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Unveiling the Narratives of English Master Students Navigating AI in Scientific Writing

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Abstract

The study employs a narrative inquiry approach and involves five English master students who have used AI tools in their academic writing. The participants' experiences and opinions on AI's role in scientific writing are analysed through thematic analysis. The findings of the study reveal that master students perceive AI as a helpful tool that can assist in various aspects of scientific writing, such as brainstorming ideas, the writing process itself, and refining scientific papers. AI tools have transformed the pre-writing process by offering solutions to streamline the workflow and unlock new research paths. The students reported using AI tools for literature exploration and idea generation, refining arguments and style, boosting research efficiency, and visualizing data and findings. The study also highlights the importance of maintaining academic integrity and ensuring the originality of works when using AI-generated content, particularly pre-, during-, and post-writing processes. This study provides insights into the experiences of English master students in using AI tools for scientific writing and highlights the benefits and potential of using AI-based tools in scientific writing by English master students to improve their writing skills, streamline the writing process, and improve the overall quality of their scientific work.

Keywords: AI, scientific writing, narrative inquiry, academic integrity

Introduction

The use of Artificial Intelligence (AI) has become a part of our lives because AI has changed the way we search for information, how we communicate with each other, and even how we behave. This transformation applies to many fields, including education because AI can change the educational landscape (Chassignol et al., 2018), especially in writing scientific papers. Chen et al. (2022) reported that 4,519 publications from 2019 to 2020 used AI applications in education (AIEd), namely topic-based bibliometrics. The main topics are intelligent guidance systems for special education, natural language

processing for language education, educational robots for AI education, educational data mining for performance prediction, discourse analysis in computer-supported collaborative learning, neural networks for teaching evaluation, affective computing for learner emotion detection, and personalized learning systems. The development of AI for writing scientific papers in universities and pedagogy still faces various contradictions, especially for the good of society (Cox, 2021; Culp, 2022). Therefore, Cox (2021) asserts that AI can provide research design designs and explain how to write them in scientific writing, even though they are fictitious.

The use of AI in scientific writing can be categorized into two main areas: tools that assist writers in the writing process and tools used to assess the quality and validity of written works. To help authors of scientific papers, AI-based tools use natural language processing to understand and generate human-like language, assist writers in writing, and prepare manuscripts. This AI-based writing tool can improve the efficiency and effectiveness of the writing process by providing suggestions, grammar corrections, slurring styles, content enhancers, and content paraphrasing. Ultimately, these AI-based tools can improve the clarity, coherence, and overall quality of written work. In addition, AI tools also play a role in evaluating and assessing the quality of manuscripts. Plagiarism detection software and automated peer-review platforms can help reviewers, edit, and evaluate the originality of content. In addition, automated peer-review platforms can objectively evaluate a large number of manuscripts, potentially reducing the editing workload and speeding up the review process (Buriak et al., 2023).

Meanwhile, research on AI in the scope of English teaching in Indonesia still revolves around the use of AI in teaching and learning English. Khabib et al., (2023) report that pre-service teachers view AI positively when used appropriately for teaching. Meanwhile, Sumakul et al. (2022) stated that all English teachers have a positive perception of the use of AI in their classrooms. They agree that AI can help teachers teach and students learn. In addition, interview data also shows that the level of student and teacher motivation on technology and AI is a consideration when integrating AI into English classrooms. Studies on the use of AI in writing scientific papers are still dominated by STEM (Baidoo-Anu & Owusu Ansah, 2023; Buriak et al., 2023; Chen et al., 2022), Management (Lee et al., 2022; Nishant et al., 2020), Medical (King, 2023; Liebrenz et al., 2023), Education and Philosophy (Cope et al., 2021; Cotton et al., 2023b; Zawacki-Richter et al., 2019).

Therefore, in this article, the authors unveiled the stories of English Master students directing AI in their scientific writing papers. They investigated how English master's students apply AI tools in their academic writing papers. Thus, this study explored their perceptions of how AI-based scientific paper writing tools can help them in various aspects of scientific writing, starting from brainstorming ideas, the writing process itself, and refining scientific papers. This research highlights the benefits and potential of using AI-based tools in scientific writing by English master students to improve their writing skills, streamline the writing process, and improve the overall quality of their scientific work.

Literature Review

According to Ciaccio (2023), OpenAI tools like ChatGPT, Google Search, Bing, Android Auto, and others can assist students in writing scientific papers because they have numerous applications in academic research, such as data analysis, pattern recognition, and natural language processing (Cox, 2021; Culp, 2022). They can use writing, grammar, paraphrasing, editing, review, and plagiarism-checking software with varying degrees of accuracy. Next, they should rewrite the AI response/answer in their own words, as this AI is used as a tool to assist with scientific paper writing. According to Alkaissi and McFarlane (2023), ChatGPT is capable of writing credible scientific essays using both fabricated and real data. This raises concerns about the integrity and accuracy of academic writing. Salvagno et al. (2023) stressed that ChatGPT is a useful and powerful tool in scientific writing.

AI-based tools for scientific writing use natural language processing to understand and generate human-like language, and help writers write, and prepare manuscripts (Buriak et al., 2023; Nishant et al., 2020; Sallam, 2023; Salvagno et al., 2023). Students can benefit from AI's ability to suggest alternative phrasing, identify logical gaps, and propose new research directions (Floridi et al., 2018; Malik et al., 2023). As a result, the impact of AI integration in academic writing influences academic integrity, originality, and the assessment of students' capabilities (Salvagno et al., 2023). The practical and ethical implications of AI in academic writing influence the development and refinement of AI tools (Malik et al., 2023). Hwang and Chien (2022) argued that AI tools should be used to help students.

However, AI has some challenges and limitations with the use of academic writing, particularly in terms of academic integrity and evaluating students' capabilities (Salvagno et al., 2023). It has the complex ethical considerations and challenges associated with the use of AI in academic writing, in terms of ethical, practical, and pedagogical implications (Malik et al., 2023) because it cannot fully comprehend and engage with the complexities of certain academic tasks, such as literary analysis and historical interpretation (Dabhade & Narula, 2023; Malik et al., 2023). It is obvious because AI analyzes and interprets texts using advanced algorithms and machine learning techniques, but its capability is limited (Stepin et al., 2021; Technology, 2023).

There are risks associated with using AI in academic writing, such as concerns about transparency, explainability, plagiarism, and authorship attribution (Stepin et al., 2021; Technology, 2023). Accepting the easy way out and using AI-generated shortcuts may save time in the short term, but it could jeopardize their academic integrity and intellectual growth (Alkaissi & McFarlane, 2023; Alonso et al., 2023; Baidoo-Anu et al., 2023; Culp, 2022). The integration of artificial intelligence (AI) in academic settings requires a careful balance, similar to a high-wire act, in which its power must be harnessed while avoiding the pitfalls of plagiarism and superficial analysis (Cotton et al., 2023; King, 2023). This has consequences for academic integrity and the evaluation of a student's capabilities and knowledge (Chen et al., 2020).

Methods

The This study employs a narrative inquiry approach to delve into the lived experiences of five English Master students as they steered the integration of AI into their scientific writing practices. This qualitative methodology is ideal for capturing the richness and complexity of individual experiences, allowing students to tell their own stories in their voices (Connelly & Clandinin, 2006).

Population/Research Participants

There were five master students (MS), one male and four female. The participants' geographical origins are Kalimantan, Papua, Sulawesi, Java, and Sumatra. The participants' ages ranged from 26 to 41. They entered their English Master's program in 2020 and 2021. The semester column indicates the participants' current semester in the program, ranging from the 7th to the 9th semester. MS 1 studied at a private university in Kalimantan while MS 2, MS 3, MS 4, and MS 5 studied at a state university in Jakarta.

Data Collection

Each participant gave their informed consent before the interview. They then underwent in-depth interviews. Five English Master students who self-reported using AI tools in their academic writing were interviewed in-depth for the study, which was based on a purposive sample. Their homelands are Papua, Java, Kalimantan, Sulawesi, and Sumatra. During the interviews, questions about their opinions of AI for scientific papers, the particular AI tools they used before, during, and after writing, and their experiences with those tools were asked. For analysis, the audio recordings of the interviews were transcribed verbatim.

Data Analysis

Thematic analysis was employed in the data analysis process (Braun & Clarke, 2006). Two researchers coded the interview transcripts independently to find reoccurring themes and patterns in the data. To improve the emerging themes and guarantee intercoder dependability, this iterative procedure comprised coding, recoding, and memo writing. Interpreting the themes in light of the experiences of five English Master students in particular as well as the larger context of AI integration in academic writing was the last step of the analysis process.

Findings and Discussions

This study explored the perception of each English master student about AI in their scientific writing papers and their AI tools before, during, and after writing scientific papers. The Master students 1 to 5 revealed their perception of the AI for the scientific paper was rescuer and skepticism, cooperative irony, moral entertainer, educator and students, instrument and reflection respectively.

Perceptions of Master Students 1-5

Master Student 1

> Artificial intelligence (AI) really revolutionize the research and writing process. It is providing benefits such as task automation, scanning large amounts of information, and generating draft outlines, so it is very useful for me. I am questioning about AI's ability that can fully understand the nuances of academic argumentation and complexity, especially the literary analysis and historical context. Whether AI can comprehend the depth of meaning in literary analysis or the many layers of historical context, it is really amazing for me as a master student. It is a sophisticated word processor as my thinking partner although it is debatable.

AI has found numerous applications in academic research, including data analysis, pattern recognition, and natural language processing(Cox, 2021; Culp, 2022). However, because AI tools have limitations and cannot completely replace human researchers, researchers must strike a balance between AI-driven automation and human ingenuity. AI-powered tools can improve various aspects of academic writing, such as readability, grammar, spelling, and tone. However, there are risks to using AI in academic writing, such as concerns about transparency, explainability, plagiarism, and authorship attribution (Stepin et al., 2021; Technology, 2023).

Master Student 2

> In my concern about AI for scientific writing, it is complex interplay of the technology's assistance and its potential impact on the work's originality and ownership. The ability of AI is alternative phrasing, identify logical gaps, and propose new research directions. For English master student like me, AI is acting as a sounding board that forces me to confront inconsistencies and refine my arguments. This is a good collaboration, although AI raises my questions and concerns.

The use of artificial intelligence (AI) in academic writing creates a complex interplay between the technology's assistance and its potential impact on the work's originality and ownership. The ability of AI to suggest alternative phrasing, identify logical gaps, and propose new research directions has been recognized as useful for students, acting as a sounding board that forces them to confront inconsistencies and refine their arguments (Floridi et al., 2018; Malik et al., 2023). This collaboration, however, raises significant questions and concerns.

Master Student 3

> Artificial intelligence for academic settings can be used to avoid the pitfalls of plagiarism and shallow analysis. We must navigate the fine line between using AI as a research tool and relying on it power. The interest of easily accessible AI-generated phrases is enticing and promising quick solutions to meet deadlines. Yes, it can be academic dishonesty, on the other hand, it can make my written works look original. But I have to be critical thought keeps my intellectual integrity.

One of the main concerns is the possibility of lines blurring between the student's original writing and AI-generated text. This begs the question of whether the student is actually writing or just editing AI-generated

content. Furthermore, there is concern that this collaboration will reduce the work's ownership and originality, as the AI's contributions may become indistinguishable from the student's input. This has ramifications for academic integrity as well as the evaluation of a student's capabilities and knowledge(Chen et al., 2020; Stepin et al., 2021; Zawacki-Richter et al., 2019). The final product of this collaboration raises questions about the evidence of the student's intelligence versus the skill of the algorithm. It becomes difficult to distinguish how much of the work is a reflection of the student's intellectual abilities and critical thinking versus the influence of AI. This has implications for assessing and recognizing a student's academic achievements, as well as the integrity of the scholarly work produced(Alonso et al., 2023; Cox, 2021; Malik et al., 2023).

Thus, the ethical implications of AI in academic writing are complex, and educational institutions and students must tread carefully through this terrain. While AI can be a useful tool in the writing process, it is critical to maintain intellectual integrity and ensure that its use is consistent with academic policies and ethical standards (Cox, 2021; Malik et al., 2023). By doing so, students can connect the power of AI while maintaining academic integrity. Accepting the easy way out and using AI-generated shortcuts may save time in the short term, but it may jeopardize their academic integrity and intellectual growth(Alkaissi & McFarlane, 2023; Alonso et al., 2023; Baidoo-Anu et al., 2023; Culp, 2022). The integration of artificial intelligence (AI) in academic settings demands a careful balance, similar to a high-wire act, where its power must be harnessed while avoiding the pitfalls of plagiarism and shallow analysis (Cotton et al., 2023a; King, 2023). Therefore, students face the challenge of navigating AI as a research tool and relying on their thought as a crutch. The attraction of readily available, AI-generated phrases presents a temptation, promising quick solutions to meet deadlines. However, academic dishonesty and the desire to contribute originally critical thought are expected to make the student attached to their intellectual integrity.

Master Student 4

> For me, AI tools for scientific writing can be both an educator and a student which is very helpful. It is playing a dynamic role in my learning process. As an educator, AI introduces me as a student to new research findings, challenges their assumptions. It gives me alternative viewpoints that promote intellectual growth. As a student, AI adapting its suggestions and insights to response the feedback and encounters for new arguments. This is harmonious dancing of teaching and learning that fosters intellectual growth on both sides. It forcing students to improve their arguments and broaden their knowledge base and at the same time, shaping AI to be more accurate and nuanced.

In the academic world, AI can be both an educator and a student, playing a dynamic role in the teaching and learning process. As an educator, AI introduces students to new research findings, challenges their assumptions, and provides alternative viewpoints, promoting intellectual growth. As a student, AI adapts its suggestions and insights in response to feedback and encounters new arguments. This dynamic dance of teaching and learning fosters intellectual growth on both sides, forcing students to refine their arguments and broaden their knowledge base while shaping AI to be more accurate and nuanced(Floridi et al., 2018).

However, there are some drawbacks to using AI in academic settings, such as concerns about transparency, explain ability, and authorship attribution(Bailey, 2023).

The ethical issues surrounding AI in education are complex. The ability of AI to have human-like conversations and generate content opens the door to adaptive tutoring and instructional assistance. However, it raises serious ethical concerns about bias, appropriate use, and plagiarism. The risk that AI-generated essays will undermine learning and the college admissions process is significant (Cotton et al., 2023a; Floridi et al., 2018). If AI is not carefully monitored, biases in the data can be perpetuated, and the technology can facilitate cheating. Therefore, The incorporation of artificial intelligence (AI) in academic research and writing presents both opportunities and challenges. Since AI can be a useful tool, it is critical to maintain intellectual integrity and ensure that its use is consistent with academic policies and standards. By doing so, students can harness the power of AI while maintaining academic integrity(Bailey, 2023).

Master Student 5

> Artificial intelligence (AI) is really a powerful tool. It has had a significant impact on my academic research and writing. I can amplify and refine these processes with AI because it is providing benefits such as grammar checks, plagiarism detection, language translation, and essay outlines. Furthermore, AI help me with data analysis, pattern recognition, and natural language processing that really improving the efficiency of my research and writing.

The use of AI in academic research and writing can be compared to a collaborative exchange in which the student and the AI exchange ideas continuously. The student questions the AI's suggestions, causing it to adapt and evolve, while the AI questions the student's assumptions, encouraging them to broaden their perspectives and think critically(Culp, 2022). This ongoing interaction catalyzes intellectual development, influencing the student's approach to scholarly inquiry while also contributing to the AI's ongoing growth and refinement. Therefore, AI is a powerful tool that has had a significant impact on academic research and writing. It can enhance and refine these processes, providing benefits such as grammar checks, plagiarism detection, language translation, and essay outlines. Furthermore, AI can help with data analysis, pattern recognition, and natural language processing, improving the efficiency of research and writing(Buriak et al., 2023; Khabib et al., 2023; Sumakul et al., 2022).

However, AI is more than just a tool. It is also a reflection of the student who is using it. Students gain a better understanding of their capabilities and the true value of original thought by confronting the ease and limitations of AI. While AI can be a useful tool in the research and writing process, the ultimate journey of scholarly inquiry belongs to the students, who are propelled by their intellectual curiosity and unwavering commitment to knowledge. Thus, The use of AI in academic research and writing has raised significant concerns. While AI can help students improve their writing skills and self-efficacy, there are concerns about transparency, explainability, and authorship attribution (Chen et al., 2022; Kasneci et al.,

2023; Sallam, 2023). Students and researchers must strike a balance between AI-driven automation and human ingenuity to ensure that the final product is a true reflection of their intellectual contributions.

AI tools for pre-writing scientific papers reported by Master Students

At the pre-writing stage, the authors need to conduct meticulous research, creative brainstorming, and clear organization. Fortunately, AI tools transformed the pre-writing process by offering solutions to streamline the pre-writing workflow and unlock new research paths. They reported the following specific AI tools' functionalities for literature exploration and idea generator, refining arguments and style, boosting research efficiency, and visualizing data and findings.

Literature Search and Idea Generating:

- Jennie AI https://jenni.ai/: This research assistant specializes in specific scientific fields. Its strength is in creating knowledge graphs and summaries based on the master students' queries, which allows the master students to delve deeper into their chosen field.
- ChatGPT https://chat.openai.com/chat: This adaptable language model excels at novel text formats such as research questions and article outlines. It is not strictly scientific, but its adaptability can lead to unexpected connections and new research directions.
- Julius AI https://julius.ai/): This platform excels at summarizing and extracting key points from scientific papers. The master students feed it a stack of research papers to get concise summaries of the main points and identify potential gaps in their field.

Arguments improvement and Style:

- Perplexity https://www.perplexity.ai/: Beyond basic grammar checks, this AI analyzes their writing for clarity, conciseness, and scientific tone. It offers suggestions for improvement, ensuring that the master students' work meets academic standards and effectively engages readers.
- Google Bard https://blog.google/technology/ai/bard-google-ai-search-updates/: This sophisticated AI can examine their draft and recommend ways to restructure arguments, improve language, and identify inconsistencies. Consider it a research assistant and writing coach in one. This sophisticated AI can examine the master students' drafts and recommend ways to restructure arguments, improve language, and identify inconsistencies. They consider it as a research assistant and writing coach in one.

Enhancing Research Productivity:

- Semantic Scholar https://www.semanticscholar.org/: This prevailing engine searches vast databases for relevant articles, creates citation trails, and even recommends related publications.

It can save time on literature reviews and discover unexpected connections in the field of master's students.

- Scilit https://scite.ai/extension-install: This Chrome extension works in tandem with Google Scholar to highlight key phrases and detect potential plagiarism in real-time. It can maintain academic integrity and originality beginning with the first draft.

Picturing Data and Findings

- MindMup https://www.mindmup.com/: This visual brainstorming tool can create mind maps, connect ideas, and organize arguments straightforwardly and intuitively. With this visual thinking app, the master students can plan their article structure, identify research gaps, and discover creative connections.
- Datawrapper https://academy.datawrapper.de/category/178-example-charts-maps: Without coding, this user-friendly platform transforms the data into stunning charts, graphs, and maps. The master students reported that their findings were visually appealing and easy to understand for their readers.

At the pre-writing stage of scientific paper writing, this article reported comprehensively that AI managed to provide several benefits, including time savings, personalized feedback, and improved learning experiences(Buriak et al., 2023). These tools transformed the pre-writing process by offering solutions to streamline the pre-writing workflow and unlock new research paths. They reported the above-mentioned AI tools' functionalities for literature exploration and idea generator, refining arguments and style, boosting research efficiency, and visualizing data and findings. However, it is critical for students and researchers to be aware of the potential consequences of over-reliance on AI tools, and to ensure that the final product is a true reflection of their intellectual contributions. Students can bind AI's power to enhance their academic pursuits while maintaining the integrity of their work by using it as a tool for intellectual exploration and academic growth(Sumakul et al., 2022). This approach ensures that the use of AI complements and enhances the student's intellectual capabilities by striking a balance between AI-driven automation and human ingenuity.

AI tools for during-writing scientific papers reported by Master Students

A scientific paper requires careful research, clear communication, and unwavering focus. Fortunately, artificial intelligence allows the five master students to optimize their writing process and gives them more time for intellectual exploration. They reported the features and connections of their chosen AI options to prepare them for a productive and impactful writing journey as creation and refinement of content,

management of citation and research integration, data visualization and interactive exploration, and maintaining focus and inspiration.

Creation and Refinement of Content:

- QuillBot https://quillbot.com/ : This AI paraphrasing tool helps all English master students rephrase sentences and paragraphs while maintaining scientific accuracy and context. They could avoid repetitive phrasing and inject new life into their writing without compromising clarity.
- Grammarly https://www.grammarly.com/ : The five master students went beyond basic grammar checks with Grammarly. This AI tool identifies passive voice, suggests concise phrasing, detects plagiarism, and even offers style suggestions, ensuring their writing meets academic standards and shines with originality.
- Ginger Writer https://www.gingersoftware.com/: Similar to Grammarly, Ginger Writer provides advanced grammar and style checks, focusing on conciseness and scientific tone. It even detects plagiarism and offers personalized writing style reports, helping the master student 1 to refine their voice and maintain academic integrity.

Management of Citations and Research Integration:

- Julius AI https://julius.ai/: This platform is particularly good at summarizing and extracting key points from scientific documents. Master student 2 feeds it a stack of research papers to get concise overviews that could help her understand main arguments and identify potential gaps in her field.
- Google Scholar https://scholar.google.com/: Google Scholar, while not strictly an AI tool, remains a research discovery powerhouse. Its advanced search capabilities and citation tracking assist all these master students in navigating the vast scientific landscape and establishing a solid foundation for their research.
- Mendeley https://www.mendeley.com/: This citation management software can simplify citation problems. Master students 1, 2, 3, and 4 capture and organize their references with ease, create in-text citations and bibliographies in their preferred style, and collaborate with other researchers with ease.
- Zotero https://www.zotero.org/: Zotero, like Mendeley, provides powerful reference management capabilities. Its user-friendly interface and integrations with popular writing tools make it a popular choice among academics. The master student 5 selected the platform that best accommodates her workflow and citation style.

Data Visualization and Interactive Exploration:

- Datawrapper https://academy.datawrapper.de/: There is no need for coding! Datawrapper allowed the master students to create custom charts and infographics easily. They Shared their findings publicly or embedded them in their article to improve reader accessibility and comprehension.

Maintaining Focus and Inspiration:

- Forest https://www.forestapp.cc/:With Forest, the master students could combat distractions. This app makes concentration fun by planting virtual trees that grow as you concentrate. As they completed their writing tasks, they observed their forest flourish and stayed motivated by a sense of accomplishment.
- Freedom https://freedom.to/: With Freedom, the master student 4 could silence the digital din. This app blocks distracting websites and notifications, creating a distraction-free zone for uninterrupted writing sessions. The master student 4 could increase their productivity and achieve a flow state with unwavering focus.

Next, during the writing stage, the authors reported that AI can optimize the writing process of their research participants, who were involved in thorough research, communication, and attention to intellectual exploration. They discussed the features and connections of their chosen AI options to prepare for a productive and impactful writing journey, such as content creation and refinement, citation and research integration management, data visualization and interactive exploration, and maintaining focus and inspiration. For these research participants, AI served as a tool rather than a replacement. They utilized its features to enhance their writing process while retaining their unique voice and critical thinking. They explored various AI platforms and discovered those that aligned with their writing style and research needs while maintaining academic integrity (Kim & Kim, 2022).

AI tools for post-writing scientific papers reported by Master Students

The post-writing stage is critical for ensuring clarity, accuracy, and publication potential after the intense effort of crafting your scientific article. Fortunately, the following AI tools can be useful in refining the masterpiece of the five English master students. Below, they explained some powerful AI options and capabilities for language refinement and fact-checking, management of citations and references, infographics and visual presentations, and plagiarism detection and originality verification.

Language refinement and fact-checking:

- Grammarly https://www.grammarly.com/: This well-known AI goes beyond grammar checks to provide advanced recommendations for conciseness, clarity, and scientific tone. The master

students made use of its plagiarism detection and style analysis to bring their writing up to publication standards.

- Ginger Writer https://www.gingersoftware.com/: Ginger Writer, like Grammarly, provides in-depth analysis of their writing, focusing on conciseness and scientific word choice. Its personalized reports and plagiarism detection assist English master students in improving their academic voice while maintaining academic integrity.
- LanguageTool https://languagetool.org/: This open-source platform provides comprehensive grammar and style checks, as well as advanced features such as spell checking in over 60 languages and the ability to detect stylistic inconsistencies.

Management of Citations and References:

- Zotero https://www.zotero.org/: This powerful reference management software eliminates the need for post-writing referencing. The English master students easily organize and format their citations in their preferred style, create bibliographies, and collaborate with co-authors in real-time.
- Mendeley https://www.mendeley.com/: Mendeley, like Zotero, provides reference management capabilities with additional features such as web annotation and PDF highlighting. The master students selected the platform that best accommodated their workflow and citation style.

Infographics and visual presentations:

- Datawrapper https://academy.datawrapper.de/: There is no need for coding! The English master students used Datawrapper to create visually stunning and publishable charts, graphs, and maps from their data. They improve their reader comprehension by making your findings visually appealing.
- BioRender https://biorender.com/: This free platform specializes in scientific illustrations. The English master students created diagrams, illustrations, and animations to clearly and engagingly explain complex concepts and data relationships.

Plagiarism detection and originality verification:

- Turnitin https://turnitin.com/: This popular platform checks their article for possible plagiarism against a large database of academic works. Before submitting their paper for publication, they ensure its originality and academic integrity.
- DoNotPay Plagiarism Checker https://donotpay.com/learn/: This free AI tool checks for plagiarism against billions of online sources in real-time. Before publishing, the master students get peace of mind and ensure originality by applying this tool.

The intense effort of crafting the scientific article, the post-writing stage is critical for ensuring clarity, accuracy, and publication potential. Fortunately, the AI tools helped the five participants of this study to improve their writing masterpieces. They discussed some powerful AI options and capabilities for language refinement and fact-checking, citation and reference management, infographics and visual presentations, and plagiarism detection and originality. The features of the AI tools helped to improve their writing and polish their work while maintaining their critical thinking and ensuring factual accuracy. In accordance with the journals, because different journals have different formatting and citation requirements, they had to become acquainted with these guidelines and adjust their post-writing process. The post-writing stage can become a more efficient and impactful process with the help of AI tools to ensure clarity, accuracy, and adherence to journal guidelines. The participants of this study were able to embrace their power, maintain control, and let their painstakingly crafted scientific masterpieces shine in the world of academic publishing (Salvagno et al., 2023).and Discussions contain results obtained by the author during the research activities. The research findings are submitted in advance as a whole, which continues by doing the discussion. The discussions are presented systematically from general to specific. The data can be presented with tables or figures. Findings and discussions must also interconnect with the theory that is used. Avoid excessive use of citations and discussion of published literature.

Artificial intelligence (AI) has indeed revolutionized the research and writing process, providing benefits such as task automation, scanning large amounts of information, and generating draft outlines, which can be especially useful for busy students. However, questions remain about AI's ability to fully comprehend the nuances of academic argumentation and complexity, particularly in fields such as literary analysis and historical context. Meanwhile, AI has been shown to improve students' writing skills, self-efficacy, and understanding of academic integrity. On the other hand, it has limitations in its ability to fully comprehend and engage with the complexities of certain academic tasks, such as literary analysis and historical interpretation (Dabhade & Narula, 2023; Malik et al., 2023). AI literary analysis entails analyzing and interpreting texts using advanced algorithms and machine learning techniques, but its capability is limited (Stepin et al., 2021; Technology, 2023).

Conclusion

This article discusses the use of Artificial Intelligence (AI) in scientific writing, particularly focusing on the experiences of English Master students, as the participants of this study. It highlights the benefits and potential of using AI-based tools in scientific writing to improve writing skills, streamline the writing process, and enhance the overall quality of scientific work. However, this study also raises significant concerns about the potential distortion between the student's original writing and AI-generated text, which could impact academic integrity and the evaluation of a student's capabilities. The participants emphasized the importance of using AI as an assistant rather than a replacement for critical thinking and maintaining control

over the writing process. They also highlighted the need to ensure academic integrity and the originality of their work despite using AI tools.

However, there are some flows of this study. It primarily presents the benefits of using AI in scientific writing, with limited discussion of potential drawbacks or contrasting viewpoints. A more comprehensive analysis would involve addressing the challenges and limitations associated with the use of AI in academic writing, providing a more balanced perspective. While the text briefly touches on the ethical implications of AI in academic writing, it does not delve deeply into the broader ethnic considerations and potential consequences of widespread AI integration. A more thorough exploration of the ethnic challenges and implications would enhance the comprehensiveness of the discussion. Lastly, although this article mentions the importance of maintaining academic integrity, it does not extensively address the specific measures and strategies that the research participants employed to ensure the originality and integrity of their work when using AI tools. A more detailed examination of the practical steps taken to uphold academic integrity would strengthen the discussion.

This article provides valuable insights into the experiences of English Master students in utilizing AI-based tools for scientific writing. It emphasizes the potential benefits of AI in improving writing skills, enhancing the writing process, and optimizing research outcomes. However, it also underscores the complex ethical considerations and challenges associated with the use of AI, particularly regarding academic integrity and the evaluation of students' capabilities. Moving forward, it is essential to address the weaknesses identified and engage in a more comprehensive and balanced dialogue about the ethnic, practical, and pedagogical implications of AI integration in scientific writing. By doing so, educational institutions and students can navigate the use of AI in academic writing more thoughtfully and responsibly, ensuring that AI remains a valuable assistant while upholding the principles of academic integrity and originality.

This study opens the door for further research into the long-term impact of AI integration in academic writing, particularly in terms of academic integrity, originality, and the evaluation of students' capabilities. Future studies could explore the perspectives of educators and academic institutions on the integration of AI tools in scientific writing, as well as the development of guidelines and best practices for responsible AI use in academic settings. There is also a need for continued research into the development and refinement of AI tools specifically tailored to the needs of scientific writers, taking into account the unique requirements of academic writing and research. In conclusion, the study provides valuable insights into the experiences of English Master students in integrating AI tools into their scientific writing practices. It highlights the benefits, challenges, and ethical considerations associated with the use of AI in academic writing, and offers practical implications for educators and further research directions in this evolving field.

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