

The Impact of ChatGPT and Gemini on Academic Writing among Bangladeshi Private University Students

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Abstract

The extensive use of generative artificial intelligence (AI) applications like ChatGPT and Gemini is changing academic writing in higher education, but there is a dearth of empirical studies on this subject in Bangladesh. This paper explores the beliefs and perceptions of the students in a private university regarding the application and the perception of these AI tools in writing, its impact on writing practices, and the ethical and practical issues involved in the application of these AI tools. The research design used was a mixed-methods study design that involved the use of both an online questionnaire that was filled by 101 students in Bangladeshi private universities and semi-structured interviews with five respondents. The results show that students create ideas, analyze information, improve their grammar, and develop vocabulary, mostly with the help of ChatGPT and Gemini. The majority of the participants considered AI as a learning aid but not as a replacement for independent writing and underlined the need to check AI-generated materials.

Keywords: ChatGPT, Gemini, Bangladeshi private university students, academic writing, mixed-method.

Introduction

ChatGPT and Gemini are examples of Generative Artificial Intelligence (AI) Large Language Models (LLMs) that have quickly revolutionized teaching, learning and academic writing in higher education. Academic writing is made easier and more effective with the help of these technologies that aid students in generating ideas, enhancing grammar, improving vocabulary, structuring the content, and providing personalized feedback (Kamalov et al., 2023; Hwang et al., 2023; Jeon and Lee, 2023). At the same time, the growing presence of AI in the workplace has also caused the problem of academic dishonesty, plagiarism, lack of critical thinking, misinformation, and responsible use, so it is high time that AI started to be applied to the educational process (UNESCO, 2021; Akgun and Greenhow, 2022; Williamson, 2017).

In Bangladesh, as the use of internet services and digital technologies has increased, the rate at which AI finds its way into higher education has increased. Many students of a private university prefer using ChatGPT and Gemini to understand complicated ideas, brainstorm, and work on grammar, revise academic texts, and write assignments (Alam et al., 2023; Muniruzzan and Afrin, 2024; Talukder and Bin Ahsan, 2025). In spite of these benefits, there has been a paucity of empirical studies to investigate the perceptions of Bangladeshi students towards these technologies, their incorporation into academic writing, and the challenges that they face. Current literature predominantly addresses the educational capabilities of AI or writing challenges but does not give much evidence on the experiences of students in the Bangladeshi higher education setting.

The research problem that was identified in this paper, therefore, is the deficit of context-sensitive empirical data on how ChatGPT and Gemini can impact the academic writing behavior of students of a Bangladeshi private university. It is important to learn how students perceive AI, their usage patterns, and issues so that effective institutional policies can be created and ethical integration of AI can be promoted.

This research explores the effects of ChatGPT and Gemini on academic writing in a private university in Bangladesh. Particularly, it focuses on student perceptions of the application of these generative AI tools in academic writing and how they impact writing practices, alongside the ethical and practical issues that students face when using them. To combat these concerns, the study investigates the perceptions of students and their use patterns of ChatGPT and Gemini, as well as how they impact writing development and the ethical and practical issues related to AI-assisted academic writing.

The research is informed by the concepts of Value Sensitive Design (Friedman and Hendry, 2019), the Technology Acceptance Model (TAM) (Davis, 1989), which explains the supposed usefulness as the reason behind the acceptability of technology, the explanation of why writers develop their ideas in the writing process, plan, and revise them, the Writing Process Theory (Flower and Hayes, 1981). Collectively, these frameworks offer a holistic basis in comprehending the adoption and responsible use of generative AI in academic writing by students.

The rest of this paper is structured in the following way. The next section is a summary of the relevant literature on academic writing aided by AI. This is followed by the methodology that describes the research design, the participants, and data collection methods. The results and discussion are presented in the following sections and the paper concludes with the main implications and limitations, and recommendations on the way to ethically integrate generative AI in higher education.

Research Questions

1. How do students of private universities perceive AI?
2. What challenges have they faced?

Literature Review

Bates et al. (2020) presented arguments that artificial intelligence has become a significant element of higher education that helps in teaching, learning, and assessment. Sharma et al. (2021) also provided the transformation of the education process by AI technologies, which involve

smart learning spaces and academic support. Pavlovoia and Necula (2023) similarly described generative AI as a disruptive technology that is changing the face of higher education since it is changing the way students obtain information, solve problems, and write academic work. Although these studies acknowledge the potential of AI in education, they also find that it is important to implement AI in teaching and learning in a responsible way.

Jeon and Lee (2023) discovered that ChatGPT can be useful in helping students generate ideas and organize their arguments, as well as improve the quality of writing by offering instant feedback in the case of academic writing. In a similar study, Fitria (2023) found that ChatGPT not only enhances grammar, vocabulary, sentence structure, and coherence but is also effective only with English language learners. Zhai (2022) also noted that with the help of AI-linked writing tools, students may have increased confidence and motivation as it supports them throughout the writing process. Furthermore, Shankar (2022) has underlined that AI fosters individual learning by customizing the help to the needs of individual students. All these studies have demonstrated that AI may be useful in academic writing provided that it is used as a learning tool, and not as a replacement for students being left to think by themselves.

The major challenges are raised in the literature, although such opportunities exist. Krugman (2022) went as far as to say that going overboard with AI usage will kill creativity and harm the ability of students to think independently. Likewise, Gao et al. (2022) cautioned that cognitive growth and critical thinking could be affected adversely in the event of overutilization of AI dialogue systems. Moss et al. (2018) indicated the issue of plagiarism as a widespread issue in the academic setting, though Akgun and Greenhow (2022) mentioned the concerns of the larger group of ethics such as academic integrity, transparency, and responsible AI usage. Moreover, Williamson (2017) postulated that educational technologies did not have to eradicate human judgment and learning but supplement them. These views imply that although AI has great educational advantages, it is important to apply it in a responsible way and have the school as the guide.

Even though ChatGPT and Gemini are most often considered in tandem, past studies indicate that they have varying strengths. Fitria (2023) and Jeon and Lee (2023) explained that ChatGPT can be effective in brainstorming, writing, paraphrasing, and refining academic texts due to its conversational features and language generation. On the other hand, Google DeepMind (2023) presented Gemini, a multimodal AI model, which enables text, images, audio, video, and code to be processed in a single system. This multimodality makes Gemini unique compared to the previous text-based language models, as it allows it to be used in more applications in education, such as understanding visual content and merging different types of information into educational problems. Both may be applied as academic writing aids, but ChatGPT is more of a conversational writing aid, whereas Gemini is a multipurpose supportive tool, aiding research and learning activities. The differences imply that students are able to choose each platform depending on the requirements of their academic activity.

Within the setting of Bangladesh, empirical research is rather limited. The study by Alam et al. (2023) suggests that digital learning technologies have increased in relevance in higher education in Bangladesh, offering more opportunities for technology-assisted learning. In Bangladesh, Muniruzzaman and Afrin (2024) and Rahman et al. (2024) discovered that undergraduate students were still confronted with a row of difficulties in academic writing, particularly grammar, structure, academic vocabulary, and critical writing. More recently, Talukder and bin Ahsan (2025) postulated that AI has enhanced student interactions in virtual education in the higher education sector in Bangladesh. Combined, these works indicate that generative AI might be of considerable assistance in support of academic writing; however, they do not provide much data on how the students of Bangladeshi private universities feel about and use ChatGPT and Gemini in their writing.

Three complementary theoretical perspectives are used in the current study. Davis (1989) came up with the Technology Acceptance Model (TAM), which is used in the explanation of technology adoption with respect to the perceived usefulness and ease of use. The Writing Process Theory developed by Flower and Hayes (1981) is a concept of writing as a recursive process of planning, drafting, revising, and editing where AI can be used in different

phases of writing. Furthermore, Friedman and Hendry (2019) came up with the concept of Value Sensitive Design, based on which the ethical factors, e.g., transparency, accountability, and human well-being, should be integrated into technological systems. All these theoretical perspectives can be combined to provide a detailed perspective on the adoption and application of ChatGPT and Gemini in education and its ethical implications for learners.

On the whole, the literature is united in the belief that academic writing can be enhanced with the help of generative AI that helps generate ideas, develop language, and write more efficiently. However, the overreliance on AI, academic dishonesty, creativity and critical thinking are controversies that have yet to be resolved. In addition, the current literature lacks evidence as far as the usage of ChatGPT and Gemini is concerned in relation to the use of this type of AI in Bangladeshi universities in the private sector. The current research fills this gap by analyzing the perceptions of students, their writing experience, and ethical issues to add to the existing body of research on AI-assisted academic writing that is context-specific.

Methodology

Research Design

This was a mixed research design in that both quantitative and qualitative research were combined to have a comprehensive understanding of how ChatGPT and Gemini are used by the students of a private university in Bangladesh in the production of writing in their academic writing. The quantitative part demonstrated the tendencies of AI application and perception of the students and the qualitative interviews provided more data regarding the experiences of students, their ethical views, and writing behavior. The two methods combined resulted in the results gained with one dataset to be utilized to complement and clarify the results gained with the other dataset.

Participants and Sampling

The sample size was 101 undergraduate and postgraduate students who have used ChatGPT and /or Gemini to study in Bangladesh in the past. Participants were recruited through simple random sampling by posting the questionnaire on the internet where worthy students could find it. The sample, however, must not be perceived to be representative of all the private universities in Bangladesh but of those taking part in the survey, as most of the respondents were only in one specific private university. Therefore, the findings should be approached with a lot of caution, and cannot be extrapolated to the national student population.

The qualitative stage involved five students who were selected among the survey respondents after being identified on the basis of their willingness to participate in follow-up interviews. All these participants were representative of different levels of AI use and provided descriptive data concerning their writing experiences within academic writing.

Research Instrument

Data were collected with the assistance of a structured online questionnaire, with the help of two sections. The former part collected demographic data, such as gender, age, level of education, and experience with AI. In section two, there were closed-ended questions to determine the perceived views of ChatGPT and Gemini, why students use AI to write academic papers, perceived advantages and challenges, and ethical concerns. The items in the questionnaire were constructed based on the analysis of the research on AI-assisted learning and academic writing conducted in the past (Davis, 1989; Jeon and Lee, 2023; Fitria, 2023; Zhai, 2022).

A semi-structured interview protocol was formulated to supplement the results of the survey. The interviews mentioned the reasons why students use ChatGPT and Gemini, the type of writing tasks which AI can assist with, what is seen as a strength and weakness of the two systems, how to prevent plagiarism, how to check the information created by AI, and its impact on critical thinking and academic integrity. The flexible interview style allowed

the respondents to give details about their experiences not only at a personal level but also gave consistency to the interviews.

Validity and Reliability

To increase the content validity, the questionnaire was written based on the available literature on the topic of AI-assisted learning and writing academic papers and was reviewed to ensure that the questions adequately addressed the research objectives. The questionnaire was also examined in terms of clarity, relevancy as well as consistency before data collection. No other psychometric measures of reliability were presented since the research mainly applied descriptive analysis and exploratory study. This will be considered when interpreting the quantitative results.

Data Collection Procedure

The study involved the use of Google Forms to administer the questionnaire online. The respondents were free to attend the survey, and informed consent was obtained before the respondents completed the survey. The participants were assured that their responses would be confidential and anonymous as well as not be used in any other manner other than academic research.

Five volunteers took part in face-to-face semi-structured interviews after the questionnaire survey. The responses to the interviews were recorded using written notes with the consent of the participants and then used to carry out the qualitative analysis.

Data Analysis

Descriptive statistical techniques like frequencies and percentages were used to analyze the quantitative data to provide a picture of the demographic characteristics of the students, their use habits of AI, perceptions, and challenges. The results were presented in tables and figures in order to be easily interpreted.

Thematic analysis was used to analyze qualitative data obtained in interviews. The responses in the interview were reread and coded according to the recurring concepts and were categorized into bigger themes that were related to the use of AI, writing support, ethical issues, verification practices, and perceived constraints. The quantitative results were next compared to these themes in order to enhance the interpretation of the results via methodological triangulation.

Ethical Considerations

The study was done on a voluntary basis. The respondents were provided with informed consent and informed that they need not be afraid to drop out at any time. No data that could be directly used to identify a person was collected, and the responses were anonymous and not utilized outside of the research.

Limitations of the Methodology

A number of limitations must be noted. First, simple random sampling was planned, but most of the respondents were selected in a single private university, which restricts the applicability of the results. Second, the 101 student sample is practical since it provides exploratory evidence, but cannot be considered a nationally representative sample of the entire population of Bangladeshi students in the private universities. Third, the study was also self-reported, which may have been influenced by recall error or social desirability bias. Lastly, the qualitative results were based on the interviews of five respondents and thus represent the deep personal insights, but not the opinions of the general population of students.

Results

This paper will analyze the different applications of ChatGPT and Gemini by students in Bangladeshi private universities to their academic tasks. Some students use these tools to seek ideas, to familiarize themselves with lectures and to write essays and some students use these tools when they are in need. The findings indicate that the majority of students are worried about the ethical use of AI and do not copy and paste directly from it. Even though these tools are easy to use by most of the students, some have challenges in their effective use. The researchers found out that books and offline sources are still being used by students to check accuracy via the survey. Therefore, AI technologies take a central part in the learning process, but students still prefer the traditional methods of learning.

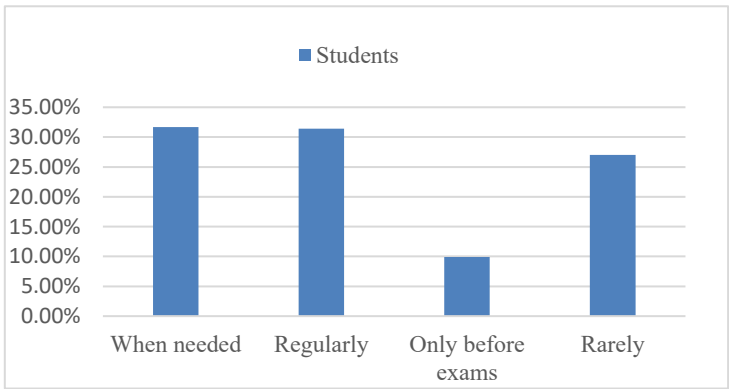


Figure 1

Students’ response to the question “How regularly do you use ChatGPT and Gemini?”

As Figure 1 shows, ChatGPT and Gemini are differently employed by the students who took part in the study depending on their academic needs and studying patterns. Overall, the findings demonstrate that AI tools have become an inseparable element of the learning of the students and most of the respondents stated that they used the tools regularly or at least during the moment when they had to fulfil a certain academic task. Students were able to use AI to do their homework, describe complex concepts, and learn, in most instances, though a small subset of the respondents said that they did so during exams or extremely rarely. This difference suggests that not all students will adopt AI with an equal amount of enthusiasm, but rather that there will be some variations in the learning behaviors and utility. Despite the fact that the results indicate that the use of generative AI is increasingly becoming part of the academic practices of the surveyed students, the results also show that the intensity of the application of AI among people differs. Therefore, the findings should be considered the experiences of the participants of the study and not all Bangladeshi university students.

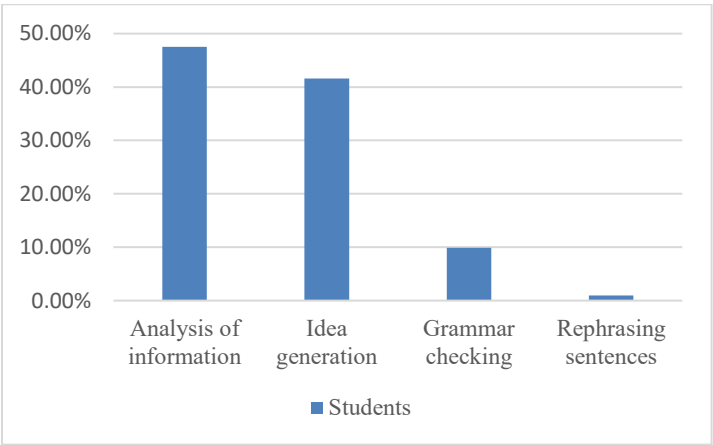


Figure 2

Students’ response to the question “For which purpose do you use ChatGPT and Gemini?”

The students who participated in the study use ChatGPT and Gemini to different academic assignments that are not related to language correction, as illustrated in Figure 2. Overall, the findings indicate that the students primarily apply these AI tools to higher-order writing, particularly to information analysis and creative thinking, but a smaller share of the respondents are able to apply them to check grammar or paraphrase sentences. The findings also suggest that the participants incorporate AI into various writing tasks, such as planning, analyzing, and revising their writing. However, its outcomes do not imply that students write academic papers with the help of AI; it just shows that AI is used together with the student's personal writing habits to support the learning process and improve the quality of written work. These results are indicative of how the surveyed students experienced it and should not be extended to all students of the university in Bangladesh.

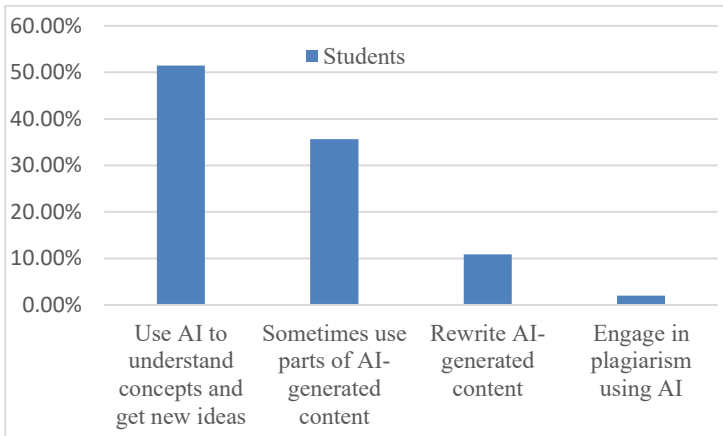


Figure 3

Students’ response to the question “How do you manage the contents generated by ChatGPT and Gemini?”

As Figure 3 shows, the students involved mostly use ChatGPT and Gemini to facilitate learning and not to rely on AI-generated materials only.

Overall, the findings indicate that most of the respondents reported using AI to understand the concepts, create new ideas and support their academic writing but a comparatively smaller number of students reported utilizing AI-generated text in their writing. The proportion of individuals who confessed to utilizing AI-produced material with no modifications is very low. Such findings imply that in this sample, learners are more likely to consider generative AI as a learning resource, and not a substitute for their personal academic work. However, the fact that there was some direct usage of AI-generated content points to the need to enhance AI literacy and transparent institutional policies on ethical use of AI. As the results are self-reports, the participating students of the research themselves cannot be trusted and cannot be generalized to all students in Bangladeshi universities.

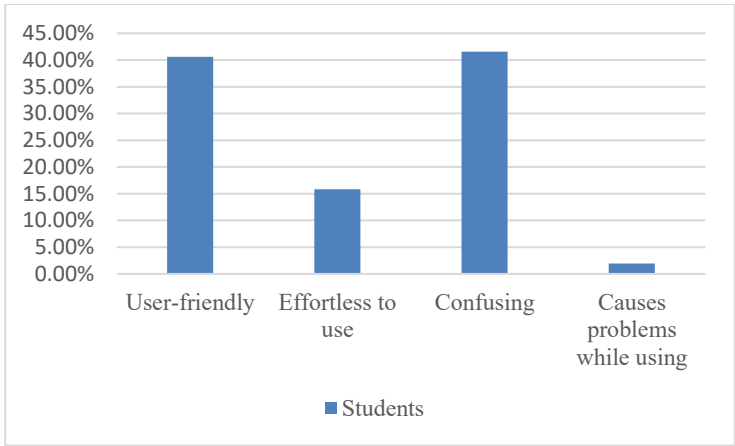


Figure 4

Students’ response to the question “What level of struggle do you face while using ChatGPT and Gemini?”

Figure 4 recommends that the participants had ambivalent views concerning the usability of ChatGPT and Gemini. Overall, most respondents reported that these AI tools were user-friendly or easy to use, with a large

proportion of them also reporting that they were confusing, possibly because different students are more familiar and confident with using generative AI. Very few respondents claimed that they had serious problems. These findings indicate that, even with increased availability of AI tools, there may be a need to provide additional support and training to allow some students to be responsible and useful in their use.

These survey findings are also supported by the qualitative results five interrelated themes which are: checking AI-generated information, preferring AI platforms, ethical awareness, overdependence-related issues, and AI use in academic writing.

Assessment of information by AI. The major tendency in all the interviews were the participants did not rely solely on AI-generated answers. Most interviewees indicated that they would first verify the results of AI with textbooks, journal articles, or other Internet sources before they used the information in their studies. This indicates that the majority of participants did not consider AI as a conclusive authority but as a source of ideas.

Prejudice against ChatGPT and Gemini. Some of the respondents contrasted the two AI sites and indicated their preference to the Gemini site when seeking academic information. Interviewees believed that Gemini provided more valid and evidence-based responses, and ChatGPT was thought to be particularly useful in generating ideas, creating a project, and polishing language. The participants further indicated the quality of answers in both sites depended on the writing of the prompts and thus the development of prompts was a successful way of determining what they would go through.

Ethical awareness and cheating. The other theme that was recurring was the awareness of responsible AI use by students. Most of the respondents indicated that they would paraphrase text created by AI and check the facts, and they would go through plagiarism checker software before they submitted their schoolwork. Trying to maintain academic integrity, interviewees defined AI as a learning aid by explaining it in their own words.

Concerns about overdependence and critical thinking. Although the respondents also admitted the educational potential of AI, they were worried about the excessive use of these technologies as well. Some interviewees thought that increased reliance on AI would decrease creativity, critical thinking, and analytical capabilities. Consequently, they emphasized the necessity to balance learning with the help of AI and the conventional means of learning, like reading textbooks and creating original ideas independently.

A writing aid: AI. Throughout the interviews, the respondents continued to discuss ChatGPT and Gemini as useful tools to brainstorm, enhance grammar, organize ideas, and enhance the quality of academic writing in general. They, however, reported that AI should not replace but rather complement individual work, in-depth reading and writing. This conclusion suggests that overall, the students interviewed perceived generative AI as student support and not a substitute for human learning.

Combined, the quantitative and qualitative results show that the involved students were aware of the possibilities and drawbacks of generative AI. Despite the fact that ChatGPT and Gemini were valued by a significant number of respondents to increase efficiency and idea generation in writing, they still saw the need to verify the information given by AI, not to overly depend on it, and remain original in academic writing. These results represent the experiences of the discussed students and need to be viewed in the context of the current study and not be generalized to all the university students in Bangladesh.

Discussion

The findings indicate that the students involved in the research use ChatGPT and Gemini as learning resources and not as a unified learning tool. Even though some of the respondents responded that they used AI on a regular basis, others only used it when they had specific academic tasks to complete, which means that adoption of AI is not a homogeneous process that could be applied universally. The presented observation is consistent with that of Sudlow (2018), who reported that students in different learning environments have a diverse disposition towards AI-assisted learning.

In line with Alotaibi and Alshehri (2023) results, the current study revealed that students mostly utilized AI to produce ideas, comprehend complicated issues, and enhance the quality of their academic papers rather than use it only to fix grammar. Among the noteworthy findings in the Bangladeshi context is that a majority of the interviewees stated that they verified the information generated by AI with the help of textbooks, academic materials, or other online sources before including it into their assignments. This means that AI was not seen as something that could replace independent study but merely as an enhancement to learning abilities.

The qualitative findings also revealed that there was a huge comparison of ChatGPT and Gemini. Although these two platforms are similar in the way they assist in academic writing, some of the participants preferred Gemini to ChatGPT because they felt that the answers given by the former were more reliable in offering academic information compared to the latter, which was more beneficial in brainstorming, writing, and improving writing styles. This comparative perception is context-specific evidence that has been understudied in previous studies.

Despite these benefits, the participants expressed certain concerns regarding the issue of plagiarism, excessive use of AI, and the possibility of losing the ability to be creative and think independently. These findings support the arguments presented by Ivanova et al. (2023), Moss et al. (2018), and Thacker (2020) according to which colleges and universities need to have clear ethical guidelines and educate on AI literacy. On the same note, the results partially confirm Zhai's (2022) work by revealing that AI can boost confidence in writing and the development of ideas, but also suggest that overuse can diminish the independent thought process. Therefore, AI should be integrated into higher education institutions as a learning tool that will be supported by an institutional aspect that will promote responsible, critical and ethical use.

Conclusion

The research involved investigating the use of ChatGPT and Gemini by students of the chosen Bangladeshi private institutions to aid in writing academic papers. The results indicate that the main purposes of the participants in using these AI tools were to generate ideas, master complicated concepts, better their writing skills, and to organize academic materials. The participants, though most of them claimed that they fact-check the information generated by AI and are conscious of the ethical concerns, a few of them also mentioned that they are worried about overreliance, plagiarism, and a lack of critical thinking. The qualitative data also proved that the participants were more likely to presuppose ChatGPT as a more useful tool to brainstorm and get writing assistance, and Gemini as a tool to find credible academic materials. These findings indicate that generative AI can be helpful in academic writing but should not take its place but complement it. The other problem that the paper has outlined is that universities should develop AI literacy courses and efficient institutional policies that will promote responsible and ethical use of AI. Since the research was conducted on a rather small sample, consisting mostly of one institution, the results can be taken with a grain of salt, and additional studies with even greater and more heterogeneous samples are advised.

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