

Potential Benefits and Challenges of Generative Artificial Intelligence (AI) Tool, ChatGPT⁸

Faheemudin¹, Sarala Thulasi Palpanadan^{2*}, Ros Eliana³

^{1,2} Centre for Language Studies,
Universiti Tun Hussein Onn Malaysia, Parit Raja 86400, Johor, MALAYSIA

³ Department of Science, Technology, Engineering, and Mathematics, Design and Technology Unit
Institut Pendidikan Guru Kampus Darulaman, Jitra 06000, MALAYSIA

*Corresponding Author: sarala@uthm.edu.my

DOI: <https://doi.org/10.30880/2025.05.01.002>

Article Info

Received: 1 March 2025

Accepted: 30 April 2025

Available online: 19 May 2025

Keywords

ChatGPT, writing skills, personalized learning, challenges

Abstract

The study proposes the potential benefits and challenges of the Generative-AI tool, ChatGPT, for learning writing skills in educational sectors. The study thematically compares and evaluates 26 research articles published in Science Direct and Springer Open from 2023 to 2025. It offers a systematic literature review to compile, integrate and analyze the available data. The articles are divided into two categories: category A) potential benefits (CA) and category B) challenges of ChatGPT (CB). Each category covers three to four themes found in these articles. CA presents that ChatGPT assists its users through 'feedback', 'writing skills', and 'personalized learning'. Whereas CB discusses the challenges and limitations of ChatGPT in the form of four themes: 'ethical consideration' of AI tools by the researchers, its disruptive impacts on 'critical thinking', and it can cause impairment of 'creativity' and 'academic integrity'—furthermore, the proposed major themes present sub-themes which cover several other promises and drawbacks of ChatGPT. Keeping in view the proposed categories and themes, the study concludes that the Generative-AI tool, ChatGPT, facilitates its users on a larger level and may not be overlooked due to its requirement in different sectors, especially in educational institutions, for learning writing skills.

1. Introduction

Artificial Intelligence (AI) has been influencing almost all essential sectors of society, including education, accounting, statistics, physics, and technology. Technological tools in the form of Natural Language Processing (NLP) chatbots and Generative AI tools provide read-mate services. They facilitate professionals, accountants, chemists, physicians, educationalists, scholars, and students as assistants in meeting workplace obligations. Jo (2024) states that AI tools are now becoming integral components of digital learning. Thus, users rely upon these tools to make their work look more presentable and professional. One of these work-efficient AI tools is ChatGPT, a language-based AI assistant that facilitates its users in working environments.

ChatGPT stands for Chat Generative Pre-Trained Transformer model released by OpenAI, an American-based research organization for AI. It successfully transformed AI into an advanced model of human-AI interaction (Kocoń et al., 2023). ChatGPT has become popular today due to its 'humanoid-text generation' (Gill & Kaur, 2023). It is the ability of AI tools to grasp, generate, and summarize text data. It can even recognize, address queries, and

prepare paragraphs. Azap (2025) identifies ChatGPT as a 'sophisticated chatbot'. It can operate various textual requests and respond to users' prompts in conversational settings. Thus, it can judge natural language and generate answers. In the case of students' queries, ChatGPT and other AI tools are effectively contributing to their learning (Shuhaiber et al., 2025).

In the education sector, AI has become a transformative drive in the form of tutoring efficiencies of chatbots. Ward et al., 2024 claim that ChatGPT has successfully improved students' proficiency and supported them in academic performance. One of the most important potential benefits of these tools is improving writing skills. ChatGPT is an AI-driven writing tool, now progressively impacting language education, specifically in writing skills (Mahapatra, 2024; Özçelik & Ekşi, 2024). Thus, it is designed for writing evaluation and writing assessment (Godwin-Jones, 2022). Furthermore, ChatGPT can generate detailed feedback and can potentially summarize it, which would take much time and energy in the case of a human instructor (Dai et al., 2023). Through its pattern recognition coding, ChatGPT promises to provide reliable feedback. ChatGPT and other AI chatbots provide corrections not only on spelling and grammar checking but also offer extensive assistance in categorizing writing problems and suggesting revisions several times. Students have access to these writing assistance tools for quality writing.

Keeping in view the potential benefits of Generative-AI tools, users also face several challenges. The overreliance on AI tools in everyday life and working environments has become controversial. Language teachers have serious concerns about the reliability and authenticity of ChatGPT-generated responses (Godwin-Jones, 2022). One of these concerns is academic integrity. Nguyen (2025) states that though AI tools offer support in education and in administrative tasks, the concern of academic integrity in terms of reliance on AI-generated content is the major challenge for academicians. Alzubi et al. (2025) proclaimed that for academic integrity, the users should choose a balanced approach to AI-generated tools and consider them as supplementary aids rather than substituting practical learning. Another major concern of educators is that Generative-AI tools affect creativity. For instance, ChatGPT lacks creativity and provides short versions of an original text. In its second or third revised versions, it adds a few changes only (Breithaupt et al., 2024). Whereas other researchers state that ChatGPT does not harm creativity, rather it influences learners' performances (Alzubi et al., 2025; Lee & Chung, 2024; Toma & Yáñez-Pérez, 2024).

2. Research Methodology

The study is a theme-based comparative analysis of 26 research articles on a selected Generative-AI tool, ChatGPT. The study applies a systematic literature review technique to compile, synthesize and interpret the data. The available data is secondary in nature. It has been adapted for a review study based on previously available published research papers that are helpful for future researchers in terms of in-depth study on the benefits and drawbacks of ChatGPT. The articles are accessed through two online databases, Data Science and SpringerOpen. The selected research articles have been published from 2023 to 2025. These articles address the potential efficacies, downsides and challenges of ChatGPT and the ways its users, including students, teachers, and educational organizations utilize it as a supporting tool for effective work. Thus, the study proposes the answers to the following two important research questions:

- i) What are the potential benefits of ChatGPT, a Generative-AI tool?
- ii) What are the setbacks and challenges of ChatGPT?

Considering the above questions, the study categorises the research articles into two: Category A) the potential benefits of ChatGPT (CA), and Category B) the challenges associated with ChatGPT (CB). A quantitative analysis of this study was conducted to clearly illustrate thematic and categorical trends. Moreover, the study thematizes each category into three to four major themes. For instance, CA offers three themes: feedback, writing skills, and personalized learning. Whereas CB is based on four themes ethical consideration, critical thinking, creative writing, and academic integrity. Accordingly, a comparative analysis will be prepared based on the nature of the proposed categories and the themes of the study. Afterwards, these major themes will be subdivided into several other sub-themes in the discussion section. Likewise, the study will recommend solutions for the responsible use of the Generative-AI tool, ChatGPT. Table 1 shows the 26 reviewed research articles along with their allotted categories and major themes. The table presents a holistic view of ChatGPT's potential benefits and challenges.

Table 1 Reviewed research articles

No.	Research Papers (Title Words)	Author(s) and Year	Findings/Synthesis	Themes	Categories
i	AI in academic writing	Niekerk et al. (2025)	ChatGPT does not support academic arguments and lacks critical insight into subject areas. But it does support improving syntax, flow of writing, and concise writing	Writing skills	CA

ii	Challenges of implementing ChatGPT in education	García-Lopez et al. (2025)	ChatGPT is technological integration, beneficial for learning. Need robust encryption to protect sensitive data. Teachers' involvement can impact learning through AI	Personalized learning	CA
iii	ChatGPT in Education: Challenges	Mienye & Swart (2025)	Ethical deployment of ChatGPT in educational sectors is required. There are risks to data privacy, transparent decision-making, and biased responses.	Ethical consideration	CB
iv	Artificial Intelligence in Academia: Turkish academics	Livberber & Ayvaz (2023)	ChatGPT is useful in education and in scientific research, but ethical concerns like plagiarism, copy-paste issues, and misinformation are the threats.	Ethical consideration	CB
v	Higher Education (HE) Students' Perspective for AI	Malik et al. (2023)	ChatGPT3.5/4.0 is beneficial in grammar, plagiarism detection, enhancing writing, and self-efficacy. Concerns: impacts critical thinking	Writing skills, & critical thinking	CA & CB
vi	ChatGPT Threats	Eke (2023)	ChatGPT undermines academic integrity. Causes threats; its acknowledgement is not added in educational policies; it's not 100 % reliable	Academic integrity	CB
vii	Cheating behaviors and ChatGPT	Lee et al. (2024)	ChatGPT /AI chatbots are a threat to academics. Students misuse it for cheating material, destabilizing the quality.	Academic integrity	CB
viii	ChatGPT in education	Memarian & Doleck (2023)	ChatGPT is deceptive, causes misuse, and lacks learning. No accountability, academic integrity is mitigated, & and lacks higher cognitive skills	Academic integrity, Critical Thinking	CB
ix	ChatGPT: A triangulation approach	Niloy et al. (2024)	ChatGPT saves time on academic tasks, access to answers, superior alternative to search sources, Google	Personalized Learning	CA
x	ChatGPT and academic learning: A survey in UAE	Youssef et al. (2024)	ChatGPT holds a constructive role. Provides learning sources and knowledge; engages students in academic achievements.	Personalized Learning	CA
xi	ChatGPT in HE	Bouteraa et al. (2024)	921 responses support ChatGP and its positive influence on self-efficacy and technology adaptation. It fulfils learning needs	Personalized Learning	CA
xii	AI chatbots: A disguised enemy for academic integrity?	Niloy et al. (2024)	ChatGPT is risky for academics. Its overreliance drives into procrastination of the users. 594 responses suggest links between motivation for chatbots and a decline in academic integrity.	Academic integrity	CB
xiii	Challenges of ChatGPT in education	Yu (2024)	ChatGPT lacks accuracy in answering. Users must meet data contamination, ethical and safety issues &, and plagiarism risks for knowledge-transforming	Academic integrity	CB
xiv	ChatGPT: Hindering creativity in academics	Rajan & Niranjana (2025)	ChatGPT's usage has negative impacts on creativity. Besides, students adopt it due to its usability. Thus, it requires controlled usage.	creativity/academic integrity	CB
xv	Integrating ChatGPT with teachers' feedback: writing skills	Asadi et al. (2025)	ChatGPT improves the International English Language Testing System (IELTS) score in essays. Students gained coherence and cohesion along with grammar accuracy and vocabulary.	writing skills	CA
xvi	ChatGPT enhances academic writing among	Alkamel & Alwagieh (2024)	144 EFL Yemeni learners reported ChatGPT increased writing efficiency, accuracy, and	writing skills	CA

			quality in academics. Useful for corrections and proofreading.		
xvii	ChatGPT for second language writing: Experiences	Meniado et al. (2024)	Vietnamese L2 learners found ChatGPT valuable for writing, generating ideas - examples, brainstorming, clarifying concepts, and editing drafts for accuracy	writing skills	CA
xviii	ChatGPT in argumentative writing	Sue et al. (2023)	ChatGPT assists in tasks such as content setting, proofreading, and structural and language understanding; offers detailed recommendations and facilitates idea generation.	feedback	CA
xix	ChatGPT and ESL academic writing (AW)	Mahapatra (2024)	ChatGPT improves AW, works as a dialogic tool for writing classes, and suggests syntax and grammatical corrections	feedback	CA
xx	ChatGPT in research and HE: A discourse	Nam & Bai (2023)	authors of Springer Nature, The Chronicle of Higher Education, and Times Higher Edu. are worried about ChatGPT conflict; authorships in academic research, teaching, and human resource management	Ethical consideration	CB
xxi	Gen Z & Y vs. ChatGPT: Teaching and learning	Chan & Lee (2023)	Gen X & Y avoid ChatGPT for its overreliance, lack of guidelines and policies, cheating, plagiarism, and transparency	ethical considerations	CB
xxii	ChatGPT: ESL/EFL education and research: a review	Lo et al. (2024)	ChatGPT's drawbacks include flawed information, privacy concerns, and even academic dishonesty.	Ethical consideration	CB
xxiii	ChatGPT contributes to users' willingness	Al Murshidi et al. (2024)	Students use ChatGPT to master this tool due to its educational benefits.	Personalized Learning	CA
xxiv	AI perceptions, benefits, and challenges in HE	Chan & Hu (2023)	ChatGPT potentially supports learning as an assistant for brainstorming, research, and analysis	Personalized Learning	CA
xxv	Is AI harmful or helpful?	Abbas et al. (2024)	Students use ChatGPT due to academic workload, & academic pressure. It causes procrastination, memory loss issues, and low academic performance	creativity/Critical thinking	CB
xxvi	Generative-AI and the future of (HE)	Yusuf et al. (2024)	ChatGPT and other AI tools are significant in HE. 81.7 % out of 1217 participants use ChatGPT to generate content, ask queries, and retrieve information.	personalized Learning	CA

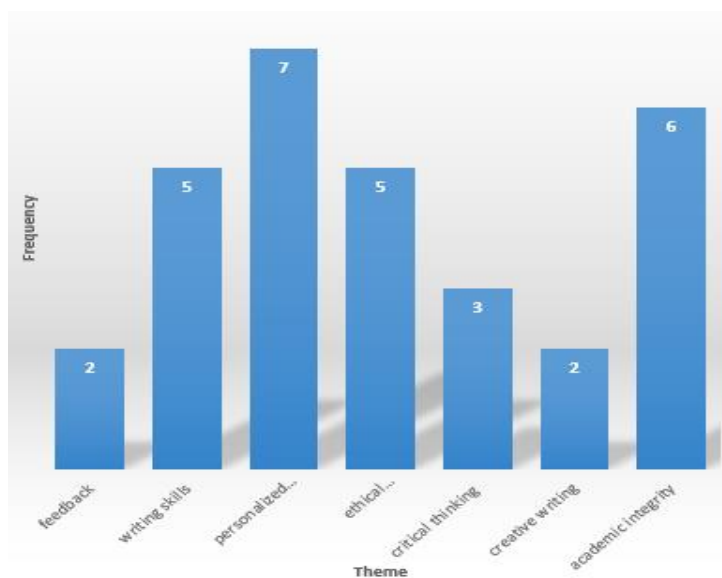


Fig. 1 Frequency of theme

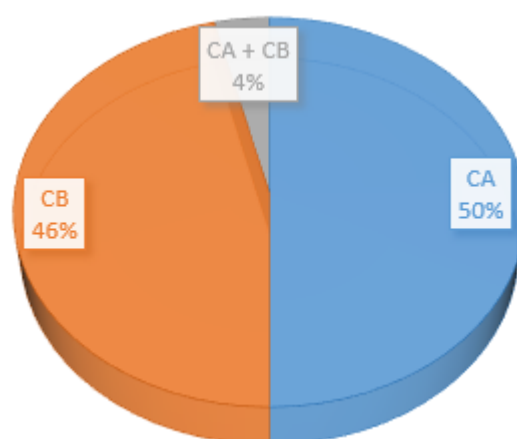


Fig. 2 Categories

Figure 1 and Figure 2 are summaries of the quantitative analysis findings to provide a clear picture of the themes and categories. Based on Figure 1, the theme with the highest frequency is personalized learning. Meanwhile, the themes with the lowest frequency are feedback and creative writing. In Figure 2, the pie chart clearly shows that half (50%) of the analyzed research papers are in the category the potential benefits of ChatGPT (CA), 46% - 12/26 research papers are in the category of the challenges associated with ChatGPT (CB) and only one research paper is in both categories.

3. Discussion

The research articles presented an objective and impartial approach of the researchers and contributors. The authors' findings state that ChatGPT and other Generative-AI tools are blessings for educators, researchers, students, and scholars. The above secondary data presents an overall picture of ChatGPT's potencies and limitations. Though most authors of the articles find ChatGPT a beneficial tool for personalized learning, feedback, and writing skills, they also have highlighted their concerns about ChatGPT, which causes some essential risk factors. However, detailed recommendations are given to address and abandon the risk factors.

The potential benefits of ChatGPT explored by the researchers fall into the category CA, which displays its major themes as mentioned in Table I.I, feedback, personalized learning, and creative writing. These major themes cover several important areas of writing skills and their association with ChatGPT. For example, Malik et al. (2023) state that both versions of ChatGPT, 3.5 and 4.0, are valuable in language rules, plagiarism recognition, developing writing, and self-efficacy. Niekerk et al. (2025) reveal that besides its drawbacks, ChatGPT is supportive of students' writing skills. García-López et al. (2025) and Niloy et al. (2024) support ChatGPT for its personalized

learning assistance, including its timesaving element, and as a valuable alternative to 'Google'. Youssef et al. (2024) surveyed 352 university students in the UAE through a square-structural model. The results showed that ChatGPT and other AI tools constructively and positively affect students' skills and actively engage them in academic learning. In the same way, Bouteraa et al. (2024) thoroughly studied 921 responses from students supporting ChatGP, influencing self-efficacy and motivation for technology adaptation. Asadi et al. (2025) study on incorporating ChatGPT with teachers' feedback presents that ChatGPT optimizes the essay writing skills of students preparing for ILTS and thus scores high. They potentially adapt to grammar and vocabulary accuracy and improve their understanding of coherence and cohesion in essays. Alkamel and Alwagieh (2024) found ChatGPT accelerates academic writing. Their data of 144 EFL Yemeni learners acknowledged ChatGPT for its support in writing efficiency, accuracy, and even quality academics. Meniado et al. (2024) studied Vietnam's L2 students' perceived ChatGPT assistance for academic writing, generating ideas, and clarifying and brainstorming syllabus concepts for second-language writing. Its features of editing and revising students' drafts have a high value for accuracy.

Su et al. (2023) explored that ChatGPT is useful in argumentative writing tasks. It provides abundant feedback on settings of content, structures of language, and it proofreads the users' texts. Similarly, Mahapatra (2024) did an experimental study on ESL students of writing through three tests, interventions, and group discussions. The findings recommend ChatGPT as a tool for formative feedback. It functions in a dialogic mode and provides alternate suggestions for areas of writing skills including syntax and grammatical correction. The by AI Murshidi et al. (2024) Based on 366 students of the UAE, explored that ChatGPT contributes to users' willingness to adapt AI technology. The study surveyed that, despite the limitations and challenges of ChatGPT, students intend to use it for its promising interactional simulations and personalized feedback. Chan and Hu (2023) studied 399 students' responses from diverse fields in Hong Kong. The data revealed that ChatGPT and Generative-AI tools potentially assist learning in brainstorming topics and ideas. Many responded that ChatGPT provides suggestions for analyzing research areas. Yusuf et al. (2024) found that ChatGPT and its versions have substantial status in HE. The study revealed that out of 1217, 81.7 % of participants adapt and use ChatGPT for content choices, query enquiries, and information retrieval.

Besides the potential benefits of Generative-AI technology and ChatGPT, researchers also address its setbacks and challenges, which are categorized as CB, and its themes include ethical consideration, critical thinking, creative writing, and academic integrity. These themes also contribute to several challenges and limitations of ChatGPT. For instance, Eke (2023) and Lee et al. (2024) considered ChatGPT as a threat to academic integrity. It undermines proper acknowledgement and destabilizes the quality of work. Niloy et al. (2024) said AI tools are disguised as opponents of academic integrity. This is because ChatGPT diminishes students' class participation and leads them towards procrastination. Mienye and Swart (2025) and Livberber and Ayvaz (2023) discuss the challenging limitations of ChatGPT in the education sector. They recommend that its ethical considerations be taken into account; its data privacy and plagiarism issues should be solved before its deployment in HE. Memarian and Doleck (2023) discuss the role of ChatGPT is deceptive and causes a lack of learning in education. This is due to its insufficient accountability. Thus, it can harm higher cognitive skills. Whereas Yu (2024) states that ChatGPT lacks accurate answers. Its data is contaminated with plagiarism. Rajan and Niranjana (2025) assert that it hinders creativity in academic activities. Students utilize it due to its user-friendly efficiency, but it requires controlled usage. In addition to that, Nam and Bai (2023) and Chan and Lee (2023) have their concerns for its ethical considerations, lack of proper guidelines, and transparency in the HE sectors. Similarly, authors Lo et al. (2024) and Abbas et al. (2024) have their own reservations that ChatGPT provides flawed information and causes academic dishonesty. Nam and Bai (2023) state that the authors of high-ranked journals are worried about conflicts in research caused by ChatGPT. Students are compelled to use these Generative-AI tools due to workload and academic anxiety. Resultantly, it can cause memory loss, trouble, and average academic performance.

As per discussion, the major themes of potential benefits of ChatGPT present several sub-themes: ChatGPT helps develop writing, self-efficacy, learning assistance, timesaving element, alternative to 'Google', constructive effects, positive effects, students' skills development, actively engaged, academic learning, motivational tool, technology adaptation, essay writing skills, argumentative essays, IELTS preparation, grammar skills, vocabulary, understanding of coherence and cohesion, writing efficiency, quality academics, generating ideas, brainstorming, syllabus, second language writing, editing, revising, and drafting.

In the same way, the major challenging themes of ChatGPT present sub-themes are: ChatGPT undermines acknowledgement, destabilizes quality, diminishes students' class participation, data privacy, plagiarism, deceptive role, causes lack of learning in education, inadequate accountability, harms cognitive skills, hinders creativity, user free efficiency, requires controlled usage, improper guidelines, transparency issues in HE, flawed information, causes academic dishonesty and academic anxiety.

4. Conclusion

Keeping into consideration the above comparative analysis of the potential benefits and limitations of ChatGPT, it can be assumed that technologies cannot be dropped due to their limitations, but there is always room for improvements and advancements. Ayanwale and Ndlovu (2024) claim that ChatGPT and other AI tools are now progressively used in HE to assist learners in academic challenges. The status of both categories, CA and CB, along with their major themes, seems very relevant and significant to further studies on ChatGPT and other Generative-AI tools. Thus, the category CA ranks equal to category CB. Both categories of the research papers equally generated responses for both the potential and setbacks of ChatGPT. Meanwhile, the themes with positive credentials in CA, writing skills, personalized learning, and feedback are more relevant and hold more advantages than ChatGPT compared to the challenging category, CB, whose maximum focus is restricted to drawbacks of AI technology.

References

- Abbas, M., Jam, F. A., & Khan, T. I. (2024). Is it harmful or helpful? Examining the causes and consequences of generative AI usage among university students, *International Journal of Educational Technology in Higher Education*, 21(1), 1–22. <https://doi.org/10.1186/S41239-024-00444-7/TABLES/6>
- Al Murshidi, G., Shulgina, G., Kapuza, A., & Costley, J. (2024). How understanding the limitations and risks of using ChatGPT can contribute to willingness to use, *Smart Learning Environments*, 11(1), 1–20. <https://doi.org/10.1186/S40561-024-00322-9/TABLES/6>
- Asadi, M., Ebadi, S., & Mohammadi, L. (2025). The impact of integrating ChatGPT with teachers' feedback on EFL writing skills, *Thinking Skills and Creativity*, 56, 101766. <https://doi.org/10.1016/J.TSC.2025.101766>
- Ayanwale, M. A., & Ndlovu, M. (2024). Investigating factors of students' behavioral intentions to adopt chatbot technologies in higher education: Perspective from expanded diffusion theory of innovation, *Computers in Human Behavior Reports*, 14, 100396. <https://doi.org/10.1016/J.CHBR.2024.100396>
- Azap, S. (2025). The role of artificial intelligence in language teacher education: EFL learners' views on the concept of "ChatGPT" through metaphorical analysis, *Social Sciences & Humanities Open*, 11, 101394. <https://doi.org/10.1016/J.SSAHO.2025.101394>
- Boutera, M., Bin-Nashwan, S. A., Al-Daihani, M., Dirie, K. A., Benlahcene, A., Sadallah, M., Zaki, H. O., Lada, S., Ansar, R., Fook, L. M., & Chekima, B. (2024). Understanding the diffusion of AI-generative (ChatGPT) in higher education: Does students' integrity matter?, *Computers in Human Behavior Reports*, 14, 100402. <https://doi.org/10.1016/J.CHBR.2024.100402>
- Breithaupt, F., Otenen, E., Wright, D. R., Kruschke, J. K., Li, Y., & Tan, Y. (2024). Humans create more novelty than ChatGPT when asked to retell a story, *Scientific Reports*, 14(1), 1–11. <https://doi.org/10.1038/S41598-023-50229-7/FIGURES/4>
- Chan, C. K. Y., & Hu, W. (2023). Students' voices on generative AI: perceptions, benefits, and challenges in higher education, *International Journal of Educational Technology in Higher Education*, 20(1), 1–18. <https://doi.org/10.1186/S41239-023-00411-8/TABLES/5>
- Chan, C. K. Y., & Lee, K. K. W. (2023). The AI generation gap: Are Gen Z students more interested in adopting generative AI such as ChatGPT in teaching and learning than their Gen X and millennial generation teachers?, *Smart Learning Environments*, 10(1), 1–23. <https://doi.org/10.1186/S40561-023-00269-3/TABLES/4>
- Dai, W., Lin, J., Jin, H., Li, T., Tsai, Y. S., Gasevic, D., & Chen, G. (2023). Can large language models provide feedback to students? A case study on ChatGPT, *Proceedings - 2023 IEEE International Conference on Advanced Learning Technologies, ICALT 2023*, 323–325. <https://doi.org/10.1109/ICALT58122.2023.00100>
- Eke, D. O. (2023). ChatGPT and the rise of generative AI: Threat to academic integrity?, *Journal of Responsible Technology*, 13, 100060. <https://doi.org/10.1016/J.JRT.2023.100060>

- García-López, I. M., González González, C. S., Ramírez-Montoya, M. S., & Molina-Espinosa, J. M. (2025). Challenges of implementing ChatGPT on education: Systematic literature review, *International Journal of Educational Research Open*, 8, 100401. <https://doi.org/10.1016/J.IJEDRO.2024.100401>
- Gill, S. S., & Kaur, R. (2023). ChatGPT: Vision and challenges, *Internet of Things and Cyber-Physical Systems*, 3, 262–271. <https://doi.org/10.1016/J.IOTCPS.2023.05.004>
- Godwin-Jones, R. (2022). Partnering with AI: Intelligent writing assistance and instructed language learning, *Language Learning & Technology*, 26(2). <http://doi.org/10125/73474>
- Jo, H. (2024). From concerns to benefits: a comprehensive study of ChatGPT usage in education, *International Journal of Educational Technology in Higher Education*, 21(1), 1–29. <https://doi.org/10.1186/S41239-024-00471-4/TABLES/6>
- Kocoń, J., Cichecki, I., Kaszyca, O., Kochanek, M., Szydło, D., Baran, J., Bielaniewicz, J., Gruza, M., Janz, A., Kanclerz, K., Kocoń, A., Koptyra, B., Mieleśczenko-Kowszewicz, W., Miłkowski, P., Oleksy, M., Piasecki, M., Radliński, Ł., Wojtasik, K., Woźniak, S., & Kazienko, P. (2023). ChatGPT: Jack of all trades, master of none, *Information Fusion*, 99, 101861. <https://doi.org/10.1016/J.INFFUS.2023.101861>
- Lee, B. C., & Chung, J. (2024). An empirical investigation of the impact of ChatGPT on creativity, *Nature Human Behaviour*, 8(10), 1906–1914. <https://doi.org/10.1038/S41562-024-01953-1/METRICS>
- Lee, V. R., Pope, D., Miles, S., & Zárata, R. C. (2024). Cheating in the age of generative AI: A high school survey study of cheating behaviors before and after the release of ChatGPT, *Computers and Education: Artificial Intelligence*, 7, 100253. <https://doi.org/10.1016/J.CAEAI.2024.100253>
- Livberber, T., & Ayvaz, S. (2023). The impact of Artificial Intelligence in academia: Views of Turkish academics on ChatGPT, *Heliyon*, 9(9), e19688. <https://doi.org/10.1016/J.HELIYON.2023.E19688>
- Lo, C. K., Yu, P. L. H., Xu, S., Ng, D. T. K., & Jong, M., & S. Yung. (2024). Exploring the application of ChatGPT in ESL/EFL education and related research issues: A systematic review of empirical studies, *Smart Learning Environments*, 11(1), 1–24. <https://doi.org/10.1186/S40561-024-00342-5/TABLES/7>
- Mahapatra, S. (2024a). Impact of ChatGPT on ESL students' academic writing skills: A mixed methods intervention study, *Smart Learning Environments*, 11(1), 1–18. <https://doi.org/10.1186/S40561-024-00295-9/TABLES/9>
- Mahapatra, S. (2024b). Impact of ChatGPT on ESL students' academic writing skills: A mixed methods intervention study, *Smart Learning Environments*, 11(1), 1–18. <https://doi.org/10.1186/S40561-024-00295-9/TABLES/9>
- Malik, A. R., Pratiwi, Y., Andajani, K., Numertayasa, I. W., Suharti, S., Darwis, A., & Marzuki. (2023). Exploring Artificial Intelligence in academic essay: Higher education student's perspective, *International Journal of Educational Research Open*, 5, 100296. <https://doi.org/10.1016/J.IJEDRO.2023.100296>
- Memarian, B., & Doleck, T. (2023). ChatGPT in education: Methods, potentials, and limitations, *Computers in Human Behavior: Artificial Humans*, 1(2), 100022. <https://doi.org/10.1016/J.CHBAH.2023.100022>
- Mienye, I. D., & Swart, T. G. (2025). ChatGPT in Education: A review of ethical challenges and approaches to enhancing transparency and privacy, *Procedia Computer Science*, 254, 181–190. <https://doi.org/10.1016/J.PROCS.2025.02.077>
- Nam, B. H., & Bai, Q. (2023). ChatGPT and its ethical implications for STEM research and higher education: A media discourse analysis, *International Journal of STEM Education*, 10(1), 1–24. <https://doi.org/10.1186/S40594-023-00452-5/TABLES/3>
- Nguyen, K. V. (2025). The Use of generative AI Tools in higher education: Ethical and pedagogical principles, *Journal of Academic Ethics*, 1–21. <https://doi.org/10.1007/S10805-025-09607-1/METRICS>
- Niloy, A. C., Hafiz, R., Hossain, B. M., Gulmeher, F., Sultana, N., Islam, K. F., Bushra, F., Islam, S., Hoque, S. I., Rahman, M. A., & Kabir, S. (2024). AI chatbots: A disguised enemy for academic integrity?, *International Journal of Educational Research Open*, 7, 100396. <https://doi.org/10.1016/J.IJEDRO.2024.100396>

- Özçelik N., P., & Eksi, Y., G. (2024). Cultivating writing skills: The role of ChatGPT as a learning assistant—A case study, *Smart Learning Environments*, 11(1), 1–18. <https://doi.org/10.1186/S40561-024-00296-8/TABLES/4>
- Rajan, S., & Niranjana, L. R. (2025). The double-edged sword of ChatGPT: Fostering and hindering creativity in postgraduate academics in Bengaluru, *International Journal of Educational Management*, 39(2), 317–337. <https://doi.org/10.1108/IJEM-03-2024-0181>
- Shuhaiber, A., Kuhail, M. A., & Salman, S. (2025). ChatGPT in higher education - A Student's perspective, *Computers in Human Behavior Reports*, 17, 100565. <https://doi.org/10.1016/J.CHBR.2024.100565>
- Su, Y., Lin, Y., & Lai, C. (2023). Collaborating with ChatGPT in argumentative writing classrooms, *Assessing Writing*, 57, 100752. <https://doi.org/10.1016/J.ASW.2023.100752>
- Toma, R. B., & Yáñez-Pérez, I. (2024). Effects of ChatGPT use on undergraduate students' creativity: A threat to creative thinking?, *Discover Artificial Intelligence*, 4(1), 1–9. <https://doi.org/10.1007/S44163-024-00172-X/FIGURES/3>
- Van Niekerk, J., Delpont, P. M. J., & Sutherland, I. (2025). Addressing the use of generative AI in academic writing, *Computers and Education: Artificial Intelligence*, 8, 100342. <https://doi.org/10.1016/J.CAEAI.2024.100342>
- Ward, B., Bhati, D., Neha, F., & Guercio, A. (2024). *Analyzing the impact of AI tools on student study habits and academic performance*. <https://arxiv.org/abs/2412.02166v1>
- Youssef, E., Medhat, M., Abdellatif, S., & Al Malek, M. (2024). Examining the effect of ChatGPT usage on students' academic learning and achievement: A survey-based study in Ajman, UAE, *Computers and Education: Artificial Intelligence*, 7, 100316. <https://doi.org/10.1016/J.CAEAI.2024.100316>
- Yu, H. (2024). The application and challenges of ChatGPT in educational transformation: New demands for teachers' roles, *Heliyon*, 10(2), e24289. <https://doi.org/10.1016/J.HELİYON.2024.E24289>
- Yusuf, A., Pervin, N., & Román-González, M. (2024). Generative AI and the future of higher education: A threat to academic integrity or reformation? Evidence from multicultural perspectives, *International Journal of Educational Technology in Higher Education*, 21(1), 1–29. <https://doi.org/10.1186/S41239-024-00453-6/FIGURES/11>