

# Analysis of Constraints and Challenges in the Use of ChatGPT for Students' Scientific Writing

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## ABSTRACT

The purpose of this research is to analyze the limits and obstacles faced by the seventh-semester students of Universitas Almuslim in using ChatGPT for scientific writing. A qualitative descriptive technique was adopted to achieve in-depth understanding of students' experiences and perceptions. The data were obtained from semi-structured interviews and open-ended surveys with 25 seventh-semester students who utilized ChatGPT for academic writing. Data collected were analyzed using theme analysis. The findings identified four significant themes: concerns over authenticity and trustworthiness of information, ethical concerns around academic integrity, over-reliance on AI-generated content and diminished critical involvement, and difficulty in crafting effective prompts. Most participants viewed ChatGPT as a beneficial tool that improved writing speed and assisted the writing process, but they emphasised the significance of fact-checking the information supplied by the AI and using the technology responsibly. The results indicate that the successful use of the ChatGPT in scientific writing is not only dependent on the technology itself, but also on students' critical thinking, digital literacy, and ethics awareness. This study adds to the literature on generative AI in higher education and underscores the need for explicit institutional standards and AI literacy training to facilitate the appropriate usage of AI-assisted writing tools.

**Keywords:** *ChatGPT, artificial intelligence, scientific writing, higher education, AI literacy, academic integrity*

## INTRODUCTION

Artificial Intelligence (AI) has transformed many areas of higher education, including how students access material, learn new concepts, and complete tasks. Since its release, ChatGPT has attracted much attention from students as it offers fast support that can make different academic duties easier, such as authoring research projects and scientific papers (Kasneji et al., 2023).

Scientific writing is an important part of higher education. Students will need to be able to critically examine information, synthesise knowledge from a number of sources and present ideas in a logical and orderly way through scientific writing. But writing a scientific article is often a difficult task. They have difficulty identifying research questions, building arguments, structuring ideas logically, reviewing relevant literature and employing appropriate academic language (Fareed et al., 2016). The difficulties are particularly evident for final-year students, when research projects, academic reports and undergraduate theses become required for graduation.

In recent years, an increasing number of people have used chatgpt as a writing assistance to help students to overcome these challenges. Students turn to the site for ideas, help with their language, paraphrasing books, creating outlines and getting clarification on the topics they are researching. Previous study has suggested that ChatGPT can aid students with their writing processes, by increasing productivity and reducing the time spent on school tasks (Dwivedi et al., 2023; Lo, 2023). Moreover, students view ChatGPT as a convenient source of immediate feedback and instruction, which is particularly attractive in educational contexts where there are often strict deadlines and substantial workloads.

Although it has the potential to be beneficial, the use of ChatGPT in academic writing has led to a continuing controversy among researchers and educators. One of the major concerns is the precision and reliability of the data the system generates. While the ChatGPT-generated content can be rational and convincing, it can also be inaccurate, contain erroneous references and factual errors, or provide misleading information (Bang et al., 2023). Such limitations raise major doubts regarding the appropriateness of ChatGPT as a source of academic support, especially in scientific writing where legitimacy and accuracy are of utmost importance.

Another is academic integrity. The increasing presence of AI-generated content has led to a re-evaluation of traditional conceptions of originality, authorship, and plagiarism in higher education (Perkins, 2023). Some academics believe that if used correctly, ChatGPT can be a useful teaching tool, while others fear that an over-reliance on AI may reduce students' engagement in independent learning and critical thinking (Baidoo-Anu & Owusu Ansah, 2023). Over-reliance on AI-generated outputs can discourage students from developing their own arguments, properly evaluating evidence, or engaging with literature. Therefore, the application of ChatGPT in academic writing needs to be critically evaluated for its advantages and downsides.

In addition to accuracy and ethics, students' digital literacy skills are another consideration for the effective use of ChatGPT. To achieve meaningful results from ChatGPT, users must craft precise prompts, evaluate the relevance of generated content and edit outputs following academic standards. Students who lack these skills may be unable to effectively use the technology. As UNESCO (2023) argues, AI literacy has become more important in today's education, as students need to not only use, but also assess the risks and limitations of AI tools.

While some research has explored the educational benefits of ChatGPT, the majority of existing material today centres on its effectiveness as a learning tool, rather than the challenges that come with its use. Research on students' experiences frequently reports benefits such as increased productivity, improved writing support and positive perceptions of AI-supported learning (Lo, 2023; Tlili et al., 2023). However, only a limited number of research have studied the specific limitations and challenges that students face when employing ChatGPT for scientific writing. This lacuna in the literature highlights the necessity for more research investigating the realities of AI use from the perspectives of students, especially within specific educational contexts.

Students in their seventh semester at Universitas Almuslim participated in the current study. This group was chosen because seventh-semester students actively participate in academic writing activities, such as writing undergraduate theses and research proposals. Students are expected to display a higher degree of independence in their research and scientific output at this point in their academic careers. As a result, a number of them have started adopting digital tools, like ChatGPT, to help with their academic writing. Examining their experiences offers vital insights into the issues students have when integrating AI tools into higher education.

Thus, the goal of this study is to examine the limitations and difficulties seventh-semester Universitas Almuslim students have when utilising ChatGPT for scientific writing. The study specifically aims to determine the academic, technological, ethical, and cognitive difficulties that arise during the writing process and investigate how these difficulties affect students' attitudes towards and usage of the technology. By looking at these problems, the study hopes to add to the expanding conversation around AI-assisted learning and offer advice on how students, teachers, and higher education institutions may employ ChatGPT in academic writing in a responsible and efficient manner.

It is anticipated that the results of this investigation will provide theoretical and practical insights. The work theoretically adds to our understanding of the application of generative AI in higher education, especially when it comes to scientific writing. Practically speaking, the findings might help institutions and educators create suitable rules, regulations, and teaching methods that promote the moral and efficient application of AI. As AI becomes increasingly

integrated into higher education, it is important to understand the challenges associated with its use so that it can effectively support students' learning and academic development.

## LITERATURE REVIEW

Artificial Intelligence (AI) has made its way into higher education at a quick pace by providing personalised learning, automated feedback and academic writing support (Holmes et al., 2022). Among these technologies, generative AI systems like ChatGPT have received much interest due to its ability to generate coherent language, summarise literature, and support students in the writing process (Lo, 2023). Such skills offer increased efficiency, but experts are divided on whether AI improves or lessens students' learning.

Optimistic studies suggest that ChatGPT improves writing productivity, reduces cognitive load, and gives quick feedback, allowing students to focus on higher-order parts of writing (Kasneci et al., 2023; Tlili et al., 2023). However, critical scholars have contended that over-reliance on AI may result in decreased autonomous learning, lowered critical thinking, and the erosion of academic authorship boundaries (Baidoo-Anu & Owusu Ansah, 2023; Cotton et al., 2024). These divergent views imply that the educational effectiveness of ChatGPT cannot be gauged by its technical capabilities alone, but must also take into account how students engage with the technology in certain educational environments.

There is also considerable diversity among the research in terms of their methodological approach. Many studies use cross-sectional questionnaires to measure students' opinions of usefulness and satisfaction (Chan & Hu, 2023; Yan, 2023). These quantitative studies give broad acceptance patterns of AI, but offer limited insight into students' experiences of ethical difficulties, verification of AI-generated knowledge, and negotiations of academic integrity in the real practices of writing. There are few qualitative studies that have looked at these concerns in depth notably in poor countries, where institutional AI policies and support for digital literacy are unequal.

### Technology Acceptance Perspectives

The Technology Acceptance Model (TAM) (Davis, 1989) is often used to describe the use of educational technologies. TAM suggests that the major factors influencing technology adoption are perceived ease of use and perceived utility influencing behavioural intention to use a technology by the users. In the case of ChatGPT, students are more inclined to utilise the system because they think it improves writing efficiency, makes difficult academic activities easier, and provides quick assistance.

But TAM alone cannot adequately explain students' experiences with generative AI. While the utility of ChatGPT is widely recognised, students continue to raise frequent concerns about hallucinated knowledge, faked references and academic integrity. This implies that acceptance of technology does not necessarily mean educational suitability. Students might find ChatGPT useful, but they might also dispute its credibility for scientific writing.

The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) provides a larger explanation that integrates performance expectancy, effort expectancy, social impact and facilitating factors. Creating enabling conditions like as institutional AI regulations, lecturer supervision and students' AI literacy can have a substantial impact on the responsible usage of ChatGPT in higher education. Additionally, social impact (attitudes of classmates and lecturers towards AI-assisted writing) might be a factor in students' propensity to use ChatGPT for academic work. The adoption of AI, therefore, should be regarded as an individual and institutional phenomenon and not only a technological one.

## Critical Perspectives on Generative AI

Although technological acceptance models provide an explanation for students' use of ChatGPT, it does not sufficiently discuss wider pedagogical and ethical issues. Critical scholarship on AI has argued that educational technologies should be evaluated not just in terms of their efficiency, but also in terms of their impact on learning processes, knowledge building and academic integrity.

Several scientists have argued that generative AI may inadvertently promote passive learning if students were to accept AI outputs without adequate examination (Perkins, 2023; Rudolph et al., 2023). Because of the probabilistic nature of language prediction, rather than reasoning, generated information by the model can be plausible but wrong or invented references (Bang et al., 2023). AI-assisted scientific writing demands constant human verification, not mindless acceptance.

At the same time, other academics suggest that these limitations do not necessarily imply that we should reject AI in education. Instead, with high levels of digital literacy, critical assessment abilities, and clear ethical instructions (UNESCO, 2023), ChatGPT can be a cognitive companion. This moves the discussion from whether AI should be utilised to how students should gain the abilities needed for ethical AI-assisted learning.

## Empirical Evidence on ChatGPT in Academic Writing

The empirical evidence for ChatGPT in academic writing remains inconclusive. Students regularly find it useful for brainstorming, structuring ideas, correcting grammar, paraphrasing and getting quick explanations (Lo, 2023; Tlili et al., 2023). These results are consistent with the TAM premise that perceived usefulness stimulates technology adoption.

Other studies, however, point to ongoing issues. Researchers have identified the impacts of misinformation, false references, ethical ambiguity, reduction of critical thinking, and over-reliance on AI-generated content (Day, 2023; Perkins, 2023; Cotton et al., 2024). It is also important to mention that these studies tend to deal with these difficulties in isolation, rather than in terms of their interaction in students' authentic scientific writing processes.

Moreover, many earlier studies have focused on students' views of the efficiency of ChatGPT rather than on the practical limitations faced in academic writing. Quantitative research usually measure acceptability, contentment or intention to use, while qualitative studies are fewer and focus on the lived experiences of students in balancing AI help with academic integrity, information verification and critical thinking. As a result, there is insufficient understanding of how students negotiate these opposing expectations while engaged in authentic scientific writing projects.

## METHODS

In order to investigate the difficulties and limitations that students encountered when utilising ChatGPT for scientific writing, this study used a qualitative descriptive method. Because the study sought to gain a thorough understanding of students' experiences, opinions, and perceptions, a qualitative approach was selected. This study concentrated on documenting how students view the use of ChatGPT and the challenges they have when using the tool for academic reasons rather than measuring variables or testing hypotheses.

The main research question that drove the study was what obstacles and limitations Universitas Almuslim seventh-semester students encounter when utilizing ChatGPT for scientific writing. The researchers gained a better knowledge of the advantages and

disadvantages of using artificial intelligence in academic writing by directly examining students' experiences.

### **Research Participants**

Participants in this study were Universitas Almuslim seventh-semester students who had previously used ChatGPT to assist with their academic writing assignments. They were language and literature students. There were 35 students: 27 female and 8 male students as the participants of the research. These students were chosen because they actively participated in the preparation of undergraduate thesis projects, seminar articles, and research ideas. They were therefore deemed to have adequate expertise with academic writing and to be conversant with using digital resources to enhance their learning.

Purposive sampling was used to choose the participants. This sampling strategy was used to make sure that every participant had expertise that was pertinent to the study's topic. Students had to fulfil three requirements in order to be included in the study: (1) they had to be enrolled in Universitas Almuslim's seventh semester; (2) they had to use ChatGPT for academic writing; and (3) they had to be willing to participate willingly. Twenty-five students in all took part in the study. The participants' varied educational backgrounds and degrees of ChatGPT experience gave the researchers a range of viewpoints on the application of AI-assisted writing tools.

### **Data Collection**

Data were collected through semi-structured interviews and open-ended questionnaires. The combination of these two methods enabled the researchers to gather rich and detailed information while also allowing participants to express their opinions freely.

#### **Semi-structured interviews**

Semi-structured interviews were used as the primary source of data. This approach gave participants the freedom to talk about their experiences while enabling the researchers to follow up with questions if further information was required. The interviews included a number of important topics, such as why students used ChatGPT, how they used it while writing, the advantages they saw, and the difficulties they faced. Additionally, participants were questioned about the ethical implications of utilising AI in academic writing as well as the veracity of information generated by ChatGPT. The duration of each interview ranged from thirty to forty-five minutes. Interviews were done in Indonesian to make sure participants felt at ease sharing their thoughts. All interviews were audio recorded with consent from the participants and then transcribed for analysis.

#### **Open-Ended Questionnaire**

In addition to interviews, an open-ended questionnaire was distributed using Google Forms. The questionnaire allowed students to provide further explanations regarding their experiences with ChatGPT and offered an opportunity for participants to share opinions that may not have emerged during the interviews.

The use of questionnaires also helped the researchers collect information from students who had limited time for extended interviews. Responses from the questionnaires were used to complement and support the interview findings.

#### **Data Analysis**

The collected data were analyzed using thematic analysis following the procedures proposed by Braun and Clarke (2006). This method was selected because it allows researchers to identify recurring patterns and themes within qualitative data. The analysis began with a careful reading of all interview transcripts and questionnaire responses. During this stage, the researchers familiarized themselves with the data and recorded initial observations. The next step involved coding meaningful statements related to students' experiences and challenges when using ChatGPT.

After the coding process was completed, similar codes were grouped together and organized into broader themes. These themes were reviewed several times to ensure that they

accurately reflected the participants' responses. Finally, the themes were interpreted and connected to previous research in order to provide a deeper understanding of the findings.

Throughout the analysis process, the researchers continuously compared responses across participants to identify common patterns as well as unique perspectives. This approach helped ensure that the findings reflected the diversity of students' experiences.

#### **Trustworthiness of the Study**

A number of techniques were used to improve the reliability of the study results. Initially, questionnaires and interviews were used to accomplish data triangulation. By gathering data from several sources, the researchers were able to compare their findings and bolster their trustworthiness. Second, chosen participants were given summaries of the results as part of member checking. Participants were able to verify whether the interpretations appropriately reflected their experiences through this method. Lastly, thorough documentation of the research procedure was kept throughout the investigation. Transparency was aided by this documentation, which also made it possible to assess the study methods as needed.

#### **Ethical Considerations**

Throughout the whole research procedure, ethical considerations were given careful thought. Students were made aware of the study's objectives and the voluntary nature of their participation prior to their involvement. They were also told that there would be no repercussions if they left the study at any point.

## RESULT

According to the study's findings, seventh-semester Universitas Almuslim students thought ChatGPT was a useful tool for assisting with scientific writing. Participants reported using the site for a variety of tasks, such as coming up with research ideas, organising academic papers, paraphrasing texts, correcting grammar, and summarising publications. Despite these advantages, students also noted a number of difficulties and limitations that impacted their use of the technology. Analysis of the interview transcripts and questionnaire responses resulted in four major themes: (1) concerns about the accuracy and reliability of information, (2) ethical issues and academic integrity, (3) overreliance on AI and reduced critical engagement, and (4) difficulties in generating effective prompts.

#### **Theme 1: Concerns About the Accuracy and Reliability of Information**

One of the most common concerns raised by students was the accuracy of the information generated by ChatGPT. Although they appreciated the tool's ability to provide quick responses, many students questioned whether the information could be trusted without further checking. Several participants reported that some of the information provided by ChatGPT appeared accurate at first but was later found to be incorrect when compared with journal articles and other academic sources. Students also mentioned that ChatGPT sometimes generated references that could not be found or verified in academic databases. One participant stated:

“Sometimes the explanation looks very convincing, so at first I believe it. But after checking journal articles, I find that some information is not completely accurate.” (Participant 4)

Another participant shared a similar experience:

“I once used references suggested by ChatGPT, but when I searched for them, some of the articles did not exist. After that, I became more careful.” (Participant 11)

Many students admitted that before using the data produced by ChatGPT in their academic work, they needed to confirm it. They did not see the platform as a trustworthy source of scholarly evidence, but they did think it was helpful for getting first ideas. These results imply that students understand the value of verifying AI-generated content and that ChatGPT cannot take the place of reliable academic sources like scholarly books and peer-reviewed journals.

### **Theme 2: Ethical Issues and Academic Integrity**

The second major issue identified in this study was related to ethics in the use of ChatGPT for academic writing. Students had different opinions about whether AI-generated content should be used in assignments and research projects. Many participants were unsure about how much assistance from ChatGPT was acceptable. Most students felt that using ChatGPT to generate ideas, improve grammar, or clarify concepts was appropriate. However, they were less comfortable using large amounts of AI-generated text without revising or modifying it themselves. One participant explained:

“I think ChatGPT can help us understand a topic, but if we copy everything directly, it feels unethical because the ideas are not entirely our own.” (Participant 7)

Similarly, another participant stated:

“Sometimes I worry that lecturers might consider it cheating if students depend too much on ChatGPT.” (Participant 18)

Students also highlighted the absence of clear institutional guidelines regarding the use of AI in academic writing. As a result, many relied on their own judgment when deciding how and when to use ChatGPT. Interestingly, most participants did not view ChatGPT itself as a problem. Instead, they emphasized that the ethical implications depended on how the tool was used. Students generally agreed that ChatGPT should function as a support tool rather than a substitute for independent work.

### **Theme 3: Overreliance on AI and Reduced Critical Engagement**

Another important finding was the concern that excessive reliance on ChatGPT could negatively influence students' critical thinking and learning processes. Many participants acknowledged that the convenience of receiving immediate answers sometimes reduced their motivation to search for information independently. Several students admitted that they occasionally accepted ChatGPT's responses without conducting additional verification because the generated content appeared detailed and well-organized.

As one participant noted:

“When deadlines are close, it is tempting to use whatever ChatGPT provides because it saves time.” (Participant 9)

Another participant reflected:

“Before using ChatGPT, I usually read several journal articles. Now I sometimes read fewer sources because I can get a quick explanation from ChatGPT.” (Participant 15)

Some students recognized that this habit could have negative consequences for their academic development. They believed that scientific writing should involve critical analysis,

evaluation of evidence, and independent interpretation, skills that could weaken if students became overly dependent on AI-generated content.

Nevertheless, participants emphasized that the impact of ChatGPT depended largely on individual users. Students who used the platform as a supplementary tool generally reported positive experiences, whereas those who relied heavily on it were more likely to encounter difficulties in developing original ideas and arguments.

#### **Theme 4: Difficulties in Generating Effective Prompts**

The final theme involved challenges related to prompt construction. Many participants reported that obtaining useful responses from ChatGPT required careful wording of prompts. Students who were unfamiliar with effective prompting techniques often received responses that were too general, irrelevant, or lacking sufficient detail.

One participant explained:

“At the beginning, I thought ChatGPT would automatically understand what I needed. Later I realized that the quality of the answer depends on how clearly I ask the question.”  
(Participant 3)

Another participant stated:

“Sometimes I have to ask the same question several times before I get a response that matches my research topic.” (Participant 21)

Several students described prompt writing as a skill that improved with practice. As they gained more experience using ChatGPT, they learned how to provide clearer instructions and more detailed context. However, participants agreed that students who lacked digital literacy skills might struggle to use the platform effectively. This finding indicates that successful use of ChatGPT requires more than access to technology. Students also need the ability to communicate effectively with AI systems and critically evaluate the responses they receive.

## **DISCUSSION**

The purpose of this study was to find out the problems faced by the seventh semester students of Universitas Almuslim in using ChatGPT in scientific writing. Overall, students found the chatbot helpful in the writing process, but the results also identified some problems that could impact learning and the quality of academic work. The data yielded four key issues: concerns about the veracity of material, ethical issues of academic integrity, overreliance on AI-generated content, and challenges of writing effective prompts. The findings offer further insights into the use of ChatGPT by students and emphasise the need to exercise caution and responsibility when utilising AI tools.

The students' biggest concern was the reliability of the information supplied by ChatGPT. While participants valued the quickness and accessibility of information, several indicated that some answers were incorrect or featured unsupported citations. This result confirms prior work that AI systems can sometimes produce wrong or misleading information (Bang et al., 2023; Rudolph et al., 2023). Scientific writing is based on reliable and trustworthy sources, hence students need to verify facts before they put them into their school work.

Fortunately, most of the participants knew this constraint. Several said they verified knowledge from ChatGPT with journal articles, books and other scholarly sources before applying it. However, some students confessed that they sometimes used the help of the chatbot without checking the information, especially when they were under the time pressure

or had a lot of work to do. This research underscores the ongoing importance of information literacy abilities in higher education. Students need to learn not only how to utilise the tools but how to analyze the information they offer.

Next, ethical issues became a key problem. Many students; 21 students were unclear on what were the appropriate boundaries for ChatGPT's support in academic writing. The majority felt comfortable using the programme to generate ideas, improve grammar or understand topics. They were less comfortable using large amounts of text created by AI, however, because they were concerned that it could harm the uniqueness of their work. Concerns similar to this have been raised in prior research on the application of generative AI in education (Perkins, 2023).

Another concern noted in this study was the absence of clear instructions on the usage of AI in academic contexts. Some participants noted that they often used their own judgement because there were no clear regulations on how to utilise the chatbot in the context of assignments or research projects. This means that students may have diverse ideas about what is acceptable, which might lead to uneven behaviours. Therefore, colleges should have explicit norms on the responsible use of AI in academic activity.

The results also point to the potential impact of overreliance on ChatGPT on students' critical thinking and independent learning. Some participants reported that they spent less time searching for journal papers or analysing sources since they could obtain rapid explanations and summaries from the chatbot. The findings of this study are broadly consistent with previous research suggesting that excessive reliance on ChatGPT may reduce opportunities for independent learning and critical reflection (Baidoo-Anu & Owusu Ansah, 2023). Similar to earlier studies, several participants reported spending less time searching for journal articles or critically evaluating evidence because ChatGPT provided rapid explanations and summaries.

However, this study extends previous work by demonstrating that overreliance is not a universal consequence of AI use but rather depends on how students integrate ChatGPT into their writing practices. While survey-based studies have generally identified overreliance as a potential risk, the qualitative data in this study reveal important differences in students' experiences. Participants who viewed ChatGPT as a supplementary tool continued to consult scholarly literature, verify AI-generated information, and develop their own arguments. In contrast, those who relied on ChatGPT primarily to save time were more likely to bypass critical evaluation and independent information seeking. These findings suggest that the relationship between ChatGPT use and critical thinking is more nuanced than previously reported. Rather than AI itself diminishing critical thinking, the educational impact appears to be mediated by students' AI literacy, information verification practices, and purpose for using the technology. This perspective helps reconcile the apparent contradiction between studies that portray ChatGPT as a threat to critical thinking and those that emphasize its value as a learning support tool, indicating that responsible and reflective use, rather than mere access to AI, determines its educational outcomes. But the relationship between ChatGPT and critical thinking is more complex than just positive or negative. In general, students who used ChatGPT as an assistive tool continued to engage with academic literature and develop their own thoughts. Meanwhile, pupils who relied largely on AI-generated answers were more likely to miss key steps in the research and writing process. This indicates that Chat-GPT's influence is mostly dependent on the student's choice of use and not the technology itself.

Participants also cited drafting good suggestions as another issue. Initially, many students thought that ChatGPT would automatically generate meaningful responses to whatever topic they posed. But they quickly found out that the quality of the answers very much depended on how clear and detailed the prompts were. The queries were often vague and yielded general or irrelevant answers, but targeted enquiries provided more meaningful information.

This conclusion underscores the need for digital and AI literacy. To use ChatGPT effectively, students require abilities including asking clear questions, giving important

context, and evaluating the quality of AI-generated responses. As AI becomes more prevalent in education, these abilities will become more vital for students.

The study's findings have a range of practical consequences. Universities need explicit regulations on the ethical use of AI tools and training that helps students use them responsibly. Lecturers should promote the idea that ChatGPT is a tool to facilitate students, not a replacement for independent thinking and research. Also, educational institutions need to foster digital and AI literacy so that students are prepared to use new technologies well, while at the same time ensuring academic integrity.

This study has significant drawbacks. The study used a relatively small sample of participants from a single university, thus the findings may not represent the experiences of students at other institutions. Moreover, the study depended on the participants' subjective accounts and their own reports of their experiences, which could be subject to personal views and biases. Future research may include the involvement of students from different universities and fields in order to acquire a deeper knowledge of the problems connected with the usage of ChatGPT in higher education.

Overall, the results reveal that while there are benefits associated with the use of the tool, there are a number of limitations associated with its use for aiding scientific writing. Also, issues of accuracy of information, ethics, critical thinking, and digital literacy are still key factors. Students, educators and institutions must work together to realise the benefits of AI and minimise its risks, ensuring new technologies are used responsibly and effectively.

## CONCLUSION

This study demonstrates that the value of ChatGPT in scientific writing lies not in the technology itself but in how students use it. While ChatGPT enhances writing efficiency by supporting idea generation, language improvement, and content organization, its educational benefits are closely linked to students' ability to critically evaluate AI-generated information, maintain academic integrity, and use effective prompting strategies. Rather than confirming the view that generative AI is either inherently beneficial or harmful, this study shows that its impact depends on the interaction between students' AI literacy, critical thinking, and institutional support. By providing qualitative evidence of students' lived experiences, the study extends previous research that has largely focused on perceptions of AI acceptance, offering a more nuanced understanding of the challenges associated with AI-assisted scientific writing.

The findings have important implications for higher education. Universities should establish clear policies governing the ethical use of generative AI while integrating AI literacy into academic writing and research methodology courses. Educators should guide students in critically evaluating AI-generated content, verifying information using credible academic sources, and using ChatGPT as a learning support tool rather than a substitute for independent thinking. Likewise, students should develop responsible AI use by balancing the efficiency offered by ChatGPT with rigorous academic practices. Although this study was limited to one university, it highlights the need for future research involving diverse educational contexts to better understand how institutional policies and AI literacy influence the responsible integration of generative AI in higher education.

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