Pedagogy: Journal of English Language Teaching
Volume 12, Number 2, December 2024
E-ISSN: 2580-1473 & P-ISSN: 2338-882X
Published by Institut Agama Islam Negeri Metro

Exploring the Integration of Artificial Intelligence in English as a Foreign Language Education in Indonesia

Muhammad Arinal Rahman
University of Szeged, Hungary
Email: arinalrahman@gmail.com

ARTICLE INFO
Article history:
Received
July 3, 2024

Revised
August 15, 2024

Accepted
August 22, 2024

ABSTRACT

The use of AI tools in EFL teaching is growing in Indonesia, but their implementation and impact are not fully understood. This research explores how English as a Foreign Language (EFL) instructors in Indonesia integrate artificial intelligence (AI) technology into their teaching, their views on the efficacy of these tools, and the obstacles they face. Five EFL teachers in Indonesia were interviewed using a qualitative approach through semi-structured interviews. Analysis of the data showed that educators use AI tools such as Grammarly, Google Translate, ChatGPT, and Claude AI to offer feedback, assist in understanding, and create content. These tools were considered to be beneficial for enhancing students' writing abilities and enthusiasm, although worries were expressed regarding excessive dependence, academic integrity, and the possibility of obstructing critical thinking and genuine learning. Obstacles involved restrictions on tools, technological setup, and preparedness of students. The research underscores the advantages of using AI tools in EFL teaching and stresses the importance of a fair and evaluative method of incorporating them. Teachers should encourage constructivist instructional techniques to stimulate cognitive involvement and digital proficiency, guaranteeing that AI resources complement rather than substitute genuine learning. Future study on moral and educational impacts are advised.

Keywords: *artificial intelligence, English as a Foreign Language (EFL), language education, educational technology, Indonesia, qualitative research, teacher perceptions, challenges, ethical considerations*.

How to cite: Rahman, M. A. (2024). Exploring the Integration of Artificial Intelligence in English as a Foreign Language Education in Indonesia. *Pedagogy: Journal of English Language Teaching, 12*(2). 196-212
DOI: 10.32332/joelt.v12i2.9549.
Journal Homepage: https://e-journal.metrouniv.ac.id/index.php/pedagogy

INTRODUCTION

The rapid advancement of artificial intelligence (AI) has significantly impacted several sectors, including education. In language education. In particular, language education has seen tremendous innovation, with artificial intelligence offering a range of innovative tools to enhance both the teaching and learning processes. For instance, AI technologies like automated writing evaluation (AWE) systems and AI-driven writing assistants are changing how language skills are taught and assessed. These technologies offer immediate feedback, enable customized learning, and assist not only students but also teachers throughout the educational journey.

One of the key benefits of AI in language education is its capacity to offer prompt and thorough feedback on written tasks. Research has demonstrated that AWE systems can enhance students' writing abilities by providing helpful feedback on grammar, style, and content. An example provided by Wang et al. (2013) showed that AI feedback tools can enhance students' writing skills by quickly spotting and fixing errors. Likewise, Link et al. (2022) point out the beneficial effects of automated feedback on students' revision and writing progress.

AI-driven tools are also crucial in improving teachers' instructional methods. These tools enable teachers to devote more attention to personalized instruction and higher-order thinking skills by automating tasks like grading and error correction. (Palermo & Wilson, 2020) discovered that incorporating AWE in various teaching settings can enhance student results and increase teacher time efficiency. Additionally, Ranalli et al. (2017) highlighted the significance of precise and beneficial feedback given by AWE systems to aid in formative assessment methods.

Despite the advantages, incorporating AI into language education comes with its own set of obstacles. One major issue revolves around the precision and trustworthiness of automated feedback. Even though AI systems can easily spot grammatical mistakes, they may find it challenging to assess more advanced elements in writing, like cohesion, persuasion, and originality. Chen et al. (2020) mentioned that despite advancements in data mining techniques, they continue to face limitations in fully understanding and assessing nuanced language usage.

Another concern is the potential danger of relying excessively on technology. There is a risk that students could become overly dependent on AI tools for writing assistance, impeding their progress in developing their own writing skills. Al-Raimi et al. (2024) expressed worry about how automated systems might affect students' motivation and independence in writing and proposed the importance of achieving a harmonious integration of AI.

Even though there have been many studies on the impact of AI in overall language education environments, especially in Indonesia, its application in

English as a Foreign Language (EFL) settings in the nation has not been fully explored (Chen et al., 2020; Mageira et al., 2022; Nazari et al., 2021; Seo et al., 2021; Wang et al., 2024; Zhai et al., 2021)

Indonesia's varied languages and increasing focus on English skills provide an interesting environment for studying how AI can be used in EFL learning. English is essential for academic and professional progress in the country, but numerous learners encounter substantial obstacles in reaching fluency (Lauder, 2008). To address this challenges, the introduction of AI technologies like language learning apps, automated feedback systems, and personalized learning platforms presents fresh possibilities for tackling these challenges (Pawlak & Kruk, 2022).

The use of AI technologies in teaching English as a Second Language (ESL) in Indonesia offers distinct possibilities and difficulties. The Indonesian education system has been integrating technology more and more to improve language learning results. Nevertheless, the effectiveness of AI integration is contingent on various elements such as technological infrastructure, teacher readiness, and student openness. While much has been written about the application of AI in education globally, specific research focusing on the Indonesian context, particularly in English as a Foreign Language (EFL) classrooms, remains limited.

Research conducted in Indonesia emphasizes the significance of adapting to the local context. Alkamel and Chouthaiwale (2018) highlighted the significance of integrating ICT tools in language instruction, including content about the local context and teaching techniques that align with the culture. Furthermore, it is crucial for teachers in Indonesia to receive thorough instruction in order to effectively incorporate AI tools in their teaching practices, as this is vital for their overall success and impact.

In summary, despite the great potential that AI-powered tools bring to improving EFL education in Indonesia, it is essential to assess the obstacles and constraints involved carefully. In the future, it is important to concentrate on creating AI applications tailored to the specific requirements of Indonesian learners and offering thorough training for teachers to use the advantages of these technologies fully. This literature review emphasizes AI's ability to transform language education while highlighting the importance of tackling the inevitable challenges to guarantee successful and long-lasting integration.

This study is especially important considering the growing digitalization in Indonesia and the government's efforts to enhance educational results using technology (Ministry of Education and Culture, 2020). However, successfully incorporating AI into EFL instruction hinges on a comprehensive grasp of teachers' backgrounds and the external

elements impacting their methods. The novelty of this research lies in its focus on the Indonesian context, exploring how sociocultural, technological, and pedagogical factors influence AI integration in EFL instruction.

Furthermore, the findings underscore that professional development for teachers is pivotal in realizing the full potential of AI in EFL classrooms. Comprehensive training not only equips educators with the technical know-how but also fosters a deeper understanding of how AI can enhance pedagogy. Without this foundation, there is a risk that AI tools may be misapplied, thereby limiting their transformative potential.

Another critical aspect is addressing ethical concerns associated with AI use, particularly issues of academic integrity and overreliance on technology. For example, while tools like ChatGPT can generate essays and solve complex language tasks, their misuse may hinder the development of essential skills such as critical thinking and original writing. Teachers must therefore guide students in responsibly using these technologies, encouraging active learning and problem-solving.

This study explores the incorporation of AI tools in English as a Foreign Language (EFL) classrooms by teachers, their perceptions of AI's impact, and the challenges they encounter, using in-depth interviews and thematic analysis. The main inquiries driving this study are:

1. How do EFL teachers in Indonesia integrate AI tools into their teaching practices?
2. What are the perceptions of EFL teachers in Indonesia regarding the effectiveness of AI tools in enhancing language learning?
3. What challenges do EFL teachers in Indonesia face when using AI tools, and how do they address them?

The findings contribute to the broader dialogue on AI's role in education, offering practical recommendations for teachers and policymakers interested in leveraging AI to enhance EFL instruction. In conclusion, this study examines the integration of AI in teaching English as a foreign language in Indonesia from the perspective of actively teaching teachers. The research provides important information about the benefits and limitations of AI tools in EFL learning to enhance teaching methods. This study aims to fill this gap by examining the perspectives, approaches, and challenges that English as a Foreign Language teachers face in Indonesia when incorporating artificial intelligence into their teaching.

METHOD

Research Design

This study used qualitative research methods, specifically a case study design, to explore the integration of AI tools in EFL instruction in Indonesia. The qualitative approach gives a thorough understanding of EFL teachers' experiences, perspectives, and challenges when using AI in their

classrooms (Yin, 2015). For this research, data from participants was gathered and analyzed through in-depth, semi-structured interviews and thematic analysis.

Participants

Five EFL teachers from Indonesia participated in the study after viewing an online advertisement by the researcher. The selection of these teachers was determined by their readiness to discuss their experiences using AI tools in EFL instruction. All participants were required to have a minimum of two years of teaching experience to ensure they had sufficient classroom exposure. The sample size was intentionally kept small to allow for in-depth exploration of each participant's experiences. While this limits the generalizability of the findings to a broader population, it provides rich qualitative insights into the specific context of AI integration in Indonesian EFL settings. Here are detailed profiles of the five EFL teachers who participated in the study with pseudonyms used for their identities.

Table 1. Profiles of the five EFL teachers who participated in the study

Participant	Origin	Gender	Age	Educational Background	Teaching Experience
Nadia	Jakarta	Female	35	Bachelor's in English Language Teaching Master's in Linguistics	12 years teaching English as a Foreign Language
Rahmat	Bandung	Male	40	Bachelor's in English Education Certificate in TESOL Certificate in Educational Technology	Over 15 years of teaching English to secondary students
Sari	Surabaya	Female	28	Bachelor's in English Literature Postgraduate Diploma in TEFL	Six years teaching English in language institutes
Adi	Yogyakarta	Male	45	Bachelor's in English Language Education Master's in Curriculum and Instruction	20 years of teaching English at various educational institutions
Maya	Medan	Female	32	Bachelor's in English Language Teaching Certificate in Online Language Teaching	Eight years of teaching English to students of all ages

Table 1 demonstrates a varied group of EFL teachers from different parts of Indonesia, with differences in gender, age, educational history, and teaching background. Even though they come from different backgrounds, they all have a shared interest in teaching language and a dedication to incorporating technology, specifically AI, into their teaching methods. Although they come from diverse backgrounds in origin, gender, and age, most of them have focused their education on teaching English or related fields, with additional qualifications in applied linguistics, TESOL, educational technology, or curriculum and instruction. Their combined teaching background spans 6 to 20 years, and they have a wide range of

practical knowledge and expertise in teaching English as a foreign language. In general, although every participant has different viewpoints and backgrounds, their collective commitment to improving language learning with technology highlights the significance of investigating the incorporation of AI tools in EFL education.

Data Collection

Data was collected through semi-structured interviews with the five EFL teachers. The semi-structured format allowed for in-depth exploration of specific topics while maintaining a standardized set of core questions to guide the interviews. The discussions covered AI tools in EFL classrooms, methods of integration, effectiveness perceptions, difficulties, strategies for overcoming obstacles, and effects on student engagement and learning results. Each interview lasted approximately 60 minutes and occurred on video conferencing platforms selected by the participants based on their preferences and availability. Before audio-recording interviews, consent was secured from all participants, and the interviews were later transcribed for analysis.

Data Analysis

The data was examined using a thematic analysis approach in accordance with the framework established by (Braun & Clarke, 2006). The process of thematic analysis involves identifying, analyzing, and discussing patterns (themes) identified in the data. The process started familiarizing with the data, with the interviews' transcripts being read multiple times to become fully familiar with their content. Initial observations and thoughts were documented to capture first impressions and possible patterns. Then, the information was methodically coded using qualitative data analysis software, with codes allocated to portions of the text deemed pertinent to the research inquiries. The codes were grouped into possible themes by looking at similarities and patterns, which were then reviewed and improved to ensure they accurately reflected the data. Each theme was given distinct definitions and names to represent the data accurately, and a thematic map was designed to visually show the connections between the themes. The last stage was to create a thorough report of the results, incorporating participant quotes to back up each theme.

Ethical Considerations

This research followed ethical standards to safeguard the well-being and rights of the subjects. Ethical considerations involved getting permission from all participants before interviews, safeguarding confidentiality and anonymity through the use of pseudonyms and removing identifiable information from transcripts and reports, permitting participants to exit the study anytime without repercussions, and safeguarding audio recordings and transcripts in password-protected files for data security.

Validity and Reliability

Various methods were used to improve the reliability and validity of the research. The triangulation technique involved gathering information from various participants to confirm the research results. Member checking required presenting the initial results to participants to confirm the interpretations' accuracy and credibility. Moreover, peer debriefing involved collaborating with colleagues and experts to review and discuss the coding and themes to verify their alignment with the data. This research methodology offers a strong structure for investigating the incorporation of AI in English language teaching in Indonesia, guaranteeing that the results are based on the participants' real-life experiences and offer valuable perspectives on the realities and obstacles of AI-supported language instruction.

RESULTS AND DISCUSSION

Results

The research concentrated on incorporating AI-driven writing aid tools in English as a Second Language (ESL) classrooms in Indonesia. Five EFL teachers who responded to an online advertisement joined the study voluntarily. The findings offer an understanding of how well AI tools like Grammarly and Google Translate and more advanced AI, such as ChatGPT by OpenAI and Claude AI, work, the difficulties they face, and general opinions about them.

Integration of AI in EFL in Indonesia

The findings indicate that teachers viewed AI writing tools favorably, acknowledging multiple educational benefits. Grammarly and similar software swiftly provided accurate assessments of students' writing, assisting in improving their grammar and vocabulary skills. Sari commented, "*Grammarly has been a game-changer for my students. They are now more confident in their writing and make fewer grammatical errors.*" This immediate feedback loop aligns with educational theories that emphasize the significance of prompt and precise feedback in language acquisition (Shute, 2008). Furthermore, Grammarly's capacity to detect and fix mistakes instantly provides a personalized level of attention that is difficult to offer in large-class settings.

The usefulness of Google Translate in helping with understanding and promoting bilingual communication in educational settings was also highlighted. Teachers discovered it to be very beneficial in aiding students' comprehension of intricate texts and in facilitating better communication with individuals who are not native speakers. Nevertheless, worries arose regarding the precision of translations, especially when dealing with idiomatic phrases and language specific to certain contexts. Adi noted, "*While Google Translate is helpful, it sometimes gives incorrect translations, which can confuse students rather than help them.*" This underscores the importance of students critically assessing AI-generated translations and

comprehending their constraints, simultaneously promoting critical thinking and language proficiency.

Lately, students have been using advanced AI tools like ChatGPT by OpenAI and Claude AI more often to help with writing tasks. Teachers recognized that these tools could offer extensive help by creating full essays or aiding with difficult language tasks. Maya remarked, "*ChatGPT and Claude AI can quickly provide students with well-structured essays, which is impressive. However, this also raises concerns about the students' understanding and ownership of the work.*" Although these tools provide advanced language generation features, using them leads to important concerns regarding academic honesty, student involvement, and improving writing abilities.

Sophisticated AI tools such as ChatGPT and Claude AI are adept at creating logical and contextually relevant text, aiding students in grasping superior writing formats and language use. Nevertheless, this benefit has two sides. While it offers a useful tool for learning by example, it also poses the danger of promoting superficial involvement with material, leading students to prioritize the result over the learning journey. This can impede the growth of important abilities like critical thinking, argumentation, and original thought.

Additionally, these sophisticated AI techniques have raised worries regarding academic integrity and the legitimacy of student assignments. Teachers were concerned that students could rely too heavily on content created by artificial intelligence, potentially hindering their creativity and capacity to produce unique work. Sari observed, "*Students can generate a complete essay using ChatGPT in minutes, but this doesn't help them learn how to write. It's like giving them a shortcut that skips the learning journey.*" This feeling reflects larger worries in educational technology regarding the balancing act between using digital tools and fostering meaningful, genuine learning experiences.

Furthermore, teachers also voiced worries that AI tools could inadvertently widen the achievement disparity between students who effectively use them and those who do not. Students with proficient digital literacy can enhance their learning using these tools. However, others may struggle with using them efficiently, leading to variations in learning outcomes.

Therefore, using AI tools like Grammarly, Google Translate, ChatGPT, and Claude AI in educational settings should be handled with care and a fair view despite their clear benefits in enhancing language acquisition and offering tailored assistance. Teachers must be ready to assist students in using technology ethically and proficiently, ensuring that it improves rather than replaces vital learning and language engagement processes. Attaining a balanced integration is crucial for unleashing the full potential of AI tools while also reducing the risks of overreliance and shallow engagement.

Teacher Perceptions and Effectiveness

The research on teacher views of AI showed a range of opinions, from strong approval to careful doubt. While a few teachers supported increasing the use of AI to improve English education, others expressed serious worries about the consequences of relying too much on these tools.

"In my understanding, teachers who are enthusiastic about incorporating AI view it as an amazing additional resource for students. I believe it's similar to having an additional teacher, don't you think? Always accessible, not limited to class times. I think that artificial intelligence can provide students with customized feedback and assist them with practicing outside of the classroom. I seem optimistic about the potential of AI to create equal opportunities in education, making learning more accessible, and improving student outcomes in the end." (Rahmat)

Nevertheless, conflicting opinions in the discussion emphasize a deeper and more detailed comprehension of AI's impact on education. Some teachers are concerned about the negative impacts of relying too much on AI, warning that it could reduce students' ability to think critically and independently. They expressed worries that the easy access to AI tools could lead to a reliance that hinders students' capacity to interact with educational content and build autonomous problem-solving abilities critically. This doubt stems from a more profound philosophical inquiry into the impact of technology on education and its ability to either give power or take it away from learners.

"Some of the teachers I spoke with were hesitant to embrace AI integration fully. They are in favor of using technology, but they are cautious about hastily adopting it without careful consideration. They're suggesting that we should be cautious, you understand? Before we begin giving students AI tools, we must ensure they have a strong base. I agree with that, cautioning us that technology is not a cure-all solution and that we must consider its impact on student autonomy and analytical thinking. It serves as a reminder to pause and reflect on the broader perspective before jumping in." (Nadia)

Additionally, some teachers acknowledge that students may lack the necessary skills and maturity to use AI responsibly. They warn against introducing AI into educational environments too soon before ensuring students grasp its ethical ramifications and constraints. This viewpoint emphasizes a key conflict between technological advancement and readiness in teaching, prompting significant inquiries about the timing and suitability of AI incorporation in the educational field.

"So, as I reflect on all these viewpoints, it's clear that the role of AI in education is far from simple. It's like a reminder to pause and really think about the implications before I dive in headfirst. It's not just about embracing new

technology; it's about considering the broader picture. I'm prompted to ponder how integrating AI aligns with our cultural values and ethical principles, and how it might shape our teaching methods. Ultimately, it's a call to keep the conversation going and explore further if I want to truly understand the future of education." (Adi)

In general, students who regularly used AI tools saw noticeable enhancements in their writing skills, including fewer grammar mistakes and increased usage of a wider vocabulary (Rusmiyanto et al., 2023). Tools such as Grammarly offer instant feedback to students, enabling them to improve their writing in real-time and gain confidence and control over language norms. As a result, students expressed increased motivation and confidence in their writing skills, as shown in a feedback survey where they also noted reduced stress and enhanced enjoyment when using Grammarly.

"You know, when it comes to AI tools for writing, I'm really impressed by how they go beyond just fixing grammar mistakes. They actually empower students to take charge of their writing process. It's like having a supportive tutor who's always there to provide feedback and help you grow as a writer." (Sari)

Nevertheless, the emergence of sophisticated AI technologies like ChatGPT and Claude AI brought about a more intricate scenario featuring both beneficial results and possible disadvantages. Even though these tools showed the ability to improve student writing with advanced language generation features, worries arose about the genuineness and richness of student learning encounters. Certain students felt a greater achievement in relation to their AI-supported tasks, noting that the tools helped simplify the writing process and generate refined results quickly. However, this emphasis on ease raised worries about the extent of students' engagement in critical thinking and personal problem-solving. Depending on artificial intelligence for assistance in writing can enhance quality in the short term, but it may also result in overlooking essential learning methods required for long-term skill development.

"When it comes to use advanced AI tools for education, it's akin to having a two-sided weapon, do you understand? Indeed, they have the ability to enhance writing proficiency and simplify tasks; however, excessively depending on them poses a potential threat. It's all about striking a balance where we can benefit from AI while also ensuring students don't lose the ability to write manually. Do you understand the need to maintain a retro feel while embracing modern technology trends?" (Rahmat)

The results of the study emphasize the changing possibilities of AI-driven tools in improving student writing abilities and promoting a mindset of ongoing growth. Nevertheless, they also highlight the significance of addressing AI integration from a critical perspective, making sure that

technological advancements are used to support, rather than supplant, the fundamental processes of learning and skill building. Teachers can maximize the power of AI tools to encourage students to be active and engaged learners in the digital era by finding a middle ground between efficiency and authenticity.

Challenges and Limitations

A significant concern for teachers is the danger of excessive dependence on artificial intelligence technology, which has been brought to light due to concerns over the lack of development that students have made in improving their writing talents. Tools like Grammarly, which are instantaneous and simple to use, may unwittingly contribute to developing a culture of reliance. Students can develop an unhealthy dependence on the correction suggestions, leading them to fail to examine or modify their work critically. By relying so heavily on the input of artificial intelligence, important talents such as self-editing, problem-solving, and linguistic originality may be constrained. Students run the danger of becoming less involved in their writing and more like spectators to criticism as a result, which may result in a reduction in their skill level and a loss of pride in the things they have completed.

"In the midst of all the excitement around artificial intelligence technology, I've seen a trend in the job that I do as a teacher. Concerns about the extent to which children are dependent on these gadgets are beginning to surface. To put it another way, it seems as if they are missing the essential mental processes that are required for genuine progress as authors." (Sari)

There are a few instances where artificial intelligence systems could sometimes make errors. Two examples are the difficulties that Google Translate has with more intricate language structures and sentences that are idiomatic. The risks associated with relying only on AI for translation are brought into focus by this. While these technologies may give rapid remedies, there is a possibility that they may unwittingly contribute to the dissemination of erroneous information and inhibit students from strengthening their language abilities. Because of this issue, the assistance provided by AI becomes less dependable and prompts us to ponder the educational implications of using technology in the context of offering proper guidance.

"In spite of the usefulness of AI technologies, I have seen them fail in a few different situations. It is not always the case that translations are correct, and sometimes, suggestions are completely off track. For one thing, it causes me to question the effectiveness of the methods I use to teach, and for another, it makes it more difficult for students to acquire a language." (Adi)

The creation of more powerful artificial intelligence models, such as ChatGPT and Claude AI, has introduced

additional complexities and caused further concerns. However, although these tools are excellent at creating a unified language, they tend to emphasize learning shortcuts rather than concentrating on the underlying processes that are essential for the development of skills. On the other hand, some teachers are concerned that students could prioritize speed over depth when writing essays. They might choose to hurry through their assignments rather than devote adequate time to developing their language abilities. As a result of this culture of shortcutting, the learning process is hampered, and the possibilities of students engaging in cognitive activities, engaging in critical thinking, and producing information are reduced.

"The attraction of efficiency radically upsets the traditional classroom practices that we have been using. Students who depend disproportionately on artificial intelligence shortcuts seem to be losing touch with the fundamentals of learning in their eagerness to get answers. There is a significant risk that the sincerity and comprehensiveness of the whole learning process will be compromised." (Rahmat)

Some teachers have reverted to more traditional methods of evaluating students, such as oral presentations or written assignments, to fight these challenges and prevent students' writing talents from deteriorating. On the other hand, this adjustment draws attention to a more significant educational dilemma: the question of how to include artificial intelligence technology while concurrently preserving authentic learning possibilities. Given the tension between simplicity of use and meaningful learning outcomes, as well as efficiency and effectiveness, it is necessary to have a smart strategy for integrating technology. This strategy should prioritize meaningful learning outcomes above rapid solutions (Hartono et al., 2023).

"*As we go farther into the realm of computers, it will be difficult for teachers to find a way to use the advantages of artificial intelligence while still maintaining a commitment to more conventional ways of instruction. Maintaining a delicate equilibrium while keeping in mind the need for critical thinking, self-directed learning, and genuine engagement throughout the process is a challenging task. Nadia, how are you doing?*" (Nadia)

It is clear that there is potential for using artificial intelligence in the classroom; however, it will not be able to address all current issues. Although there are clear benefits, like enhancing writing abilities, there are also possible downsides, like hindering critical thinking. In the future, teachers need to keep discussing how they can incorporate technology into their teaching methods. We can better prepare our students for the ever-changing digital world by finding a middle ground between using artificial intelligence to enhance learning outcomes and

compromising the authenticity of learning experiences that occur in the actual world.

Discussion

The findings of the study align with established theories in educational psychology regarding how AI tools enhance student writing achievements. Bandura's Social Cognitive Theory emphasizes the significance of self-regulation and feedback when acquiring new skills. AI tools such as Grammarly assist students in efficiently overseeing their learning process by providing prompt and detailed feedback, potentially leading to improved writing abilities (Bandura, 1986).

Empirical studies back these findings. An analysis conducted by (Graham et al., 2015) showed that feedback interventions, specifically ones that give corrective feedback on specific mistakes, greatly improve the quality of students' writing. Likewise, (Reiser, 2017) found that prompt feedback from AI systems enhances students' motivation and self-efficacy in writing assignments (Moybeka et al., 2023).

However, the study also highlights the diverse impacts of advanced AI technologies and underscores the importance of striking a balance between efficiency and authenticity in educational methods. This aligns with the cognitive load theory (CLT) that suggests cognitive resources are limited and excessive cognitive load can hinder learning (Sweller, 1988). While AI tools can boost efficiency by automating certain tasks, teachers must ensure that students' cognitive engagement and deep learning are not compromised.

Additionally, (Kirschner et al., 2006) found that teaching approaches focused on actively involving students with content result in better educational results. On the other hand, excessive help in academic settings may impede students' ability to develop critical thinking and problem-solving skills. Hence, teachers need to encourage the integration of AI in a way that enhances cognitive involvement and encourages self-examination, nurturing genuine learning opportunities.

Furthermore, studying how AI affects teachers raises important ethical and pedagogical issues. Numerous teachers are concerned about students relying excessively on AI tools, emphasizing the significance of ethical decision-making and technology integration. (Mukul & Büyüközkan, 2023) suggest in their SAMR model that technology should not just replace but also redefine and revolutionize learning activities. Relying too much on AI for everyday tasks could lead to getting stuck at a basic level of substitution, preventing opportunities for meaningful learning.

Furthermore, the focus on students' basic knowledge and moral comprehension before incorporating AI corresponds with principles of digital literacy and appropriate technology use. (Selwyn, 2010) contends that digital literacy includes more than just technical abilities; it also involves a thoughtful comprehension of technology's social, cultural, and ethical

impacts. Hence, it is crucial for teachers to give importance to teaching digital literacy and incorporating AI to enable students to become responsible digital citizens.

In the future, the study's results propose various directions for further research and educational practice. Long-term studies could investigate how the integration of AI affects students' writing abilities and cognitive growth in the long run. Moreover, qualitative investigation may explore students' views and interactions with AI technology, revealing intricate elements like motivation, autonomy, and self-control.

In terms of teaching methods, teachers should embrace a constructivist strategy when incorporating AI, enabling students to actively participate with AI tools as cognitive supports rather than just receiving feedback passively. This fits with Vygotsky's Zone of Proximal Development (ZPD) theory, which suggests learning happens through social engagement and structured assistance (Vygotsky & Cole, 1978). Teachers can support students in developing writing skills and enhancing cognitive engagement and metacognitive awareness by incorporating AI in the Zone of Proximal Development (ZPD).

The research results provide valuable perspectives on the intricate relationship between AI technology and pedagogical methods in EFL instruction. By basing the conversation on studies and theories from educational psychology and technology-enhanced learning, teachers can effectively manage the obstacles and advantages of AI incorporation, ensuring that technological progress improves genuine learning experiences.

CONCLUSION

This research illuminates the incorporation of AI-driven technology in English as a Foreign Language education in Indonesia, providing an understanding of perception, strategies, and challenges. It underscores the beneficial influence of AI on students' writing abilities, underscoring the necessity of maintaining a balance between efficiency and authenticity in educational settings. Ethical concerns and learning impacts emphasize the requirement for responsible AI incorporation guided by empirical data and theoretical frameworks. Longitudinal studies and constructivist teaching methods should be used in the future to enhance the advantages of AI and provide authentic learning experiences for students. This research adds to the continuing conversation about AI in education by offering useful suggestions for successful and ethical AI incorporation in EFL teaching environments.

ACKNOWLEDGEMENT

I would like to express my gratitude to all the participants in my study. Your contributions and insights were invaluable to this research. Thank you to my colleagues, the institutions, and agencies that supported this project. Your assistance and encouragement were greatly appreciated.

AUTHOR CONTRIBUTION STATEMENT

MAR was solely responsible for all aspects of this study, including conceptualization, data collection, analysis, and manuscript writing.

REFERENCES

Alkamel, M. A. A., & Chouthaiwale, S. S. (2018). The use of ICT tools in English language teaching and learning: A literature review. *Veda's Journal of English Language and Literature-JOELL*, *5*(2), 29–33.

Al-Raimi, M., Mudhsh, B. A., Al-Yafaei, Y., & Al-Maashani, S. (2024). Utilizing artificial intelligence tools for improving writing skills: Exploring Omani EFL learners' perspectives. *Forum for Linguistic Studies*, *6*(2). https://journals.bilpubgroup.com/index.php/fls/article/view/6575

Bandura, A. (1986). Social foundations of thought and action. *Englewood Cliffs, NJ*, *1986*(23–28), 2.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *Ieee Access*, *8*, 75264-75278.

Graham, S., Hebert, M., & Harris, K. R. (2015). Formative Assessment and Writing: A Meta-Analysis. *The Elementary School Journal*, *115*(4), 523–547. https://doi.org/10.1086/681947

Hartono, W. J., Nurfitri, N., Ridwan, R., Kase, E. B., Lake, F., & Zebua, R. S. Y. (2023). Artificial Intelligence (AI) Solutions In English Language Teaching: Teachers-Students Perceptions And Experiences. *Journal on Education, 6*(1), 1452-1461.

Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why Minimal Guidance During Instruction Does Not Work: An Analysis of the Failure of Constructivist, Discovery, Problem-Based, Experiential, and Inquiry-Based Teaching. *Educational Psychologist*, *41*(2), 75–86. https://doi.org/10.1207/s15326985ep4102_1

Lauder, A. (2008). The status and function of English in Indonesia: A review of key factors. *Makara Human Behavior Studies in Asia*, *12*(1), 9–20.

Link, S., Mehrzad, M., & Rahimi, M. (2022). Impact of automated writing evaluation on teacher feedback, student revision, and writing

improvement. *Computer Assisted Language Learning*, *35*(4), 605–634. https://doi.org/10.1080/09588221.2020.1743323

Mageira, K., Pittou, D., Papasalouros, A., Kotis, K., Zangogianni, P., & Daradoumis, A. (2022). Educational AI chatbots for content and language integrated learning. *Applied Sciences*, *12*(7), 3239.

Ministry of Education and Culture. (2020). *Strategic Plan of the Ministry of Education and Culture for 2020–2024. Jakarta: Ministry of Education and Culture, Republic of Indonesia.* Retrieved from https://gurudikdas.kemdikbud.go.id/news/Rencana-Strategis-Kementerian-Pendidikan-dan-Kebudayaan-Tahun-2020---2024

Moybeka, A. M., Syariatin, N., Tatipang, D. P., Mushthoza, D. A., Dewi, N. P. J. L., & Tineh, S. (2023). Artificial Intelligence and English classroom: the implications of AI toward EFL students' motivation. *Edumaspul: Jurnal Pendidikan, 7*(2), 2444-2454.

Mukul, E., & Büyüközkan, G. (2023). Digital transformation in education: A systematic review of education 4.0. *Technological Forecasting and Social Change*, *194*, 122664.

Nazari, N., Shabbir, M. S., & Setiawan, R. (2021). Application of Artificial Intelligence powered digital writing assistant in higher education: randomized controlled trial. *Heliyon*, *7*(5).

Palermo, C., & Wilson, J. (2020). Implementing automated writing evaluation in different instructional contexts: A mixed-methods study. *Journal of Writing Research*, *12*(1), 63–108.

Pawlak, M., & Kruk, M. (2022). *Individual differences in computer assisted language learning research*. Routledge. https://www.taylorfrancis.com/books/mono/10.4324/9781003240051/individual-differences-computer-assisted-language-learning-research-miroslaw-pawlak-mariusz-kruk

Ranalli, J., Link, S., & Chukharev-Hudilainen, E. (2017). Automated writing evaluation for formative assessment of second language writing: Investigating the accuracy and usefulness of feedback as part of argument-based validation. *Educational Psychology*, *37*(1), 8–25. https://doi.org/10.1080/01443410.2015.1136407

Reiser, R. A. (2017). Eight Trends Affecting the Field of Instructional Design and Technology: Opportunities and Challenges. In F.-Q. Lai & J. D. Lehman (Eds.), *Learning and Knowledge Analytics in Open*

Education (pp. 139–147). Springer International Publishing. https://doi.org/10.1007/978-3-319-38956-1_11

Rusmiyanto, R., Huriati, N., Fitriani, N., Tyas, N. K., Rofi'i, A., & Sari, M. N. (2023). The role of artificial intelligence (AI) in developing English language learner's communication skills. *Journal on Education, 6*(1), 750-757.

Selwyn, N. (2010). Looking beyond learning: Notes towards the critical study of educational technology. *Journal of Computer Assisted Learning*, *26*(1), 65–73. https://doi.org/10.1111/j.1365-2729.2009.00338.x

Seo, K., Tang, J., Roll, I., Fels, S., & Yoon, D. (2021). The impact of artificial intelligence on learner–instructor interaction in online learning. *International journal of educational technology in higher education*, *18*, 1-23.

Shute, V. J. (2008). Focus on Formative Feedback. *Review of Educational Research*, *78*(1), 153–189. https://doi.org/10.3102/0034654307313795

Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive science*, *12*(2), 257-285. https://doi.org/10.1016/0364-0213(88)90023-7

Vygotsky, L. S., & Cole, M. (1978). *Mind in society: Development of higher psychological processes*. Harvard university press.

Wang, X., Pang, H., Wallace, M. P., Wang, Q., & Chen, W. (2024). Learners' perceived AI presences in AI-supported language learning: A study of AI as a humanized agent from community of inquiry. *Computer Assisted Language Learning*, *37*(4), 814-840.

Wang, Y.-J., Shang, H.-F., & Briody, P. (2013). Exploring the impact of using automated writing evaluation in English as a foreign language university students' writing. *Computer Assisted Language Learning*, *26*(3), 234–257. https://doi.org/10.1080/09588221.2012.655300

Yin, R. K. (2015). *Qualitative research from start to finish*. Guilford publications.

Zhai, X., Chu, X., Chai, C. S., Jong, M. S. Y., Istenic, A., Spector, M., ... & Li, Y. (2021). A Review of Artificial Intelligence (AI) in Education from 2010 to 2020. *Complexity*, *2021*(1), 8812542.