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Detection of AI Utilization in Language Learning: A Study on the Implementation of Chat Gpt In Academic Writing Among Indonesian Higher Education Students

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Abstract

The integration of artificial intelligence (AI) technologies in educational settings has become increasingly prevalent, particularly in the realm of language learning In English context. This study aims to investigate the utilization of ChatGPT, an AI-powered conversational agent, in enhancing academic writing skills among Indonesian higher education students, specifically in the context of English language learning. Through a mixed-methods approach, including surveys and qualitative analysis of student writings, this research explores the effectiveness and impact of ChatGPT in assisting students with their academic writing tasks. he research findings indicate that ChatGPT is predominantly utilized in completing academic tasks, particularly in composing scholarly papers. Furthermore, Chat GPT is perceived as user-friendly with a high level of accuracy in locating relevant literature for assignments. The findings of this study contribute to the growing body of literature on AI integration in education and provide insights into the practical implications of using Chat GPT as a learning tool in English language education
Key words: AI, Academic Writing, and Chat GPT.

Introduction

Artificial intelligence plays a vital role in English language learning. Through this technology, students can access various learning resources, ranging from translation apps that aid in understanding English texts to online learning platforms that provide interactive exercises to enhance speaking, listening, reading, and writing skills (Zhang & Cao, 2022). Artificial intelligence systems can also provide immediate feedback to students, helping them identify errors in pronunciation or grammar, and adjust learning materials according to individual proficiency levels (Ericsson & Johansson, 2023; Yang et al., 2024). Thus, artificial intelligence not only expands accessibility to English language learning but also enhances its effectiveness by providing tailored and immersive experiences for each student.

However, students face several challenges when using artificial intelligence (AI) for learning. Firstly, there is a possibility of a digital divide among students who have access to AI technology and those who do not (Barra et al., 2024). Students who lack access or proficiency in using such technology may feel left behind in learning (Al-Adwan et al., 2024). Secondly, sometimes AI fails to adapt learning approaches to the individual needs of each student (Moxley & Archer, 2019) (Kashdan et al., 2013). This can result in a lack of customization in the learning experience, which may not be effective for all students(Muhsin.M.A, 2016) (Kolade et al., 2024). Additionally, privacy issues are also a concern, as the use of AI for learning often involves the collection of students' personal data that requires appropriate protection and security (Duan et al., 2024). Furthermore, there are concerns about the reliability and sustainability of AI in the educational context, as technology errors or failures can disrupt the learning process (Lee et al., 2018; Mccalla, 2000). Finally, the use of AI in education also raises ethical questions, including those

regarding fairness, bias, and its long-term impact on students' learning skills (Al Shloul et al., 2024) (Archambault et al., 2024). Therefore, while AI offers great potential to enhance learning, students need to understand and address these challenges to fully leverage its benefits.

One of the widely used AI in English language learning is ChatGPT. The utilization of ChatGPT in English language learning is extensive and beneficial. Firstly, ChatGPT can be used as a personal assistant for practicing English speaking. Users can practice everyday conversations with ChatGPT, which can respond to various situations and contexts Chat(Johnson et al., 2024) (K. Hussain et al., 2024). Additionally, ChatGPT can assist in improving grammar and vocabulary through corrections and suggestions provided during interactions (Menon & Shilpa, 2023) (Shorey et al., 2024). Besides speaking exercises, ChatGPT can also be used as a tool for writing practice. Users can write essays, short stories, or articles, then ask for opinions or revisions from ChatGPT to enhance their writing skills (Casal & Kessler, 2023; Giordano et al., 2024; Playfoot et al., 2024). Furthermore, ChatGPT can provide clear and detailed explanations about complex grammar rules or vocabulary (Javaid et al., 2023) (T. Hussain et al., 2024) (Steiss et al., 2024). Thus, the utilization of ChatGPT in English language learning not only improves speaking and writing skills but also expands knowledge about the language itself.

There are several studies that examine the utilization of ChatGPT in English language learning in Indonesia. The first relevant study is conducted by (Ni & Buehler, 2024), which investigates the use of ChatGPT in enhancing academic writing skills among Indonesian students. The research findings indicate that interaction with ChatGPT significantly improves academic writing skills, particularly in terms of correct structure and flow of writing. The second study, conducted by (Currie, 2023), highlights the importance of employing ChatGPT as a tool to provide automated feedback on students' academic writing. Findings from this study suggest that feedback provided by ChatGPT assists students in rectifying common errors in academic writing, such as grammar and improper citations. Subsequently, the third study conducted by (Zhou et al., 2023)focuses on the use of ChatGPT in facilitating collaboration among students in writing scientific papers. Results indicate that ChatGPT enables students to exchange ideas and provide feedback to each other efficiently, thereby enhancing the quality of their final writing. The fourth study, by (Hunt et al., 2024), deepens the understanding of how ChatGPT can assist students in overcoming creative blocks and discovering new ideas in academic writing. Findings show that using ChatGPT as a brainstorming tool helps students find new approaches to complex topics and improves their writing productivity. Lastly, the fifth study, conducted by (Einarsson et al., 2024), examines the impact of ChatGPT usage in expanding accessibility to academic writing education in Indonesia, especially in remote areas. Research findings indicate that the use of ChatGPT allows students in remote areas to access educational resources that were previously not widely available, thereby enhancing inclusivity in academic writing education in Indonesia.

Although ChatGPT has been widely used in various aspects of English language learning, there hasn't been a detailed analysis of its utilization in composing academic papers, especially in the field of English Language Education in Indonesia, particularly at the tertiary level, which is the focus of this research. Therefore, this study aims to analyze the role of ChatGPT in composing academic works for final semester students.

Method

This research study involved quantitative approaches. The quantitative approach entailed distributing an online survey to 120 seventh-semester undergraduate students in Indonesia who were studying English and were currently completing their theses. The survey encompassed

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questions regarding their experience using Chat GPT in academic writing, their perception of the effectiveness of this tool in aiding English language learning, and how often they utilized AI in their learning process. Furthermore, content analysis was performed on the texts generated by Chat GPT to evaluate their quality and suitability for academic writing demands. Through this combined approach, the research aimed to provide a comprehensive understanding of AI usage in English language learning among Indonesian students.

Results

In a survey study conducted among students, several statements were formulated regarding the use of AI in English language learning. The first subsequent statement pertained to the types of AI used by students. The results of respondents' answers are presented in the following data:

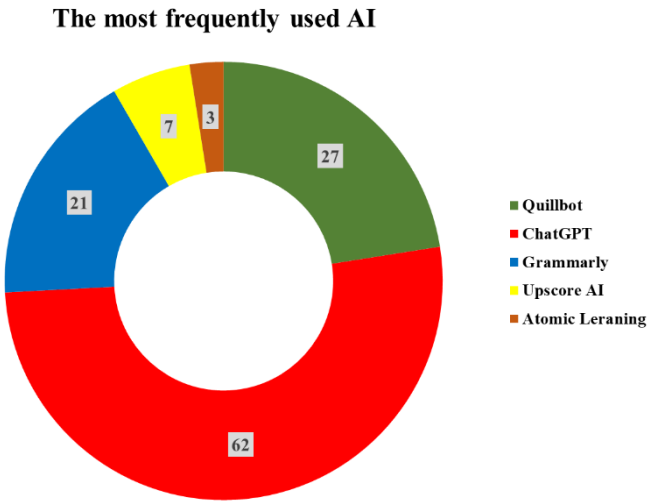


Figure 1. The most AI used by students in English Departement.

In a recent survey regarding the utilization of various types of artificial intelligence (AI), it was found that the majority of respondents opted to use AI in different forms. The survey results indicated that 72 respondents chose to use ChatGPT, an AI platform renowned for its ability to generate meaningful and responsive texts. This was followed by 27 respondents using Quillbot, a tool enabling users to swiftly and efficiently revise and edit texts. Additionally, 21 respondents opted for Grammarly, an AI platform focusing on enhancing grammar and writing quality. However, none of the respondents utilized Upscore AI or Atomic Learning, indicating that current user preferences tend towards established and proven-effective AI platforms.

The nets statement provided to 120 respondents about the use of AI dan Chat GPT in academic activity show the figure below:

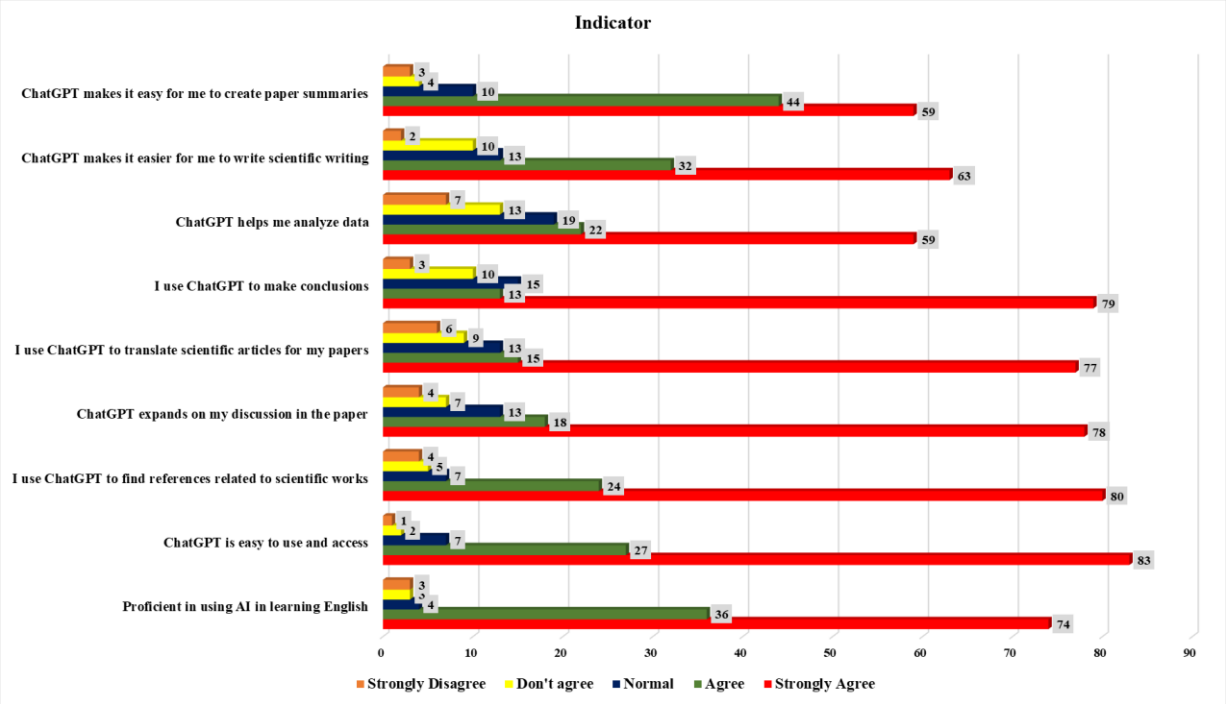


Figure 2. there were 9 statemen about the use of AI and ChatGPT in academic activity for English Students.

From the provided data, it is evident that students hold a highly positive perception towards the utilization of artificial intelligence (AI) in the process of learning the English language. A total of 74 respondents expressed strong agreement, while an additional 36 respondents stated agreement. This suggests that the majority of students believe AI can serve as an effective tool in enhancing their proficiency in English. Nonetheless, there is also a small fraction with differing views, with 4 respondents characterizing their stance as neutral, 3 respondents disagreeing, and another 3 respondents strongly disagreeing with the use of AI in learning English. Despite the variation in opinions, the majority of students appear to be convinced of the benefits of employing AI in augmenting their English language skills.

The subsequent statement addressed the utilization of Chat GPT for academic referencing. Based on data from 120 respondents, a significant majority, 83%, strongly agreed that Chat GPT is easy to use, while 22.5% agreed with the statement. 6.7% of respondents considered it average, while only 1.7% disagreed. None of the respondents strongly disagreed with the statement. Thus, a vast majority of respondents (105 out of 120) tend to agree that Chat GPT is an easy-to-use tool.

The subsequent statement concerned the utilization of Chat GPT for finding sources related to academic paper composition. Among the 120 respondents participating in the survey, the majority, approximately 70.8%, firmly expressed their "Strong Agreement" with the idea of using Chat GPT to aid in finding references related to academic paper assignments. 23.3% of respondents supported this notion by stating their "Agreement". Although only a small portion, approximately 5.8% of respondents, expressed a "Neutral" view on this matter. However, none of the respondents showed disagreement with the use of Chat GPT for this purpose. This indicates a significant level of agreement and overall positive acceptance of this concept in supporting academic paper composition activities.

In addition to the survey data from 120 respondents, researchers also conducted interviews with 12 Chat GPT users. From the statements provided, it is generally understood that contemporary students are capable of utilizing AI to complete college assignments. The results

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of these interviews can be interpreted as indicating that students use artificial intelligence (AI) to complete college assignments because AI offers several significant benefits. Firstly, AI can assist in processing and analyzing complex data quickly and accurately, enabling students to draw better and deeper conclusions from the data they encounter. Additionally, AI can provide assistance in completing repetitive tasks through automation, saving students time and effort to focus on the creative and analytical aspects of these tasks. Furthermore, AI often provides additional insights or alternative solutions to complex problems, helping students expand their understanding of the subjects they study. Finally, the use of AI in college assignments also helps students understand and adapt to the increasingly important technological developments in various fields of study and industries, preparing them for future challenges involving advanced technology integration.

Moreover, ChatGPT is the most favored AI platform among students. Some students stated that "ChatGPT is a very helpful tool for us to compose academic papers; many papers I presented were aided by ChatGPT." This statement was generally expressed by students who found various conveniences in using ChatGPT. The results can be summarized that the tendency of students to choose Chat GPT for composing academic papers is primarily influenced by the ease, affordability, and speed offered by this technology. With the ability to provide relevant information and efficiently solve problems, Chat GPT becomes an attractive choice for students in need of assistance in composing their academic papers. Additionally, the interactive and responsive features of Chat GPT allow students to receive instant assistance without waiting time to consult with professors or search for references from other sources. Furthermore, in this digital era where internet access is readily available, students can quickly access Chat GPT whenever and wherever they need it. However, it is important for students to ensure the authenticity and validity of their academic papers by conducting careful research and verifying the information provided by Chat GPT.

Discussion

Based on the findings of a survey administered to students regarding the utilization of AI platforms, it has been noted that contemporary students utilize these platforms to structure their academic tasks, including those within the English Education field in Indonesia. The survey results suggest that the integration of AI has emerged as a predominant trend in the current era, serving as a supplementary tool in academic endeavors. According to (Chauncey & McKenna, 2023), Artificial intelligence (AI) presents itself as a potentially promising avenue, offering support for teaching and learning within modern educational settings, while also acknowledging ethical and responsible considerations.

Advantages of AI in learning English include its ability to process and analyze large amounts of text data quickly. AI can understand the context and nuances in English, as well as learn patterns in sentence structure and vocabulary. This enables AI to provide more accurate recommendations in terms of grammar, spelling, and writing style (Peres et al., 2023). Furthermore, AI's ability to learn continuously means it can continually improve the quality of translation and understanding of English over time (Kolade et al., 2024). However, weaknesses of AI in learning English also need to be considered. One issue is that AI may struggle to understand highly specific contexts or nuances in more informal English (AlShaikh et al., 2024). This can result in less accurate translations or misunderstandings of the text. Additionally, depending on the training data used, AI is also vulnerable to biases and errors that may occur in the understanding or interpretation of English (Mendoza et al., 2024). Alongside this, AI's

ability to learn from data can be a flaw if the data used does not represent the diversity present in English or if there is a lack of monitoring in the AI learning process.

In the use of AI, the ChatGPT platform is the easiest reference for students. Survey results have shown that ChatGPT can provide a deep interactive learning experience by directly responding to users' questions and requests (Al Shloul et al., 2024). This allows learners to practice speaking and writing in English comfortably and without pressure. Furthermore, interviews with students explain that ChatGPT provides instant access to a variety of educational resources, including grammar explanations, vocabulary, and text-based exercises. This helps learners to improve their overall understanding of English. Moreover, according to them, ChatGPT can be customized to individual learners' abilities, allowing for personalized and efficient learning. With this combination of strengths, ChatGPT becomes a powerful and versatile tool in supporting English language learning for all proficiency levels (Rejeb et al., 2024).

The most common activity performed by students is referencing for papers or academic works. According to their perspectives, ChatGPT greatly assists students in finding references for English language studies papers. With its broad language capabilities and continuously updated knowledge, ChatGPT can provide advice on reliable sources, academic journals, articles, and books relevant to the topic being researched (Al Shloul et al., 2024). Additionally, they can ask questions about specific topics, and ChatGPT will provide recommendations accordingly. Another perspective states that ChatGPT can also help in formulating research questions, analyzing data, and providing additional insights that can enrich their academic work. With the assistance of ChatGPT, students can obtain in-depth and relevant references to support their arguments in their academic papers (Wang et al., 2024).

Survey results also found that ChatGPT is very user-friendly. ChatGPT is highly user-friendly for students because of its ability to provide assistance in various aspects of academic activities (Bouteraa et al., 2024). With an intuitive and responsive interface, students can easily ask questions, request advice, or even ask for explanations about specific topics. Similarly, from interviews with students, they stated that ChatGPT's ability to provide relevant and reliable information quickly makes it a very useful tool in research, completing assignments, or even just gaining additional understanding of a concept. Additionally, ChatGPT can help students generate new ideas, improve their writing, or even practice for presentations by providing useful feedback (Yilmaz-Na & Sönmez, 2023). With easy access and extensive capabilities, ChatGPT becomes an invaluable partner for students in their academic journey.

Conclusion

The integration of artificial intelligence (AI) platforms, particularly ChatGPT, has become a prevalent trend among contemporary students, significantly impacting various aspects of their academic endeavors, including English language learning and academic paper composition. The positive perception of AI among students is evident, with a majority expressing strong agreement or agreement with its utilization for enhancing English proficiency and aiding in academic tasks. AI, particularly ChatGPT, offers several advantages in learning English, such as its ability to process large amounts of text data quickly, understand context and nuances, and provide accurate recommendations. While AI's continuous learning capability improves translation and understanding over time, it may struggle with specific contexts and is susceptible to biases if not monitored carefully. ChatGPT stands out as the preferred AI platform among students due to its ease of use, affordability, and speed. It provides an interactive learning experience, instant access to educational resources, and personalized assistance, making it a powerful tool for English language learning across proficiency levels. In academic paper

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composition, ChatGPT facilitates the process of finding relevant references, formulating research questions, analyzing data, and providing additional insights. Its user-friendly interface and ability to provide reliable information quickly make it indispensable for students in their research and assignments. Overall, the widespread acceptance and utilization of AI platforms like ChatGPT among students underscore their effectiveness in supporting various aspects of academic endeavors, reflecting a paradigm shift in how students approach learning and research tasks in the digital age..

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References

Al Shloul, T., Mazhar, T., Abbas, Q., Iqbal, M., Ghadi, Y. Y., Shahzad, T., Mallek, F., & Hamam, H. (2024). Role of activity-based learning and ChatGPT on students' performance in education. *Computers and Education: Artificial Intelligence*, *6*(August 2023), 100219. https://doi.org/10.1016/j.caeai.2024.100219

Al-Adwan, A. S., Alsoud, M., Li, N., Majali, T., Smedley, J., & Habibi, A. (2024). Unlocking future learning: Exploring higher education students' intention to adopt meta-education. *Heliyon*, *10*(9). https://doi.org/10.1016/j.heliyon.2024.e29544

AlShaikh, R., Al-Malki, N., & Almasre, M. (2024). The implementation of the cognitive theory of multimedia learning in the design and evaluation of an AI educational video assistant utilizing large language models. *Heliyon*, *10*(3), e25361. https://doi.org/10.1016/j.heliyon.2024.e25361

Archambault, S. G., Ramachandran, S., Acosta, E., & Fu, S. (2024). Ethical dimensions of algorithmic literacy for college students: Case studies and cross-disciplinary connections. *Journal of Academic Librarianship*, *50*(3), 102865. https://doi.org/10.1016/j.acalib.2024.102865

Barra, C., Grimaldi, M., Muazzam, A., Troisi, O., & Visvizi, A. (2024). Digital divide, gender gap, and entrepreneurial orientation: How to foster technology adoption among Pakistani higher education students? *Socio-Economic Planning Sciences*, *93*(August 2023), 101904. https://doi.org/10.1016/j.seps.2024.101904

Bouteraa, M., Chekima, B., Thurasamy, R., Bin-Nashwan, S. A., Al-Daihani, M., Baddou, A., Sadallah, M., & Ansar, R. (2024). Open Innovation in the Financial Sector: A Mixed-Methods Approach to Assess Bankers' Willingness to Embrace Open-AI ChatGPT. *Journal of Open Innovation: Technology, Market, and Complexity*, *10*(1), 100216. https://doi.org/10.1016/j.joitmc.2024.100216

Casal, J. E., & Kessler, M. (2023). Can linguists distinguish between ChatGPT/AI and human writing?: A study of research ethics and academic publishing. *Research Methods in Applied Linguistics*, *2*(3), 100068. https://doi.org/10.1016/j.rmal.2023.100068

Chauncey, S. A., & McKenna, H. P. (2023). A framework and exemplars for ethical and responsible use of AI Chatbot technology to support teaching and learning. *Computers and Education: Artificial Intelligence*, *5*(November), 100182. https://doi.org/10.1016/j.caeai.2023.100182

Currie, G. M. (2023). Academic integrity and artificial intelligence: is ChatGPT hype, hero or heresy? *Seminars in Nuclear Medicine*, *53*(5), 719–730. https://doi.org/10.1053/j.semnuclmed.2023.04.008

Duan, D., Long, C., & Zhang, H. (2024). An authentic assessment method for cordyceps sinensis. *Journal of Pharmaceutical and Biomedical Analysis*, *239*(December 2023), 115879. https://doi.org/10.1016/j.jpba.2023.115879

Einarsson, H., Lund, S. H., & Jónsdóttir, A. H. (2024). Application of ChatGPT for automated problem reframing across academic domains. *Computers and Education: Artificial Intelligence*, *6*(November 2023), 100194. https://doi.org/10.1016/j.caeai.2023.100194

Ericsson, E., & Johansson, S. (2023). English speaking practice with conversational AI: Lower secondary students' educational experiences over time. *Computers and Education: Artificial Intelligence*, *5*(September), 100164. https://doi.org/10.1016/j.caeai.2023.100164

Giordano, V., Spada, I., Chiarello, F., & Fantoni, G. (2024). The impact of ChatGPT on human skills: A quantitative study on twitter data. *Technological Forecasting and Social Change*, *203*(March 2023), 123389. https://doi.org/10.1016/j.techfore.2024.123389

Hunt, K., Behlendorf, B., Wang, S., Mukherjee, S., & Zhuang, J. (2024). Near-repeat terrorism: Identifying and analyzing the spatiotemporal attack patterns of major terrorist organizations. *Expert Systems with Applications*, *249*(PB), 123712. https://doi.org/10.1016/j.eswa.2024.123712

Hussain, K., Khan, M. L., & Malik, A. (2024). Exploring audience engagement with ChatGPT-related content on YouTube: Implications for content creators and AI tool developers. *Digital Business*, *4*(1), 100071. https://doi.org/10.1016/j.digbus.2023.100071

Hussain, T., Wang, D., & Li, B. (2024). The influence of the COVID-19 pandemic on the adoption and impact of AI ChatGPT: Challenges, applications, and ethical considerations. *Acta Psychologica*, *246*(December 2023), 104264. https://doi.org/10.1016/j.actpsy.2024.104264

Javaid, M., Haleem, A., Singh, R. P., Khan, S., & Khan, I. H. (2023). Unlocking the opportunities through ChatGPT Tool towards ameliorating the education system. *BenchCouncil Transactions on Benchmarks, Standards and Evaluations*, *3*(2), 100115. https://doi.org/10.1016/j.tbench.2023.100115

Johnson, S., Owens, E., Menendez, H., & Kim, D. (2024). Using ChatGPT-generated essays in library instruction. *Journal of Academic Librarianship*, *50*(2), 102863. https://doi.org/10.1016/j.acalib.2024.102863

Kashdan, D. S., Schwartz, J. A., & Rapoport, H. (2013). Education for Critical Thinking Lieutenant. In *Military Review* (Vol. 1, Issue 2). https://doi.org/10.1017/CBO9780511840272.012

Kolade, O., Owoseni, A., & Egbetokun, A. (2024). Is AI changing learning and assessment as we know it? Evidence from a ChatGPT experiment and a conceptual framework. *Heliyon*, *10*(4), e25953. https://doi.org/10.1016/j.heliyon.2024.e25953

Lee, M. H., Yun, J. H. J., Pyka, A., Won, D. K., Kodama, F., Schiuma, G., Park, H. S., Jeon, J., Park, K. B., Jung, K. H., Yan, M. R., Lee, S. Y., & Zhao, X. (2018). How to respond to the Fourth Industrial Revolution, or the second information technology revolution? Dynamic new combinations between technology, market, and society through open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, *4*(3). https://doi.org/10.3390/joitmc4030021

Mccalla, G. (2000). The Fragmentation of Culture, Learning, Teaching and Technology: Implications for the Artificial Intelligence in Education Research Agenda in 2010. *International Journal of Artificial Intelligence in Education*, *11*, 177–196.

Copyright © 2024 The Author(s)

Menon, D., & Shilpa, K. (2023). "Chatting with ChatGPT": Analyzing the factors influencing users' intention to Use the Open AI's ChatGPT using the UTAUT model. *Heliyon*, *9*(11), e20962. https://doi.org/10.1016/j.heliyon.2023.e20962

Moxley, K., & Archer, A. (2019). Writing centres as dialogic spaces: Negotiating conflicting discourses around citation and plagiarism. *Stellenbosch Papers in Linguistics Plus*, *57*(2008), 25–37. https://doi.org/10.5842/57-0-808

Muhsin.M.A. (2016). *The Developtment of Creative Writing Model on Short Story Based Siri ' Na Pacce at the XI Class Senior High Schools in Makassar*. *6*(1), 52–58. https://doi.org/10.5901/jesr.2016.v6n1p52

Ni, B., & Buehler, M. J. (2024). MechAgents: Large language model multi-agent collaborations can solve mechanics problems, generate new data, and integrate knowledge. *Extreme Mechanics Letters*, *67*(Ml). https://doi.org/10.1016/j.eml.2024.102131

Peres, R., Schreier, M., Schweidel, D., & Sorescu, A. (2023). Editorial: On ChatGPT and beyond: How generative artificial intelligence may affect research, teaching, and practice. *International Journal of Research in Marketing*, *40*(2), 269–275. https://doi.org/10.1016/j.ijresmar.2023.03.001

Playfoot, D., Quigley, M., & Thomas, A. G. (2024). Hey ChatGPT, give me a title for a paper about degree apathy and student use of AI for assignment writing. *The Internet and Higher Education*, *62*(March), 100950. https://doi.org/10.1016/j.iheduc.2024.100950

Rejeb, A., Rejeb, K., Appolloni, A., Treiblmaier, H., & Iranmanesh, M. (2024). Exploring the impact of ChatGPT on education: A web mining and machine learning approach. *International Journal of Management Education*, *22*(1), 100932. https://doi.org/10.1016/j.ijme.2024.100932

Shorey, S., Mattar, C., Pereira, T. L. B., & Choolani, M. (2024). A scoping review of ChatGPT's role in healthcare education and research. *Nurse Education Today*, *135*(February), 106121. https://doi.org/10.1016/j.nedt.2024.106121

Steiss, J., Tate, T., Graham, S., Cruz, J., Hebert, M., Wang, J., Moon, Y., Tseng, W., Warschauer, M., & Olson, C. B. (2024). Comparing the quality of human and ChatGPT feedback of students' writing. *Learning and Instruction*, *91*(February), 101894. https://doi.org/10.1016/j.learninstruc.2024.101894

Wang, L., Chen, X., Wang, C., Xu, L., Shadiev, R., & Li, Y. (2024). ChatGPT's capabilities in providing feedback on undergraduate students' argumentation: A case study. *Thinking Skills and Creativity*, *51*(November 2023), 101440. https://doi.org/10.1016/j.tsc.2023.101440

Yang, Y. F., Tseng, C. C., & Lai, S. C. (2024). Enhancing teachers' self-efficacy beliefs in AI-based technology integration into English speaking teaching through a professional development program. *Teaching and Teacher Education*, *144*(October 2023), 104582. https://doi.org/10.1016/j.tate.2024.104582

Yilmaz-Na, E., & Sönmez, E. (2023). Having qualified arguments: Promoting Pre-service teachers' critical thinking through deliberate computer-assisted argument mapping practices. *Thinking Skills and Creativity*, *47*(December 2022). https://doi.org/10.1016/j.tsc.2022.101216

Zhang, Y., & Cao, J. (2022). Design of English teaching system using Artificial Intelligence. *Computers and Electrical Engineering*, *102*(June), 108115. https://doi.org/10.1016/j.compeleceng.2022.108115

Zhou, W., Wang, Z., Han, F., & Hong, L. (2023). Chinese digestive surgery interns' learning quality and English reading proficiency during COVID-19 pandemic: Comparison between

face-to-face versus WeChat teaching and learning. *Heliyon*, *9*(2). https://doi.org/10.1016/j.heliyon.2023.e13434