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Artificial Intelligence Integration Patterns (Artificial Intelligence) in Indonesian Language Learning in the Independent Curriculum

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Abstract

This article examines the application of artificial intelligence (AI) in Indonesian language learning within the Merdeka Curriculum. The integration of AI is expected to make the learning process more effective, efficient, and comprehensive. This research employs a qualitative descriptive method with in-depth literature analysis from various sources. The results show that the use of AI in Indonesian language learning encompasses various skills, including listening, speaking, reading, and writing. AI *platforms* such as Speech Recognition Tools, Amazon Alexa, and ChatGPT help enhance interactivity, personalization, and the quality of learning. These findings indicate that AI integration can provide a more adaptive and responsive learning experience tailored to students' needs, preparing them to face the increasingly sophisticated challenges of the digital era.

Keywords: artificial intelligence, independent curriculum, indonesia language

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Abstrak

Artikel ini mengkaji penerapan kecerdasan buatan (AI) pada pembelajaran bahasa Indonesia dalam Kurikulum Merdeka. Integrasi AI diharapkan dapat membuat proses pembelajaran lebih efektif, efisien, dan komprehensif. Penelitian ini menggunakan metode deskriptif kualitatif dengan analisis literatur yang mendalam dari berbagai sumber. Hasil penelitian menunjukkan bahwa penggunaan AI dalam pembelajaran bahasa Indonesia meliputi berbagai keterampilan, yaitu mendengarkan, berbicara, membaca dan menulis. Platform Penggunaan AI, seperti Alat Pengenalan Suara, Amazon Alexa, dan ChatGPT, membantu meningkatkan interaktivitas, personalisasi, dan kualitas pembelajaran. Temuan ini menunjukkan bahwa integrasi AI dapat memberikan pengalaman belajar yang lebih adaptif dan responsif terhadap kebutuhan peserta didik, serta mempersiapkan mereka untuk tantangan yang semakin canggih di era digital.

Kata kunci: kecerdasan buatan, kurikulum merdeka, bahasa indonesia

Introduction

Artificial intelligence (AI) is an imitation of human intelligence engineered into machines to think like humans. According to Wenge (2021) artificial intelligence is the process of providing machines such as computers with the ability to exhibit behavior considered equivalent to human intelligence. In education, the integration of AI into the curriculum is becoming increasingly important (Liriwati, 2023; Susanto, 2023). One significant innovation in the field of education is the application of AI in Indonesian language learning, especially within the framework of the Independent Curriculum. In line with previous opinions, according to Wahyudiono (2023) the Independent Curriculum is designed to provide freedom and flexibility to educators and students, with the aim of improving the quality of education and preparing students for future challenges. The integration of AI is expected to make Indonesian language learning more effective and efficient, help identify individual learning needs, provide customized materials, and provide fast and accurate feedback.

Indonesian language learning has positive potential when linked to artificial intelligence/AI. This is because AI has had a significant impact on various sectors, including education. In the context of learning Marlin et al (2023) AI offers various tools and platforms which can support the teaching and learning process to be more effective and interactive. Some platforms which support the Indonesian language learning process, for example in listening activities such as *Speech Recognition Tools* which can help students in listening by converting speech into text in real-time (Eriana & Zein, 2023). Then in speaking activities there is the platform *Amazon Alexa* which can be used for speaking practice in Indonesian. Writing activities can use the platform *ChatGPT* which has features like a virtual assistant to help answer any questions about the material requested and can also provide all the information needed. Learning is based on a chatbot that will answer any analytical questions in real time. Also, during reading activities, you can use the platform *Read The story* which can be used to assess students' reading comprehension through various tests and exercises tailored to their ability level.

Technological advances require educators to master technology and media to support the learning process. In the 21st-century education era, educators and textbooks are no longer the primary sources of information in the classroom. According to Rahmawati (2022) educators act as facilitators for students in acquiring knowledge and skills. With digital devices, students can explore the world through limitless online learning resources and access various digital media to obtain the information they need (Eriana & Zein, 2023; Putri & Assidik, 2024). In facing the 21st-century education era, educators must be wise in selecting information to teach students, as well as understanding student characteristics, learning objectives, strategies, and appropriate teaching

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materials, and selecting the best available technology and media to encourage optimal learning.

The use of AI in Indonesian language learning in the Independent Curriculum encompasses various aspects. Indonesian language learning in the Independent Curriculum includes reading, listening, speaking, and writing activities (Komalasari & Riani, 2023; Nai et al., 2023). First, AI enables the development of adaptive learning systems that can tailor lesson materials to the abilities and needs of each student, help educators understand students' strengths and weaknesses, and provide appropriate supplementary materials or exercises. Second, AI technology based on natural language processing can be used to develop learning aids. Indonesian, such as automated grammar platforms, speech recognition for correct pronunciation, and essay grading systems that provide instant feedback. Third, AI can create a more interactive and engaging learning environment, for example through chatbots that can assist students with assignments or conversation practice. Thus, the integration of AI into the Independent Curriculum not only enriches the learning experience but also prepares students for the increasingly sophisticated digital era.

Digital-based learning can be applied across various disciplines, with educators or lecturers playing a crucial role in supporting the smooth running of the learning process in accordance with the desired objectives. Narawati (2021) argues that improving the quality of education is inseparable from the renewal of the learning media used. Learning media plays a crucial role in achieving the effectiveness and efficiency of learning objectives (Sastro, 2010). Learning media can generate new interests, increase learning motivation, and influence students' psychology. The use of learning-oriented media can enhance the vitality of the learning process and transfer information and learning content. In addition to increasing student motivation and interest, media also aids their understanding by presenting data in an engaging and reliable manner (Komalasari & Riani, 2023; Nai et al., 2023).

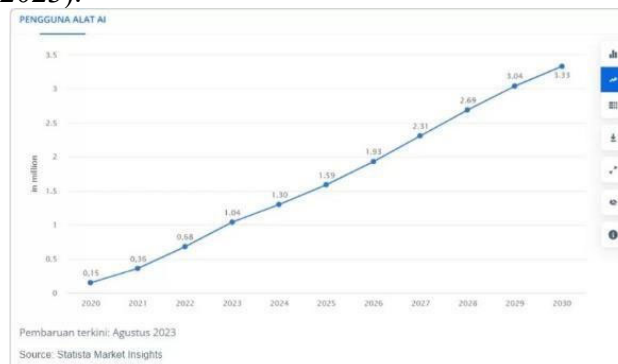


Figure 1. Infographic of Indonesia's AI Usage Data in 2023

Indonesia as the most populous country in ASEAN has demonstrated success in AI marketing. OpenAI capitalizes on the 77% of the population that actively uses the internet, and the large number of students who use AI technology to support their learning (Garuda Website, 2023). For example ChatGPT technology in the learning sector is used to help students complete school assignments. Many schools already actively use AI to support the teaching and learning process, such as preparing assignments for students, preparing learning materials, and so on. This is consistent with data from an Ipsos survey, which found that nearly 78 percent of respondents in Indonesia believe AI provides more benefits than disadvantages, especially in education.

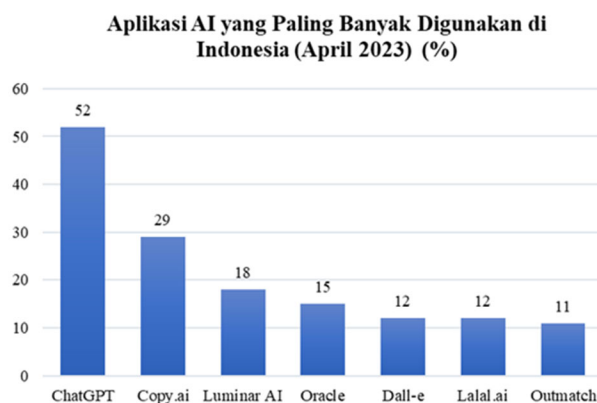


Figure 2. Popularity of AI Applications

In line with the findings of previous data graphics, reported by a Populix survey discussed in online media (STIS, 2023), approximately 45% of workers and entrepreneurs in Indonesia have used artificial intelligence (AI) applications. The survey results indicate that ChatGPT was the most widely used AI application in Indonesia in April 2023, with a percentage of 52%. In the context of education, access. It's easy for students to use AI technology to help them complete school or college assignments. Some useful AI capabilities in education include answering questions, writing essays, reviewing journals, creating CVs, converting text to video, and more.

Research on AI-assisted learning has been conducted over the past five years, highlighting its use. For example, a study by Fauziyah & Haryanto (2024) used the discovery learning method and artificial intelligence (Chat GPT) in teaching drama writing. This conceptual idea aims to support the development of digital education in Indonesia, in line with the Independent Curriculum. The results show that the application of AI-based discovery learning methods can increase student interactivity in the learning process, support online collaboration, and facilitate real-time feedback, which are relevant in contemporary education.

Research conducted by Oktavianus et al., (2023) explored the application of AI in learning and assessment, documented the methods used, and analyzed the resulting positive impacts. The results showed that the use of AI in learning and assessment improves the efficiency, accuracy, and personalization of learning. With machine learning algorithms, AI systems can identify individual learners' needs and provide appropriate learning content, enabling a more relevant and effective learning experience. In the context of assessment, AI provides a fast and objective automated assessment solution, reducing educators' workload and providing in-depth feedback to learners. Jenita et al., (2023) in their community service utilized AI for the preparation of scientific articles, held online via Zoom on October 25, 2023, with 25 participants from among lecturers, students, and educators. This abstract explains the reasons for the topic selection, the methods used, and a summary of the results achieved. The importance of integrating AI in scientific research lies in its ability to improve the efficiency of data analysis and the quality of the resulting articles. Through training and practical simulations, participants understand AI concepts and apply them in their research, increasing their understanding of the use of AI in writing scientific articles.

Another study related to the use of AI in learning was conducted by (Fauziyah & Haryanto, 2024) which produced results that learning to create generation Z scripts using the artificial intelligence-based discovery learning (GPT) method showed that there were six stages of the phenomenon: (a) providing incentives, (b) identifying problems, (c) collecting data, (d) managing information, (e) proving, (f) drawing conclusions. The results of this research indicate that the application of AI-based discovery learning methods can increase student interactivity in the

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learning process, support online collaboration, and facilitate real-time feedback, which is relevant in contemporary education.

Similar research examining AI-assisted learning was conducted by Khoiruman & Irawan (2023) which aimed to improve the quality of English learning at SMAN Banyuwani through the integration of Artificial Intelligence (AI) animations. By utilizing this innovative technology, it is hoped to create a more engaging and effective learning experience for students. The results showed increased material absorption, utilizing an innovative AI animation approach to visually enhance understanding of difficult concepts and increase student engagement, creating a dynamic and collaborative learning environment. Overall, the integration of AI technology, particularly English animations, makes a significant contribution to the learning experience at SMAN Banyuwani.

Research by Ahnaf & Setiadi (2023) aims to describe the optimization of the use of text-to-image artificial intelligence/AI in short story writing materials. Data analysis shows differences in learning outcomes between students who use Adobe Firefly and those who do not. The average post-test score of students in the experimental class was 81.0, while the control class was 72.50. The independent sample T-test showed a value of $0.03 < 0.05$. The results of the qualitative data description indicate that educators and students have a positive view of the use of Adobe Firefly. They reported that this application encourages students to be more proactive in writing short stories and feel more connected to the short story material, especially in linking local folklore to students' writing.

The results of previous research relevant to this study are expected to provide a strong theoretical and empirical foundation for understanding the phenomenon of dysphemism in social media. Based on the relevant previous research used as the basis for this study, it can be concluded that the application of AI in education significantly impacts the use of AI technology, increasing interactivity, efficiency, personalization, and the quality of learning and assessment. In line with the research background previously described, it can be concluded that the goal of this research is to model the application of AI in learning. By understanding the research objectives, it is clear that the integration of AI in Indonesian language learning in the Independent Curriculum has great potential to improve the quality of education. With a focus on listening, reading, speaking, and writing skills, AI can be a powerful tool for creating a better, more efficient, effective, and comprehensive learning experience for all students in Indonesia. Its implementation requires a well-thought-out strategy and collaboration between various parties, including the government, schools, educators, and technology providers. With the right approach, AI can help create a learning environment that is adaptive and responsive to the needs of each student.

Method

This research uses a qualitative approach through a literature review method. This method involves analyzing and combining information from various relevant literature (Atika & Sayekti, 2023; Cohen, 2019). Data analysis in this study was conducted descriptively based on data obtained from various sources. The purpose of data analysis was to gain a deep understanding of the research topic (Jailani, 2023). An in-depth literature review was conducted by collecting and reviewing various relevant studies and articles regarding the integration of artificial intelligence (AI) in language learning, particularly in the context of the Independent Curriculum. The sources used included academic journals, books, research reports, and credible online publications.

Literature data collection was carried out through specific keyword searches, such as "AI in language learning," "Independent Curriculum," "application of technology in education," and "use of platform AI in education." Each source found was evaluated for its relevance and credibility before being included in the analysis (Ginting et al., 2023).

After collecting the literature data, the next step was to conduct a descriptive analysis. This

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analysis aimed to identify patterns and trends in the use of AI in Indonesian language learning and to evaluate the effectiveness and efficiency of this method. The analysis process also included an assessment of various platform AI used, like *Speech Recognition Tools*, *Amazon Alexa*, And *ChatGPT*, in enhancing interactivity, personalization, and learning quality. Using this approach, this research seeks to provide a comprehensive overview of how AI can be integrated into Indonesian language learning in the Independent Curriculum, as well as the implications of such integration for students' learning experiences and their readiness for the increasingly sophisticated digital era.

Result and Discussion

The results of this study were obtained through a literature review process on the use of AI in Indonesian language learning. These results were then categorized into Indonesian language learning categories, which include listening, reading, speaking, and writing skills. Borrowing the opinion of (Andriwardhaya et al., 2023; Putri & Assidik, 2024b), media must take into account the conditions of students and schools so that media created by teachers can be useful and utilized. Therefore, the use of AI media must be tailored to each basic skill in Indonesian language learning to ensure its effective use.

A. Listening Skills

Platform which are used to improve listening skills include *Podcastle*, *Google Assistant*, *Speechify* and others as in table 1. Useplatform This demonstrates that AI can improve listening skills through text-to-speech conversion, interactive listening exercises, and pronunciation feedback. The use of AI in listening skills is presented in the following table.

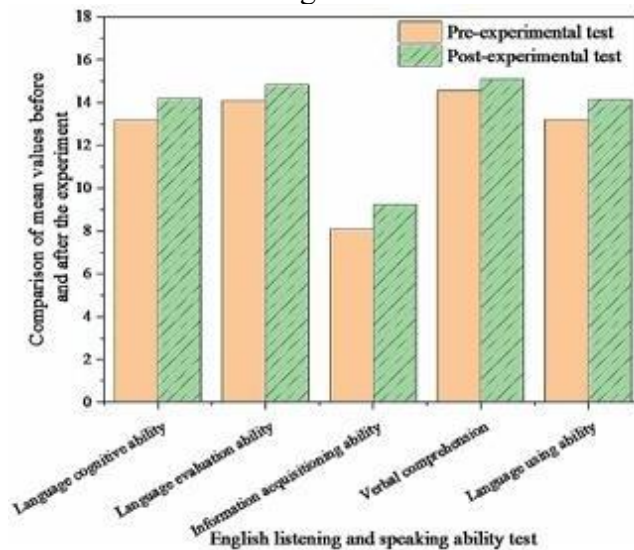
Table 1. Platform AI for Listening Skills

Platform	Description	Key Features
<i>Podcastle</i>	Convert text to audio	High quality text to speech conversion
<i>Google Assistant</i>	Virtual assistant for listening practice	Voice response, conversational interaction
<i>Wireless AI</i>	Listening and learning platform speak English	Voice response, speech correction and conversational interaction
<i>Speechify</i>	Platform text-to-speech	Text to speech conversion
<i>NaturalReader</i>	Text reader with natural voice	Automatic text reading
<i>Duolingo</i>	Interactive listening exercises	Gamification, progress analysis
<i>Mondly</i>	Listening practice through virtual conversations	Virtual conversation, pronunciation feedback
<i>Rosetta Stone</i>	Listening practice with speakers virtual original	Virtual native speaker, feedback direct
<i>Pimsleur</i>	Focus on listening skills	Listening and speaking practice
<i>FluentU</i>	Authentic videos for listening practice	Authentic videos, context understanding
<i>Yabla</i>	Videos with interactive subtitles	Interactive video, bilingual subtitles
<i>Three</i>	AI-based automatic transcription service	Real-time transcription, speech recognition
<i>Speak AI</i>	Automatic speech analysis and transcription	Sentiment analysis, automatic transcription
<i>Otter</i>	Smart transcription tool with collaboration features	Real-time transcription, integration with other applications
<i>Bee</i>	Automatic transcription and subtitle tool	Multi-language transcription, speech recognition
<i>New AI</i>	Video editing with automatic transcription	Video transcription, automatic subtitles

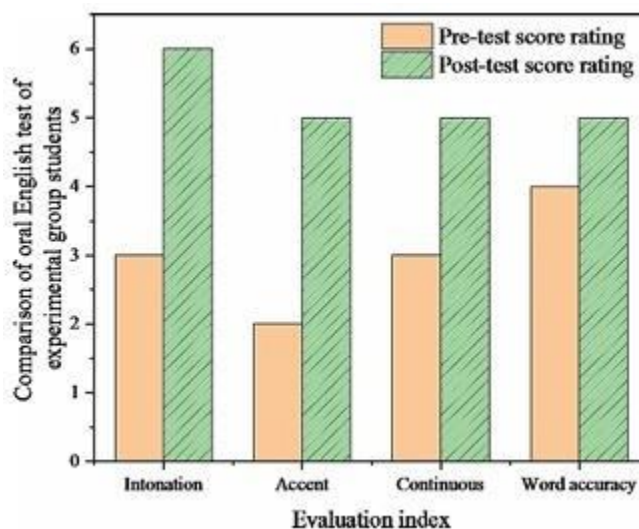
According to research by Hu (2024), the integration of AI in education has contributed significantly to improving listening skills. The AI platform used in the study was: *Wireless AI*

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Wireless network-based artificial intelligence technology used in intelligent learning systems can effectively improve students' listening skills. This study shows that through the implementation of learning strategies utilizing AI-based intelligent learning systems, students' listening skills can be significantly improved, as shown in the following table.



Graph 1. English Listening and Speaking Ability Test



Graph 2. The Oral English Test of the Experimental Group Before and After the Experiment

The results of the study indicate that a learning strategy using a wireless AI network-based learning strategy can effectively improve students' English listening and speaking skills. The average student listening ability after the experiment increased by 4.65 points compared to before the experiment. Furthermore, there was a significant difference in students' listening skills before and after the experiment, indicating that this learning system significantly improved students' listening and speaking skills.

B. Speaking Skills

Platform for speaking skills include Rosetta Stone, Duolingo, Lingbe, HelloTalk, Mondly, Speechling, and others as in table 2. Platform It helps learners improve their speaking skills through

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interactive speaking exercises, pronunciation feedback, and interaction with native speakers or AI bots.

Table 2. *Platform AI for Speaking Skills*

Platform	Description	Key Features
<i>Rosetta Stone</i>	Practice speaking with a virtual native speaker	Pronunciation feedback, virtual native speaker
<i>Duolingo</i>	Interactive speaking practice	Gamification, speech analysis
<i>Lingbe</i>	Interaction with native speakers	Speaking practice, real interaction
<i>HelloTalk</i>	Interaction with native speakers for speaking practice	Voice messages, corrections from the community
<i>Mondly</i>	Virtual conversation with AI bot	Pronunciation feedback, speaking practice
<i>Speechling</i>	Pronunciation correction from native speakers	Audio feedback, speaking practice
<i>FluentU</i>	Authentic videos for speaking practice	Authentic videos, pronunciation feedback
<i>Elsa Speak</i>	Pronunciation analysis with AI	Real-time feedback, speaking practice
<i>Pimsleur</i>	Focus on speaking skills	Listening and speaking practice
<i>Google Assistant</i>	Practice speaking through everyday interactions	Conversation-based interactions
<i>Lingbe</i>	Interaction with native speakers for speaking practice	Speaking practice, interaction real
<i>Conversational AI Breakthrough</i>	AI to enhance conversational skills	Conversation practice, real-time feedback
<i>HiALICE</i>	AI-based conversational assistant	Speaking practice, voice recognition
<i>TalkpalAI</i>	<i>Platform</i> interactive speaking practice	Conversation exercises, pronunciation feedback
<i>YellowAI</i>	AI conversation bot for speaking practice	Conversation-based interaction, feedback

Research by Ghareeb Ahmed Ali (2020) on the integration of artificial intelligence (AI) into learning, particularly speaking skills, has shown significant results in improving student abilities. This study highlights how Google Assistant can improve students' speaking skills by providing a more interactive and personalized learning experience

Table 3. Mann Whitney Test Analysis of Scores Obtained by the Control and Experimental

Table 3. Groups on the Pre-Test of the Speaking Skills

Group	N	Mean Ranks	Sum of Ranks	"z" value	Sig
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Control	20	18.20	364	1.252	Not
Experimental	20	22.80	456		

Maximum score = 75

Table 4. Mann Whitney Test Analysis of Scores Obtained by the Control and Experimental Groups on the Post-Test of the Speaking Skills

Group	N	Mean Ranks	Sum of Ranks	"z" value	Sig
Control	20	10.50	210	5.417	0.01
Experimental	20	30.50	610		

Maximum score = 75

Table 5. Wilcoxon Signed Ranks Test Analysis of Scores Obtained by the Experimental Group in the Pre Post-Test of the Speaking Skills

Administration	N	Mean Rank	Sum of Ranks	"z" value	Sig
Negative ranks	0	0.00	0.00	3.928	0.01
Positive ranks	20	10.50	210		

Maximum score = 75

The results of the pre-test and post-test showed a significant improvement in speaking skills and listening comprehension in students who used the artificial intelligence application. In the pre-test, no significant differences were found between the experimental and control groups in either listening or speaking skills. However, after implementing the AI application, the post-test results showed that the experimental group had a significantly higher score compared to the control group. The results of the study indicate that the use of Google Assistant AI has a significant positive impact on the development of students' speaking skills. Thus, this study confirms that the integration of AI in language learning, especially in the speaking aspect, can provide effective and positive results. This is mainly due to AI's ability to provide an interactive learning environment and provide live examples for students to follow.

C. Reading Skills

Platform for reading skills include *Quillionz*, *Socratic by Google*, *Khan Academy*, *Duolingo* and others as in table 3. Platform It helps learners improve reading skills through automatic question generation, text analysis, adaptive reading practice, and automatic text reading.

Table 6. Platform AI for Reading Skills

Platform	Description	Key Features
<i>Quillionz</i>	Create questions and quizzes based on text	Automatic generation questions, text analysis
<i>Socratic by Google</i>	Help solve problems and understand the text	Text scanning, annotation draft
<i>NovoLearning</i>	Developing language skills through advanced and effective technology	Complete facilities language learning
<i>Khan Academy</i>	Personal learning materials	Adaptive learning, progress tracking

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<i>Duolingo</i>	Interactive reading exercises	Gamification, progress analysis
<i>Lingbe</i>	Real-time interaction with native speakers	Reading and writing practice
<i>Grammarly</i>	Grammar and spelling correction	Grammar check, text analysis
<i>ReadTheory</i>	Adaptive reading practice	Progress analysis, various reading texts
<i>Newsela</i>	Adaptive news articles	Reading assessment, relevant content
<i>NaturalReader</i>	Automatic text reading	Multiple voice options, text format support
<i>Smartick</i>	Adaptive learning for reading and mathematics	Adaptive learning, interactive exercises
<i>IBM Next-Generation AI</i>	Next generation AI learning tools	Text analysis, learning recommendations
<i>Azure AI Immersive Reader</i>	Immersive reader tool from Azure	Text understanding, text to speech conversion
<i>SiderAI</i>	AI reader tool for text analysis	Text analysis, learning adaptive

Research by Arini et al. (2022) found that AI integration in learning significantly contributes to improving reading skills. NovoLearning, an AI-based mobile learning platform, was used in this study to implement fun and practical language learning. This platform covers learning objectives in the areas of vocabulary, grammar syntax, reading, listening, pronunciation, and role-playing. The following are the results of the independent t-test calculated on data from both groups tested to determine significant differences between the Pre-Test and Post-Test results. The independent t-test group statistics are calculated in the table below.

Table 7. Group Statistics

Group	N	Mean	Standard Deviation	Standard Error Mean
Experimental	26	81.192	6.37197	1.24947
Control	28	74.6858	7.97688	1.50733

Table 8. Independent Samples Test

Levene's Test for Equality of Variances	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	11.279	.001	3.171	52	.002	6.50620	2.05189	2.39361	8.51952
Equal variances not assumed			3.220	50.119	.002	6.50620	2.02077	2.44728	8.52012

This study used a pretest-posttest non-equivalent control group design, with two groups: one as a control group that did not use AI-based learning, and another as an experimental group that used it. The results showed that the English competence of the experimental group was significantly higher compared to the control group, with a critical t value (6.373) greater than the t table, and a Sig value (2-tailed) less than 0.05. Students' positive attitudes towards AI-based mobile learning include increased learning opportunities and areas of improvement in NovoLearning during implementation. AI integration in Indonesian language learning according to the Independent Curriculum is expected to provide similar results, by improving reading skills through more personalized and effective learning.

D. Writing Skills

Platform for writing skills include Grammarly, QuillBot, ProWritingAid, Slick Write, and others as in table 4. Platform It helps students improve their writing skills through grammar checking, writing suggestions, style analysis, and plagiarism detection.

Table 9. Platform AI for Writing Skills

Platform	Description	Key Features
Grammarly	Grammar and writing style correction	Grammar check, writing suggestions
Adobe Firefly	Text generation, text editing, grammar correction language	Generative Fill, Text Effects, Template and Preset Generation
QuillBot	Paraphrase and word suggestions	Paraphrasing, text simplification, expansion of ideas
ProWritingAid	Grammar check and style analysis	Grammar analysis, writing style suggestions
Slick Write	Grammar checking and analysis writing style	Grammar check, style analysis
Hemingway Editor	Text simplification and readability improvement	Readability analysis, text simplification suggestions
WriteLab	Writing feedback and improvements sentence structure	Writing feedback, style analysis
Writing	Grammar and spelling check	Grammar check, writing style analysis
Ginger Software	Grammar and spelling corrections, paraphrase	Grammar check, word prediction
Textio	Data-driven writing suggestions	Text analysis, readability improvement

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LanguageTool	Multilingual grammar check	Grammar check, text analysis
Otter.ai	Smart transcription tool with collaboration features	Real-time transcription, integration with other platforms
QuizGecko	AI tools for quiz creation and question	Automatic generation of questions, analysis text
Google Bard	Google's AI-based writing tool	Writing suggestions, text analysis
Open AI Playground	AI experiment tool from OpenAI for various platforms	AI experiments, integration of various model
Chat GPT-3/GPT-4	AI language models for generation text and analysis	Text generation, context analysis, suggestions writing

According to research by Ahnaf & Setiadi (2023), the integration of AI technology into Indonesian language learning adapted from the Merdeka Curriculum significantly contributes to improving writing skills. This study highlights the use of text-to-image artificial intelligence technology, such as Adobe Firefly, in short story writing instruction. This statement is supported by the results of the following data normality test table.

Table 10. Normality Test

Class		Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Students' Learning Outcomes	Pre-Test Experimental (AI)	0.168	30	0.030	0.908	30	0.013
	Post-Test Experimental (AI)	0.171	30	0.025	0.908	30	0.013
	Pre-Test Control	0.192	30	0.006	0.903	30	0.010
	Post-Test Control	0.143	30	0.118	0.961	30	0.327

Based on the results of the AI Pre-Test and Post-Test experiments, an independent sample T-test was conducted to determine the difference between the average values before and after the experiment. These results are illustrated in the following table.

Table 11. Independent sample T-test table

Class		F	Sig.	t	df	Sig.	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Students' Learning Outcomes	Equal variances assumed	0.18	0.67	3.07	58	0.03	6.333	2.058	2.215	10.45
	Equal variances not assumed			3.07	56.9	0.03	6.333	2.058	2.213	10.45

The calculation results show a significant value of $0.03 < 0.05$, indicating a significant difference between student learning outcomes in the experimental class on the use of text-to-image based artificial intelligence technology, Adobe Firefly and the control class. So it can be concluded that the use of text-to-image based AI with Adobe Firefly is effective in increasing student

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motivation and learning outcomes in writing short stories. This technology can be a useful alternative in learning Indonesian, especially in short story material.

AI in this context refers to a variety of platforms appropriate for each skill in learning Indonesian (Tundreng et al., 2023; Zebua et al., 2023). In order to support the listening skills platform, AI provides listening exercises designed to improve students' listening skills through interactive audio that can be adapted to their skill level. For example, AI platforms can present various types of spoken text such as everyday conversations, news, or stories with variations in accent and speaking speed. The system can also provide feedback *real-time* regarding students' understanding of the learning they hear, so that students can better understand and improve areas that are still lacking.

In addition, it supports a speaking skills platform AI-based Indonesian language learning offers interactive speaking exercises using speech recognition technology. This allows learners to practice speaking Indonesian in various practical scenarios, such as dialogues, presentations, or everyday conversations. AI can assess learners' intonation, pronunciation, and fluency, and provide specific feedback to correct errors. Thus, in line with Assidik's opinion (2015), learners can improve their speaking skills in a practical and targeted manner.

Reading skills, *platform* AI can present texts with varying levels of difficulty and includes features such as new word logging, automatic pronunciation, and text summarization. These features enable learners to read more effectively, understand new vocabulary, and strengthen their reading comprehension. AI can also adapt reading materials based on learners' progress, so they are always engaged with texts that match their abilities. For writing, AI platforms provide tools that help learners plan, write, and revise texts. AI can offer suggestions on grammar, spelling, and sentence structure, as well as provide feedback on the overall quality of the writing. With autocorrect and writing guidance, learners can learn to correct their mistakes and develop better writing skills through continued practice.

Overall, the use of AI in Indonesian language learning, in accordance with the Independent Curriculum, contributes to a more personalized and adaptive learning experience. This supports the goals of the independent curriculum, which emphasizes student learning freedom and independence. Borrowing the opinion of (Shobri & Kamal, 2023), technology that can adapt to individual student needs allows them to learn more effectively and according to their respective abilities. This AI integration not only makes the learning process more interactive but also accelerates the achievement of expected language skills (Sandy et al., 2023; Susanto, 2023). In line with the opinion of (Shobri & Kamal, 2023), the integration of artificial intelligence in Indonesian language learning has great potential to improve the quality of education. By utilizing various platform AI, learners can learn more effectively and enjoyably, and get relevant feedback to improve their skills

Conclusion

Based on the results of research conducted through a literature review process on the use of AI in Indonesian language learning, it can be concluded that AI has great potential to improve students' listening, speaking, reading, and writing skills. The results of the study indicate that the use of AI in Indonesian language learning is *platform* Artificial intelligence (AI) in Indonesian language learning in the Independent Curriculum can significantly improve students' listening, speaking, reading, and writing skills. *Platform-platform* AI like *Podcastle*, *Google Assistant*, *Speechify*, and others provide a variety of interactive and adaptive features that enable a personalized, effective, efficient and comprehensive learning experience.

Effective and efficient learning occurs thanks to support through adequate learning media. This is in line with research by Faridli et al. (2024) and Widawati et al. (2023), which both stated

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that support from learning media such as platforms makes learning effective, efficient, and comprehensive. Overall, the integration of AI in Indonesian language learning supports the Independent Curriculum approach, which emphasizes student learning freedom and independence. AI platforms enable a more personalized and adaptive learning experience, effectively improving language skills.

The integration of AI in Indonesian language learning supports modern educational theories that emphasize adaptive and personalized learning. According to Vygotsky & Cole (1978), social interaction and a supportive learning environment are key to students' cognitive development. The use of AI creates a dynamic learning environment that is responsive to individual student needs, in line with the concept of *Zone of Proximal Development* (ZPD). The constructivist theory put forward by Piaget (1969) in (Hotopf, 2013) states that learning is an active process in which students construct their own knowledge. *Platform* AI supports constructivism by giving learners greater control over their learning process, allowing them to learn at their own pace and based on their interests. This study found that integrating AI into Indonesian language learning not only improved learners' language skills but also increased their motivation and engagement in the learning process. *Platform* Interactive and adaptive AI provides a more engaging and challenging learning experience, positively impacting student motivation (Lin & Mubarak, 2021; Secinaro et al., 2021). This is a novel finding that demonstrates that AI functions not only as a learning aid but also as a motivational trigger.

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