

Utilizing ChatGPT in checking academic writing for postgraduate students

Duong Ngoc Han^{1*}, Tong Thi Mai Huong², Le Duc Hanh²

¹ FPT University, Hanoi, Vietnam

² School of Languages and Tourism, Hanoi University of Industry, Vietnam

* Corresponding author's email: handn6@fpt.edu.vn

 <https://orcid.org/0009-0004-3886-6173>

 <https://doi.org/10.54855/paic.24614>

® Copyright (c) 2024 Duong Ngoc Han, Tong Thi Mai Huong, Le Duc Hanh

Received: 25/09/2024

Revision: 27/11/2024

Accepted: 29/11/2024

Online: 06/12/2024

ABSTRACT

Although artificial intelligence has long been controversial, there is no doubt about its enormous impact on language education. This study investigates the potential utility of ChatGPT in assisting postgraduate students enrolled in academic writing courses at a public university in Southeast Asia in terms of grammar, vocabulary, coherence, and cohesiveness. The study used quantitative data collected through questionnaires to assess the effectiveness of ChatGPT in improving students' academic writing skills. Data was gathered via an online questionnaire completed by 18 postgraduate students who had used the chatbot to write essays. Our findings reveal that ChatGPT can significantly enhance students' writing skills, helping them avoid grammatical and lexical errors while also reducing writing time. However, the study also uncovered certain challenges, such as concerns about the use of a copyrighted chatbot and the cost of implementation. Despite these obstacles, the research underscores the value of ChatGPT as a tool for educators designing language programs and for researchers working in comparable settings.

Keywords: AI, academic writing, ChatGPT, postgraduate

Introduction

In recent years, artificial intelligence (AI) has become increasingly integrated into various aspects of education, offering innovative solutions to enhance learning experiences and outcomes. One such AI tool, ChatGPT, has gained attention for its ability to assist students in academic writing, particularly at the postgraduate level. Academic writing requires not only mastery of content but also the ability to present arguments with clarity and correction to formal writing conventions. For many postgraduate students, these requirements can be challenging, especially when it comes to avoiding grammatical errors, improving lexical choices, and ensuring overall coherence.

The primary aim of this study is to examine the utilization of ChatGPT in giving feedback on academic writing for postgraduate students. Its objectives include evaluating ChatGPT's accuracy and effectiveness in grading academic papers, identifying the tool's strengths and

limitations for reviewing writing, and exploring ways ChatGPT can help students improve their academic writing skills.

The study will focus on postgraduate students from a public university in Vietnam. By concentrating on this group, the research hopes to explore the unique challenges and opportunities that arise when using ChatGPT in a nonnative English-speaking academic environment. The researchers will collect data through surveys and analyze the results generated by ChatGPT. The study will be limited to English, and only academic papers will be assessed.

Additionally, the significance of this study is that it contributes to the existing literature on the role of technology in aiding academic writing assessment. It seeks to evaluate the use of ChatGPT in assisting postgraduate students in producing quality academic writing. The study's findings will provide insights into the potential benefits and challenges of utilizing ChatGPT in grading academic papers. The areas that require improvement in ChatGPT can be highlighted from the research. Finally, the findings from this study can be used to inform policymakers and educators about the role of technology in the assessment of academic writing.

Literature review

The definition of Academic Writing

The definition of academic writing has been concluded by much research. According to Oshima and Hogue (2007, p. 3), "Academic writing is the kind of writing used in high school and college classes. Academic writing is different from creative writing, which is the kind of writing you do when you write stories. It is also distinct from personal writing, which is the kind of writing you do when you write letters or emails to your friends and family." Chen and Baker (2010) divide it into two types: student academic writing and expert academic writing. The former is used as a form of assessment at school, while the latter is intended for publication in an academic journal or book. This type of writing is known for its structured, evidence-based, critical, balanced, precise, objective, and formal characteristics, setting it apart from other forms of writing (Gillett, 1999).

AI text generator in academic writing

According to Luger (1993), artificial intelligence (AI) is a field of computer science that automates intelligent behaviors. On the other hand, by using computer math facts to generate data, machines' mental abilities are compared to those of people (Charniak & McDermott, 1987). Besides, Nilsson (1998) said, "AI is preoccupied with intelligent behavior artifacts." Considering the criteria mentioned, artificial intelligence (AI) is the capacity of a machine or computer software to imitate or replicate human intellect and behavior.

A tool known as an AI text generator is frequently used in scholarly writing today. Artificial intelligence is a term used to describe a specific type of AI system that can generate text using natural language processing (NLP). AI text creation algorithms are able to understand the grammatical rules and structures of real languages just like they would if they had access to vast amounts of textual data. The new texts are then created using the same grammar and syntax standards. This Artificial text generation capability has advantages, disadvantages, and consequences if misused.

Positive aspects

One of the main benefits of AI text generators in academic writing is that they produce material more quickly and effectively than humans (Golan et al, 2023). While a typical article takes

hours to write and correctly edit, writers can use AI natural language processing algorithms to check and correct errors in their work in just a few minutes. AI text generation can also recommend books and provide users with study summaries. These diagrams can be used as frameworks to make sure that all of a text's crucial elements are included. Finally, AI-powered articles or abstracts make specific suggestions. As an illustration, the AI can recommend pertinent prior research papers for the introduction or limit the discussion portions of the manuscript.

Negative aspects

Because it is derived from the same source, when AI is misused in academic writing, the article's content will contain passages that are comparable to those of previously published material (Hetler, 2023). AI tools will put together and arrange the referenced pieces from various websites. Creating authoritative and instructive content can be challenging when compiling data from various websites without using proper human judgment. Plagiarism is what causes academic writing to become forbidden.

In addition to the issue of plagiarism, using AI text generators can limit your creativity and customization. Creativity constantly increases a piece's appeal to readers. Due to its lack of creativity, AI cannot produce novel ideas or original content. Creating original content on the newest and most well-liked concepts and ideas becomes difficult.

Challenges in Academic Writing

With the constant advancement of technology, people can now self-study English communication through a variety of methods, including watching instructional videos, engaging in interactive practice, and corresponding online with friends from across the world social interaction to enhance communication and reactions. Also, users can make use of supporting tools like Grammarly, Quillbot, etc. to help them with their style and grammar in academic writing. Academic English is more demanding and challenging for learners, though. Academic languages require a long time for students to do their work in addition to being boring and unusable in daily life. Studies have documented the challenges that students at both undergraduate and graduate levels encounter when writing papers for content-based courses (Braine, 2002; Braxley, 2005; Gurel Cennetkusu, 2012).

Thus, students will find academic writing easier if AI text generators are supported. This study will mention Chat GPT, a tool for assisting students in producing academic texts.

ChatGPT

ChatGPT (Chat Generative Pre-training Transformer) is a chatbot developed by OpenAI based on Google's Transformer model. This AI (artificial intelligence) assists you in creating automated conversations and answering questions on various topics and fields.

ChatGPT has many different versions, of which GPT-1 is the first. GPT-1 is relatively small in size and complexity compared to later versions. In the field of language artificial intelligence, researchers evaluate AI intelligence by hyperparameters, which measure how deeply the AI understands the text used in the training.

Advantage of Chat GPT in many fields and Academic Writing

The demand to employ conversational AI grows along with workload and competition in academics (Bishop, 2023). Chatbots offer ways to do jobs fast, whether you're a PhD student working to finish your dissertation, a researcher wanting a speedy literature review for your grant proposal, or a peer reviewer with a deadline to meet for your study. Besides, recent studies

highlight the growing influence of AI-powered tools on the academic writing of EFL learners. Tools like ChatGPT and Grammarly provide convenience and meet the needs of learners, improving writing fluency, content quality, and knowledge (Yuan et al., 2024; Tran & Tran, 2023; Nguyen, 2023).

Results may be published more quickly if AI chatbots could assist with these duties, freeing up academics to concentrate on fresh experimental approaches. This might greatly speed up invention and possibly result in ground-breaking discoveries in a variety of fields. If the current teething issues related to bias, provenance, and inaccuracy are resolved, we believe this technology has immense promise. It is important to examine and advance the validity and reliability of LLMs so that researchers know how to use the technology judiciously for specific research practices.

The academic skill set may be rebalanced thanks to AI technologies. On the one hand, AI could enhance academic teaching (Zhai et al., 2021), for instance, by giving feedback to students to help them become better writers and thinkers. On the other hand, it might lessen the requirement for some abilities, including the capacity to conduct a literature search. Also, it might introduce fresh competencies like speedy engineering (designing and crafting the text used to prompt conversational AI models). Although most researchers no longer manually undertake statistical analyses, the loss of some talents may not necessarily be negative, but as a community, we must carefully examine whether academic skills and traits remain crucial for researchers.

Moreover, it is a cost-effective alternative for companies of all kinds due to its excellent scalability and efficiency (Eva et al., 2023). It has a low percentage of false positives and negatives and is quite accurate. Due to its capacity to comprehend both written and spoken language, ChatGPT offers a more thorough dialogue than previous technologies.

ChatGPT employs pre-trained datasets that are currently available, so you can avoid spending time and money on model development. This enables you to deploy ChatGPT and start using it right away. ChatGPT can self-learn, meaning it can continuously enhance its performance and needs minimum monitoring.

Research Questions

To achieve the objectives of the study, the following question is posed to search for answers:

How effective is ChatGPT in supporting academic writing for postgraduate students?

Methods

Pedagogical Setting & Participants

This research article discusses the impact of using AI tools (ChatGPT) to support academic writing. A total of 18 participants, divided into 6 groups consisting of postgraduate students studying for their M.A. at the School of Language and Tourism (SLT-HaUI), took part in the research. Regarding the sampling procedure, we chose this group of participants for two reasons. First, they are studying for an M.A.. Therefore, they are usually required to write research papers with academics. Besides, we had to make sure that most of them hardly used Chat GPT to support their academic writing.

Design of the Study

In our quantitative research, we used self-administered questionnaires to design the questions. The research includes both open-ended and closed-ended questions and a Likert scale. The goal was to collect survey responses from 18 M.A. students at SLT.

Data collection & analysis

Our research was conducted virtually through Google Forms, and participants were given 5 minutes to fill in the survey anonymously. The survey asked about specific AI tools that participants have used or are interested in using, how often users use AI tools for academic writing, the time they spent on writing a paragraph before and after using an AI tool, their satisfaction, and the difficulties they faced while using AI tools. In total, 14 over 18 participants responded, due to this, 14 survey results were included in the analysis.

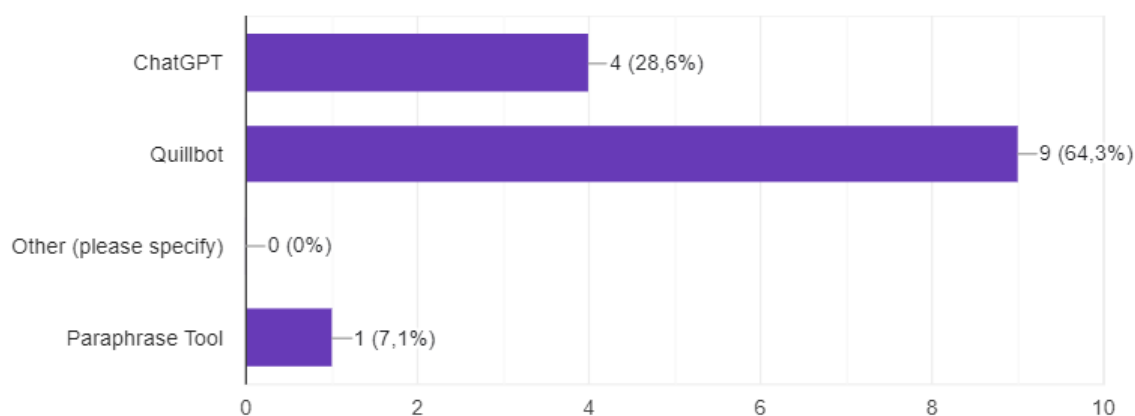
Results/Findings

The use of technology in education has been growing rapidly. With advancements in artificial intelligence (AI), educational institutions are exploring the use of AI-based tools to enhance the learning experience. One such tool is ChatGPT, a large language model trained by OpenAI. This study aims to explore the effectiveness of using ChatGPT in checking academic writing for postgraduate students.

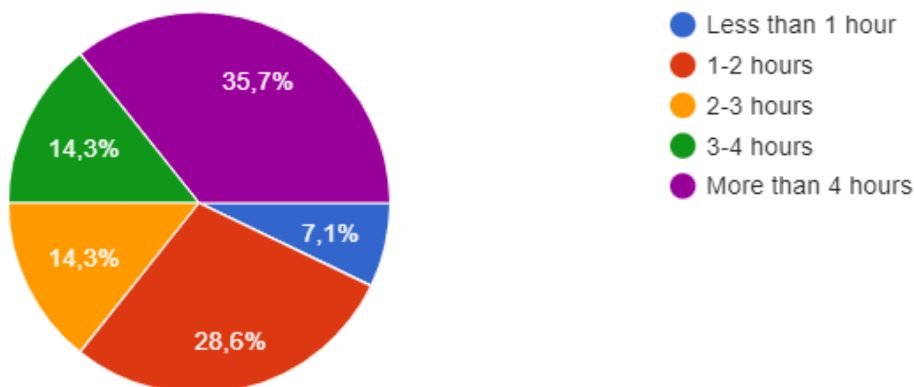
After conducting a survey of graduate students about using ChatGPT to support learning and correct writing errors, all fourteen out of fourteen participants used ChatGPT to check their writing during the course of Academic Writing. Although ChatGPT is not the most preferred tool they use to check writing (28.6%), behind Quillbot (64.3%), when using ChatGPT, the time they spend writing has been significantly reduced (Figure 1).

Figure 1

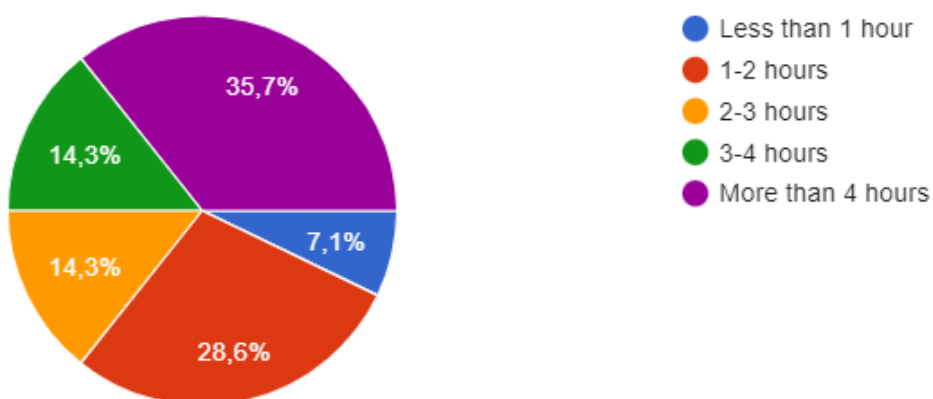
List of tools used to check academic writing



Specifically, 35.7% of participants said that they usually spend more than 4 hours to complete an essay, 28.6% write within 1-2 hours, 28.6% write in 2-4 hours, only 7.1% of the participants were able to write within 1 hour (Figure 2).

*Figure 2**Average amount of time to write an essay without supporting of AI tools*

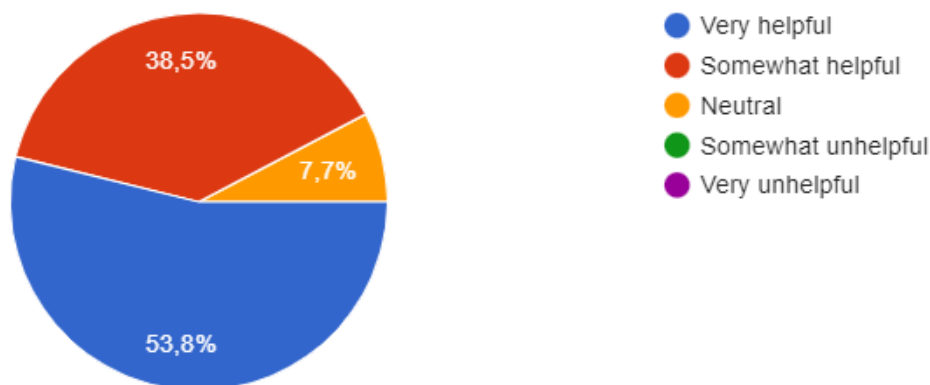
However, thanks to Chat GPT, the number of hours spent on writing was reduced as follows: 30.8% of students completed the lesson in just the first hour, increasing by about 23%, accounting for the highest percentage. The number of people who needed 4 hours to write an article decreased to 15.4%, and only 30.8% spent 1-2 hours writing articles (Figure 3).

*Figure 3**Average amount of time to write an essay with supporting of AI tools*

When asked about their evaluation after using ChatGPT, 53.8% of users shared that ChatGPT is a very useful tool for checking errors in their essays. About 38% affirm that ChatGPT is useful in certain writing cases. 7.7% have no opinion, especially no participants, that GPT Chat is not useful (Figure 4).

Figure 4

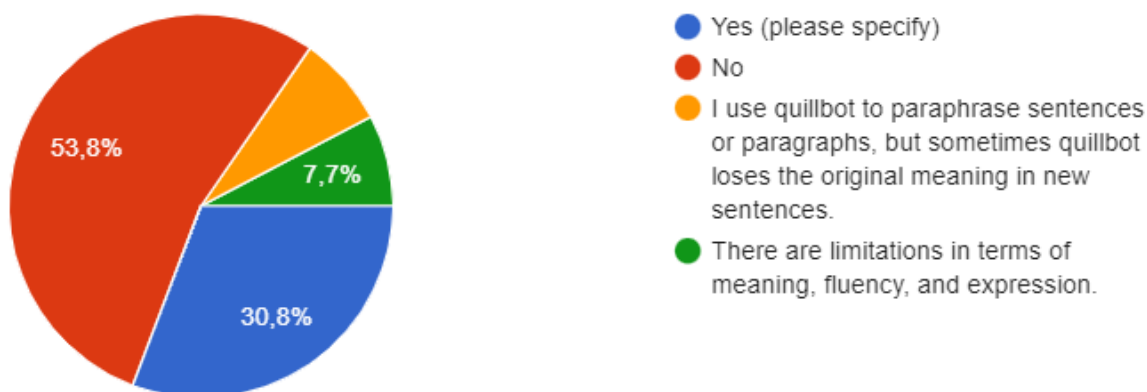
The overall evaluation of postgraduate students after using ChatGPT in writing



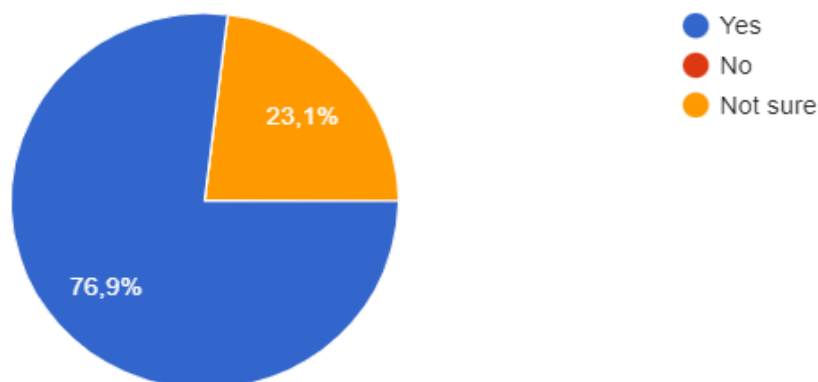
ChatGPT helps learners improve their writing speed, of which 53.8% of users do not face any difficulties or disadvantages when using the application. However, we cannot deny that there are still some minor disadvantages during use; only 7.7% of users agree that there are limitations in terms of meaning, fluency, and expression. (Figure 5)

Figure 5

Some limitations when using ChatGPT in writing



Besides, 76.9% of users said they would recommend that their students use ChatGPT while studying at the university (Figure 6). This shows strong support for ChatGPT's utility in aiding learning, with many users recognizing its potential to enhance the learning experience for students at the University level.

*Figure 6**Percentage of users who recommend ChatGPT for academic use*

Discussion

The results from the survey helped answer the research questions.

All graduate students use AI tools in writing, specifically in Academic Writing. In fact, ChatGPT is in the top 2 most popular applications, and the main reason for its popularity is its authenticity and time-saving.

In terms of time, students have nearly halved their writing hours. With the traditional method in the past, when there was no AI tool, students needed time to check grammar and spelling errors by talking with instructors and classmates or searching for information on the Internet. Thanks to the advent of ChatGPT, the above steps became redundant because ChatGPT can take care of the above steps in just a few seconds. Besides, ChatGPT helps them by giving ideas for their writing; it solves the problem of lack of ideas when doing student writing.

The second reason ChatGPT is so popular is that it gives answers that contain authentic information. With simple commands, ChatGPT can provide users with information containing specific sources and links.

More than half of users rate ChatGPT as a very useful AI tool. However, ChatGPT is not an absolutely perfect tool because the application also has limitations in terms of semantics and expressions. Lin and Morrison (2021) argue that academic writing requires critical thinking and advanced writing skills, making it both challenging and complex. Given that many participants struggle with grammar and writing standards, Imran and Almusharraf (2023) describe ChatGPT as a tool that helps improve students' writing. However, despite the availability of ChatGPT, the participants in this study still encounter difficulties with grammar and syntax, indicating persistent issues with grammar structures and language use that negatively affect the quality of their academic writing. Therefore, developing and improving the application in the future is necessary.

In short, ChatGPT has some disadvantages. However, we cannot deny the benefits it brings to graduate students in academic writing.

Implications of utilizing ChatGPT in checking academic writing

This study found several important effects of using AI in education (for both students and educators). The learning rate of students increases due to their use of AI, which saves time. Here, AI is used as a tool to check academic writing; the time it takes for it to respond is quite fast; it only takes a few seconds for students to get a response. From there, they can complete their assignments on time and effectively. Therefore, not only does learning productivity increase, but students' grades also improve.

An important implication of this study is the potential for AI technology to dramatically change students' approach to academic writing. In addition to saving time and increasing learning productivity, the use of ChatGPT also has a deeper meaning. Students receive feedback and comments quickly, and they are not as pressured as when receiving feedback from teachers. That helps them reduce the stress and anxiety associated with academic writing, allowing them to focus more on their studies.

Another important point from this study is that the use of AI in education will likely become more frequent. As AI technology improves, it will help learners detect even more literary errors and provide useful vocabulary related to the topic that learners are aiming for. This helps students and educators speed up the academic writing process.

However, it is important to understand that AI technology, in general, and ChatGPT in particular, cannot replace humans or the ability to think critically. It can give feedback on vocabulary and grammar, but it cannot provide feedback that contains nuances and vibes of the writer. Therefore, it is necessary to use ChatGPT in combination with other tools or resources to ensure the quality of the product, from academic writing to the highest level.

Additionally, educators can use ChatGPT as a teaching tool and teaching support to help students recognize common mistakes in academic writing and improve their writing skills. Teachers can incorporate ChatGPT in the classroom, thereby instructing students to use this AI technology effectively. This approach fosters students' critical thinking and prepares them for a technology-based future.

To summarize, using ChatGPT to improve academic writing skills has important implications for education. As AI continues to evolve, we can expect more advanced systems capable of detecting more writing errors. However, it's important to remember that AI should assist, not replace, human editors and critical thinking skills.

Conclusion

In short, this study of the use of ChatGPT to improve graduate students' academic writing skills found that the technology could dramatically change their approach to academic writing. The results show that ChatGPT, developed by OpenAI, is capable of detecting grammatical, spelling, and punctuation errors in real time and making suggestions for improvement. This saves students valuable time by minimizing the need for self-assessment of their work.

Although there are still some limitations in terms of usability (if you only use the trial version and not the paid version) or overuse AI to write articles, there is no denying the usefulness of ChatGPT in improving writing ability in general and academic writing skills in particular. This could also be an idea for technology developers to aim to improve on the limitations that Chat GPT currently has, supporting users to use it effectively but not be dependent on it, especially in the field of education.

Acknowledgment

I would like to give my sincere thanks to FPT University and FPT Polytechnic for their solid financial support in completing this study. I also appreciate deeply the enthusiasm and contributions of postgraduate students of the School of Languages and Tourism of Hanoi University of Industry. In addition, I would like to acknowledge the collaborative efforts of other authors who have shared their expertise, making this research possible. Your collective support and encouragement are essential to achieving the goals of this study.

References

- Bazerman, C. (1981). What written knowledge does: Three examples of academic discourse. *Philosophy of the social sciences*, 11(3), 361-387.
- Bishop, L. (2023). *A computer wrote this paper: What ChatGPT means for education, research, and writing*. Indiana University - Robert H. McKinney School of Law. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4338981
- Braine, G. (2002). Academic literacy and the nonnative speaker graduate student. *Journal of English for Academic Purposes*, 1, 59–68.
- Braxley, K. (2005). Mastering academic English: International graduate students' use of dialogue and speech genres to meet the writing demands of graduate school. In K. H. Hall, G. Vitanova, & L. Marchenkova (Eds.), *Dialogue with Bakhtin on second and foreign language learning* (pp. 11–32). Lawrence Erlbaum Associates.
- Charniak, E., & McDermott, D. (1987). *Introduction to artificial intelligence*. Addison-Wesley.
- Chen, Y. H., & Baker, P. (2010). Lexical bundles in L1 and L2 academic writing. *Language Learning & Technology*, 14(2), 30–49.
- Eva A. M. van Dis., Bollen, J., Zuidema, W., van Rooij, R., & Bocktin, C. L. (2023). ChatGPT: Five priorities for research. *Nature*, 614(7947), 224-226. <https://doi.org/10.1038/d41586-023-00288-7>
- Gillett, A. (1999). *Using English for academic purposes: For students in higher education*. Retrieved from <http://www.uefap.com/writing/feature/featfram.htm>
- Golan, R., Reddy, R., Muthigi, A. et al. Artificial intelligence in academic writing: a paradigm-shifting technological advance. *Nat Rev Urol* (2023). <https://doi.org/10.1038/s41585-023-00746-x>
- Gurel Cennetkusu, N. (2012). Writing a research paper in the foreign language: A case study of challenges and strategies. *Bitlis Eren University Journal of Social Sciences Institute*, 1, 1.
- Hetler, A. (2023, February 2). *Pros and cons of AI-generated content*. WhatIs.com. Retrieved March 9, 2023, from <https://www.techtarget.com/whatis/feature/Pros-and-cons-of-AI-generated-content>
- Imran, M., & Almusharraf, N. (2023). Analyzing the role of ChatGPT as a writing assistant at higher education level: A systematic review of the literature. *Contemporary Educational Technology*, 15(4), ep464. <https://doi.org/10.30935/cedtech/13432>
- Lin, L. H., & Morrison, B. (2021). Challenges in academic writing: Perspectives of engineering faculty and L2 postgraduate research students. *English for Specific Purposes*. <https://doi.org/10.1016/j.esp.2021.03.004>

- Luger, G. F., & Stubblefield, W. A. (1993). *Artificial intelligence: Structures and strategies for complex problem solving* (2nd ed.). Benjamin/Cummings.
- Nguyen, Q. H. (2023). AI and plagiarism: Opinion from teachers, administrators, and policymakers. *Proceedings of the AsiaCALL International Conference, 4*, 75–85. <https://doi.org/10.54855/paic.2346>
- Nilsson, N. J. (1998). *Artificial intelligence: A new synthesis*. Morgan Kaufmann.
- Oshima, A., & Hogue, A. (2007). *Introduction to academic writing* (p. 3). Pearson/Longman. <https://shorturl.at/VVsoZ>
- Tran, T. N., & Tran, H. P. (2023). Exploring the role of ChatGPT in developing critical digital literacies in language learning: A qualitative study. *Proceedings of the AsiaCALL International Conference, 4*, 1–17. <https://doi.org/10.54855/paic.2341>
- Yuan, Y., Li, H., & Sawaengdist, A. (2024). The impact of ChatGPT on learners in English academic writing: Opportunities and challenges in education. *Language Learning in Higher Education, 14*, 41–56. <https://doi.org/10.1515/cerces-2023-0006>
- 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.

Biodata

Ms. Duong Ngoc Han is an English lecturer at Hanoi FPT Polytechnic College and the Hanoi University of Industry's School of Languages and Tourism in Vietnam. She received a master's degree in English at Hanoi University of Industry. Her preferred career is using ICT technologies to learn and teach English.

Ms. Tong Mai-Huong is an enthusiastic lecturer at Hanoi University of Industry. She received a master's degree in English Language at the School of Languages and Tourism, Hanoi University of Industry, Vietnam. She has an interest in teaching English and would like to devote for national education.

Ms. Le Duc-Hanh has been working as an English lecturer at the School of Languages and Tourism, Hanoi University of Industry, Vietnam since 2007. Besides teaching, she currently works as the deputy director of the center of training and partnership development at her school. She has taken responsibility of designing and teaching EOP blended programs for technical students. Her areas of professional interest include professional development, EMI, and ICTs in education.