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AI Chatbots in Education: Benefits, Risks, and Misuse Prevention

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Abstract

Technological advancements, particularly the rise of AI chatbots like ChatGPT, are transforming educational landscapes, offering both significant opportunities and challenges. This paper explores the dual nature of AI chatbots in education, particularly focusing on their impact on students' writing skills and academic integrity. AI chatbots are found to enhance writing proficiency by assisting with organizing content, improving grammar, refining vocabulary, and fostering critical thinking. They also aid students in managing revision processes, providing instant feedback, and generating ideas, which helps in producing polished and comprehensive academic work. However, the widespread use of AI tools raises concerns about plagiarism, over-reliance on technology, and the potential for generating inaccurate or misleading information. These risks highlight the need for clear policies and strategies to ensure the responsible use of AI in academic settings. The paper advocates for AI literacy programs, transparent guidelines, and a balanced approach to AI integration, urging educators to use AI as a complement to, rather than a replacement for, traditional teaching methods. It calls for further research on the long-term effects of AI on cognitive development and creativity, as well as the ethical implications surrounding its use in education.

Keywords: *AI Chatbots; ChatGPT; Educational Technology; Academic Integrity*

Introduction

Technological advancements have continually reshaped human life, with innovations such as typewriters and mass printing transforming communication. Today, AI chatbots, particularly ChatGPT, are significantly impacting sectors like education. Research shows that ChatGPT helps students organize essays, refine grammar, improve writing proficiency, and generate better outlines, which boosts motivation and self-efficacy. However, like a double-edged sword, AI chatbots present both benefits and risks. While they enhance writing skills, they also raise concerns about academic integrity, with risks such as plagiarism and over-reliance that can undermine independent thinking. Studies highlight ethical issues like biased content and academic dishonesty, exacerbated by AI's widespread availability. To ensure that AI chatbots foster positive learning outcomes, it is crucial to implement preventive measures that safeguard academic integrity and human creativity. Despite the growing interest in AI chatbots, there is limited research on how English Language Teaching (ELT) lecturers in Indonesia perceive these tools' benefits and risks and what preventive measures they use to mitigate misuse. This literature review seeks

to fill that gap by exploring strategies that might be employed to address the potential challenges posed by AI chatbots.

The Impact of ChatGPT on Students' Writing Skills

Xu and Jumaat (2024) explored ChatGPT's effectiveness in supporting 60 junior English majors at a Chinese university enrolled in a "Business English Writing" course. The result showed the students found ChatGPT particularly helpful in both the planning and revision stages. In planning, they appreciated its assistance in organizing content, structuring essays, and generating outlines and templates for business writing tasks. During revision, they valued ChatGPT's support in refining sentence structure, improving clarity, and providing grammar feedback, which led to well-organized final drafts. By managing technical aspects efficiently, students were able to focus more on content development, and many expressed their intention to continue using ChatGPT in their writing endeavors.

Similarly, Xiao (2024) conducted a study involving 51 second-year university students enrolled in an English writing course at a foreign language studies university in China. Their finding highlights that ChatGPT significantly enhanced EFL students' writing proficiency, particularly in content, organization, and language use. By assisting students in elaborating on ideas, incorporating specific examples, and refining their focus, ChatGPT contributed to the development of more comprehensive content. In terms of structure, ChatGPT supported students in achieving more cohesive and logically organized arguments. Language use also saw improvements, with the tool offering vocabulary suggestions and grammar corrections, encouraging students to use more discipline-specific terminology while improving grammatical accuracy. These combined improvements led to writing that was not only clearer and more fluent but also more professionally polished.

Furthermore, Xu et al. (2024) investigated ChatGPT's impact on academic writing strategies among 70 first-year graduate students in humane science at a public university in China. Findings showed that ChatGPT significantly improved outline quality by prompting students to add crucial elements, such as conclusions, which led to more coherent and complete structures. ChatGPT also encouraged students to expand on ideas and add relevant examples, deepening the content of their work. Vocabulary and grammar suggestions enabled students to replace general language with discipline-specific terms and correct errors that arose from direct translations, creating more polished drafts. Students valued ChatGPT's ability to streamline the writing process by quickly generating organized content, allowing them to focus more on idea development.

In another study, Tica and Krsmanović (2024) surveyed 79 university students enrolled in an English Language for IT course. The study provided nuanced insights into students' perceptions of ChatGPT as a writing aid in supporting English language assignments. A substantial portion of students reported using ChatGPT frequently for structured writing tasks. Notably, it was particularly popular for business emails and academic papers. In these tasks, students valued the tool's speed and accuracy due to finding it a reliable asset for improving the technical quality of their work. Students also appreciated ChatGPT's efficiency in offering immediate corrections for grammar, punctuation, and sentence structure. They felt these quick adjustments helped them produce more polished and refined work, enhancing the overall quality of their writing. Proofreading and sentence correction were the most appreciated features. Students highlighted these features as particularly beneficial for enhancing formal aspects of their writing which aligned with their professional and academic goals.

Punar Özçelik and Yangın Ekşi (2024) studied the impact of ChatGPT on learning register across different writing tasks among 11 undergraduate students at a state university in Türkiye. The participants came from the Faculty of Engineering, Faculty of Economics and Administrative Sciences, and Faculty of Education. They appreciated ChatGPT's role in enhancing self-editing skills, especially in formal writing tasks. Through ChatGPT's corrections, students improved the grammar, structure, and professional tone

of their writing. Participants noted that ChatGPT "leveled up" their writing in which some students found that it could elevate text from intermediate to advanced levels.

Teng (2024) conducted a study with 45 EFL learners enrolled in two classes of an English Practical Writing course in Macau. Findings showed that students using ChatGPT experienced significant improvements in motivation, self-efficacy, and engagement. The AI's practical feedback encouraged students to enhance their writing in which some noted that comparing AI and teacher feedback sparked their curiosity. ChatGPT helped students identify and correct grammar issues independently, boosting their confidence. Additionally, the immediate and specialized feedback promoted active participation and ongoing improvement which allowed students to make real-time adjustments and see progress in their writing.

Slamet (2024) explored perspectives among EFL students regarding ChatGPT's potential as a digital language learning assistant. Students largely perceive ChatGPT as a valuable tool in language learning which offers support in skill acquisition, engagement, and motivation. They appreciate its personalized feedback, which helps identify areas for improvement and align with their learning needs. This support enables them to address specific challenges in language acquisition. ChatGPT's feedback encourages deeper language development, with students noting it helps refine their language use and boosts confidence in writing and speaking. The real-time and tailored feedback is motivating which allowed students to improve their skills immediately and feel a sense of progress. Collaborative activities with ChatGPT also enhance interaction and peer feedback, enriching the learning experience.

These studies are just a few examples that highlight the positive aspects of AI chatbots in education. Like any other tools, the benefits of AI chatbots should be embraced and utilized effectively rather than dismissed. When integrated properly into learning environments, AI chatbots can assist students in tasks that might otherwise take up too much time. By streamlining certain processes, these tools have the potential to enhance productivity, improve learning efficiency, and provide personalized support which may help students achieve better outcomes.

AI Chatbots against Written Assessments

AI chatbots have demonstrated proficiency in passing written assessments across a wide range of academic fields. In the field of physics education, Yeadon et al. (2023) investigated the capabilities of ChatGPT in generating high-quality short-form essays within the "Physics in Society" module at Durham University. This module evaluates students on topics related to the history, philosophy, and ethics of physics and includes an exam with five essay questions. A sample of ten AI-generated scripts was marked by five independent markers and achieved an average score of 71±2% which is comparable to typical student scores. The results suggest that AI-generated essays can attain first-class marks. This result challenged traditional assessment methods and raising concerns about academic integrity. The study concludes that while AI poses a threat to authentic assessment, it also presents opportunities to rethink evaluation strategies and enhance educational practices, such as utilizing AI for writing workshops and as personalized tutoring tools.

In the field of business education, Terwiesch (2023) examined ChatGPT and its ability to perform tasks typically associated with Master of Business Administration (MBA) graduates, particularly in the context of an Operations Management final exam. They found that ChatGPT excelled in basic operations management and process analysis questions. The AI chatbot provided accurate and well-explained answers, especially for case studies. However, it occasionally made significant errors in simple calculations and struggled with advanced process analysis problems, particularly those involving multiple products and stochastic effects. Notably, ChatGPT demonstrated adaptability by modifying its responses based on human hints. Overall, it would have received a B to B- grade on the exam. These findings emphasize the need for revised exam policies in business education and curriculum designs that foster collaboration between humans and AI, and a focus on teaching creative problem-solving skills.

In legal studies, Katz et al. (2023) evaluated the performance of the GPT-4 version of ChatGPT on the Uniform Bar Exam (UBE), which consists of three components: the Multistate Bar Exam (MBE), the Multistate Essay Exam (MEE), and the Multistate Performance Test (MPT). The lowest passing threshold, set by Alabama, Minnesota, Missouri, New Mexico, and North Dakota, is 260. On the other hand, the highest passing threshold, set by Arizona, is 273. The study found that GPT-4 achieved an impressive overall score of 297 which surpassed even the highest minimum passing threshold. Despite these promising results, the study emphasized the need for safeguards in its application due to potential limitations, such as hallucination of sources and ethical concerns.

Finally, in biomedical sciences, Williams (2024) compared ChatGPT, Bing, and Bard by prompting each with essay questions from various undergraduate and postgraduate biomedical sciences courses. AI-generated responses were evaluated by independent markers using the UK's Frameworks for Higher Education Qualifications (FHEQ) to determine their alignment with academic standards. Findings indicate that ChatGPT outperformed Bing and Bard in terms of scientific accuracy, detail, and context across all levels. Moreover, all AI chatbots performed better at the postgraduate level than the undergraduate level. In short, these tools demonstrated the capacity to produce content that could potentially pass course tests. However, issues such as inadequate or falsified references, especially with Bing highlighted gaps in fully meeting academic standards.

These studies shows that the presence of AI chatbots challenge assessment methods and prompts reevaluation of grading standards. Additionally, these studies underscores both the opportunities AI presents as an academic aid and the need for revised policies in higher education. As AI chatbots become more integrated into education, institutions may need to design new assessment strategies, incorporate AI into curricula, and implement preventive measures. These measures will ensure that AI complements, rather than undermines, authentic learning and evaluation.

AI Chatbots and Their Risks towards Students

One of the major risks in the academic community related to this issue is plagiarism. Before the emergence of AI chatbots, students might have hired contract cheating services to complete their work or simply copied and pasted others' work as their own. This issue has intensified with the rise of AI chatbots, especially those that are freely available, such as ChatGPT, Bing, Perplexity, and others. In the modern world we live in today, Noam Chomsky referred to this new form of plagiarism as "high-tech plagiarism" (Stewart, 2023).

Xu and Jumaat (2024) emphasized that there is an ongoing fear that students and researchers might misuse AI-generated content by presenting it as original work without proper verification. Mogavi et al. (2023) similarly highlighted that ChatGPT's capacity to generate contextually coherent text allows students to effortlessly plagiarize, paraphrase, or alter content in their writing assignments and exams. In addition, Kooli (2023) pointed out that AI chatbots have the potential to create essays or other written tasks, potentially leading to plagiarism and diminishing the educational experience for every student.

Another significant risk is the tendency of AI chatbots to generate inaccurate references, which can mislead students and further compromise the integrity of their academic work. Mogavi et al. (2023) highlighted that while AI models like ChatGPT aim to generate relevant content, they can inadvertently produce misleading or incorrect information due to limitations in training data or inherent biases. Students, who are often not experts, may mistakenly consider the information provided by AI chatbots to always be correct. For this reason, Kooli (2023) emphasized the importance of using chatbots as tools to assist users rather than replace them. He further stressed that users must carefully assess and verify the information provided by chatbots before using it. This issue is particularly concerning in educational settings since inaccurate information can mislead students.

Furthermore, the instant feedback provided by AI chatbots may lead to over-reliance on these tools and affect students in the long run. Teng (2024) pointed out concerns that overreliance on technology might impede critical thinking. Similarly, Kooli (2023) argued that the use of chatbots could result in a decline in independent problem-solving abilities, in addition to critical thinking skills. He further noted that this could lead to a generation of students who are overly reliant on technology and unable to think critically or creatively. Mogavi et al. (2023) further argued that overreliance on AI chatbots may promote superficial learning habits, reduce social skills and effective communication abilities, impede the development of essential psychological traits, and lead students to disregard verification and exploration of alternative views.

Preventive Measures against AI Chatbos' Risks

Clear policies are essential, especially in educational settings where emerging technologies like AI are becoming increasingly prevalent. Without clear guidelines, confusion may arise for both educators and students. Verma (2023) highlighted tensions among educational professionals at Texas A&M, where vague regulations surrounding the use of AI chatbots in coursework create challenges. Efforts to regulate AI usage risk leading to false accusations. For students, the lack of clarity about AI's permissibility is equally problematic. As Colorado College sophomore Ronan Takizawa noted, many students are uncertain whether using ChatGPT to summarize readings is any different from using established resources like YouTube (Gecker, 2023). Bowen and Watson (2024) stress the importance of collaboratively developing policies with students. They emphasize that instructors should clarify the purpose of assignments and explain the value of academic integrity. By discussing AI's role in education, instructors can help students understand the capabilities and limitations of AI while actively involving them in policy creation (p. 134).

Gladd (n.d.), Department Chair of the Integrated Studies Department at the College of Western Idaho, frames AI integration in education through two key dimensions: cognitive and ethical. The cognitive dimension highlights AI's potential to enhance learning and critical thinking, while the ethical dimension underscores the importance of transparency and academic integrity. Grounded in these, Gladd enforces four specific policies in his course. AI Policy I allows students to use AI tools like ChatGPT for brainstorming, editing, and improving their work, while cautioning that AI output may be flawed but still helpful. AI Policy II mandates that students must produce at least 50% of major assignments independently, reserving AI use for tasks like early drafting or idea generation. This leads into AI Policy III, which requires students to track and disclose any AI assistance beyond basic proofreading, using guidelines from Monash University and supporting documentation such as ShareGPT links or screenshots. Finally, AI Policy IV imposes academic penalties for unacknowledged AI-generated content, treating it as a violation of academic integrity and assigning a zero until the work is revised to meet the 50% originality requirement, aligning with the standards proposed by Yeadon et al. (2024).

In addition to implementing clear policies, fostering AI literacy among both students and educators is equally important. While policies provide necessary boundaries, understanding the technology behind AI and its potential risks is essential for making informed decisions about its use. Fostering AI literacy is a crucial strategy for ensuring responsible AI usage in educational settings. This involves equipping students and educators with the knowledge and skills necessary to use AI chatbots effectively and ethically. Fitzpatrick et al. (2023) argue that while some believe AI tools could lead to student laziness or a decline in literacy levels, effectively using large language models (LLMs) like ChatGPT actually demands strong literacy skills. They further explain that poor literacy can result in ambiguous communication, which may confuse AI and affect its ability to generate accurate responses. As AI and literacy become increasingly intertwined, mastering effective communication with AI is essential for success in an AI-driven world.

To achieve this, AI literacy can be integrated into education through AI-related courses such as those provided by King's College London (Compton et al., 2023), Arizona State University (2024), and University of Queensland (2025). By offering accessible learning pathways, these programs ensure students gain the knowledge needed to navigate the complexities of AI technology, regardless of their prior expertise. AI literacy can also be fostered through specialized workshops. Korte et al. (2024) conducted a study with 29 students from 13 countries, who participated in two AI literacy workshops over five hours. With little prior knowledge, the students completed pre- and post-workshop surveys and maintained learning diaries. Results showed a significant improvement in AI knowledge and awareness. The study calls for further research to create a tailored curriculum and suggests interactive activities for teaching AI literacy in cross-cultural media education. Moreover, educators might also incorporate AI literacy into classroom instruction across various subjects. Several studies explore the integration of AI chatbots into academic settings, emphasizing their role in improving students' writing and critical thinking. Tseng and Lin (2024) and Du and Alm (2024) highlight the positive impact of ChatGPT on academic writing, noting improvements in organization, grammar, and vocabulary, and emphasizing the importance of using AI as a supplement, not a replacement, for teachers. Both studies stress the need for critical thinking and effective prompting strategies. All studies suggest a balanced, critical, and well-structured approach to integrating AI in education to enhance learning outcomes.

Conclusion

AI chatbots, particularly ChatGPT, have the potential to significantly enhance students' writing skills and academic performance. Numerous studies highlight how these tools can support students in organizing content, improving grammar, refining vocabulary, and fostering critical thinking. The ability of AI chatbots to assist with revisions, provide instant feedback, and facilitate brainstorming allows students to focus more on content development while improving the technical quality of their work. Additionally, AI chatbots are becoming increasingly proficient in performing well in written assessments, which challenges traditional evaluation methods and raises important questions about academic integrity.

However, these advancements also come with considerable risks. The potential for academic dishonesty, including plagiarism, and over-reliance on AI tools, may undermine students' independent thinking and critical problem-solving skills. Furthermore, the capacity of AI chatbots to generate misleading references and inaccurate information presents additional challenges for both students and educators. To address these risks, clear policies and comprehensive educational frameworks must be implemented to guide AI use in academic contexts.

While the current literature highlights several positive outcomes, there remains a need for further research to fully understand the long-term effects of AI on learning, especially in terms of cognitive development and creativity. Studies investigating the cultural and regional differences in AI adoption across educational settings would also contribute to a more global perspective. Additionally, more research is needed to explore the ethical implications of AI-generated content, particularly regarding bias and misinformation, and how to best safeguard academic integrity in an AI-driven educational environment.

Recommendations

The integration of AI chatbots into education requires clear guidelines, professional development, and ongoing policy adjustments for educators, administrators, and policymakers. Institutions should establish policies on AI usage that address academic integrity, the appropriate contexts for AI use, and the distinction between student-generated and AI-generated work. Educators must also promote AI literacy, helping students understand AI's capabilities and limitations through training and coursework. While AI chatbots can enhance learning, educators should encourage independent thinking and creativity, using AI

as a supplement rather than a replacement for critical skills. Monitoring AI usage through plagiarism detection and student discussions can ensure ethical use. AI should be seen as a tool to enhance learning through collaboration between students, educators, and AI chatbots. Lastly, policymakers must work with educational institutions to develop ethical frameworks addressing fairness, transparency, and data privacy, ensuring responsible AI use in education.

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