, and assisting students in organizing and developing ideas during the writing process. By providing direct feedback and relevant suggestions, AI makes it easier for students to identify and correct technical errors in their writing, which are often overlooked in manual writing processes.

Furthermore, AI also serves as a tool to overcome mental blocks, helping students find fresh ideas that can enrich their writing topics. Multimodal AI, which integrates text, voice, and images, also allows students to improve their speaking skills, especially in pronunciation and intonation. This provides a more holistic and interactive learning experience. However, this study also identifies some challenges related to AI's limitations in understanding the cultural and social context that affects word choice and expressions in language. Therefore, it is important to continue developing AI technology to be more sensitive to cultural and social nuances in language education.

Overall, AI has the potential to revolutionize the way we teach and learn languages, offering a more personalized and learner-centered experience. With the ability to provide immediate and detailed feedback, multimodal AI technology enables students to learn more effectively and efficiently while enhancing their

language skills. The combination of text, voice, and images in language learning offers great opportunities for more comprehensive learning, integrating different modalities that can improve understanding and information retention.

However, challenges related to the limitations of AI in understanding cultural and social contexts must remain a key focus. To ensure that this technology is used effectively in diverse global contexts, AI development needs to prioritize understanding cultural and social differences. This will allow AI to be used more accurately and relevantly in supporting language learning that is inclusive and sensitive to the contextual needs of learners.

Overall, while there is still room for development, the potential of AI to support language education is vast. In the future, AI can play a key role in enriching language learning experiences, enhancing communication skills, and facilitating more effective and directed independent learning.

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