From Grammarly to GPT:

Exploring the Use of AI-Assisted Academic Writing Tools Among Doctoral Researchers

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Abstract

The rapid integration of artificial intelligence (AI) into academic writing has reshaped research practices in higher education, particularly at the doctoral level, where advanced writing, critical thinking, and scholarly autonomy are essential. This study investigates Algerian doctoral students' engagement with AI-assisted academic writing tools, focusing on their familiarity, usage patterns, perceived benefits, and ethical concerns. Adopting a mixed-methods approach, data were collected through an online questionnaire administered to 30 PhD students specializing in English language–related disciplines across various Algerian universities. Quantitative data examined tool awareness, frequency of use, and perceptions of effectiveness, while qualitative responses provided insights into ethical considerations and recommended practices. The findings reveal universal awareness of AI writing tools, with ChatGPT, Grammarly, and QuillBot emerging as the most frequently used applications. Participants primarily employed these tools for grammar correction, paraphrasing, idea generation, and organizational support. Overall perceptions were predominantly positive, highlighting improvements in writing quality, efficiency, and cognitive support. However, notable ethical concerns were expressed regarding academic integrity, overreliance, authorship boundaries, and potential impacts on critical thinking and independent writing development. Importantly, all participants emphasized the need for clear institutional guidelines and formal training to ensure responsible and transparent AI use. The study concludes that while AI tools offer substantial pedagogical value as assistive resources in doctoral academic writing, their integration must be guided by ethical frameworks, critical engagement, and institutional policy. These findings contribute to the growing discourse on AI in higher education and underscore the necessity of balanced, discipline-sensitive approaches to AI adoption in advanced academic contexts.

Keywords: Academic writing; Artificial Intelligence; doctoral studies; ethical considerations; higher education.

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1. Introduction

In recent years, artificial intelligence (AI) has rapidly become an integral component of academic research and writing, transforming the landscape of higher education. From grammar correction to idea generation and content structuring, AI-assisted writing tools have evolved from simple proofreading applications like Grammarly to advanced generative language models such as ChatGPT. These tools offer doctoral researchers a range of support mechanisms, from enhancing linguistic accuracy to facilitating complex cognitive tasks, thereby streamlining the writing process and potentially improving the quality and efficiency of academic output.

As doctoral studies demand high levels of critical thinking, academic rigor, and sustained scholarly engagement, AI writing tools are increasingly viewed as valuable allies in navigating the challenges of academic communication (Belkhir, 2024). However, this technological shift also introduces concerns related to overreliance, academic integrity, authorship, and the development of independent scholarly voice. The balance between support and substitution raises essential pedagogical and ethical questions that deserve critical attention.

This study investigates how Algerian doctoral researchers engage with various AI-assisted writing tools, examining their perceptions, usage patterns, and the perceived impact on their academic writing practices. By exploring a continuum of tools—from basic editing applications like Grammarly to generative models like ChatGPT—this research aims to understand how these technologies are reshaping doctoral-level academic writing. To fulfill the study's objectives, this study seeks to address the following research questions:

✓   RQ1: To what extent are Algerian PhD students familiar with and using AI-assistive tools in their academic writing practices?

✓   RQ2: What are PhD students' perceptions of the usefulness and impact of AI tools on the quality and development of their academic writing?

✓   RQ3: What concerns and ethical considerations do PhD students express regarding the use of AI tools in academic writing?

The findings are intended to inform educators, supervisors, and policy makers on the pedagogical implications of integrating AI into advanced academic contexts, while also contributing to the ongoing dialogue about the role of AI in shaping the future of academic literacy.

2.   Literature Review

2.1.   The Nature and Importance of Academic Writing in Doctoral Studies

Academic writing is a fundamental component of doctoral education, serving as both a medium of scholarly communication and a means of intellectual development. At the doctoral level, academic writing extends beyond the accurate use of language; it reflects a student's ability to construct arguments, engage critically with existing literature, and contribute original insights to their field of study (Casanave, 2010; Swales & Feak, 2012). Doctoral researchers are expected to write with precision, coherence, and analytical depth while adhering to the conventions of their discipline. This involves mastering various academic genres such as literature reviews, research proposals, journal articles, and dissertations.

The demands of doctoral writing can be especially challenging for non-native English speakers or students who enter postgraduate programs without a strong academic writing foundation. These challenges include organizing complex ideas logically, integrating sources correctly, maintaining academic tone, and avoiding plagiarism (Hyland, 2016; Paltridge et al., 2012). Writing is not only a product but also a process that involves planning, drafting, revising, and refining arguments based on feedback. Consequently, writing becomes a site of learning and identity formation, as doctoral students begin to see themselves as contributors to knowledge within their academic community.

The pressure to publish in high-impact journals, produce a quality thesis, and complete writing tasks under tight deadlines adds further complexity. In this context, academic writing is not merely a

skill but a critical success factor in doctoral education. Therefore, many students seek support through supervisors, peer review, writing centers, or increasingly, through digital tools designed to facilitate writing quality and efficiency.

2.2. *The Evolution of Writing Support Tools*

The landscape of academic writing has undergone significant transformation with the advancement of digital technologies. Initially, doctoral researchers and students relied on traditional forms of writing support, such as peer feedback, writing centers, and supervisory guidance. However, as the academic and linguistic demands of scholarly writing increased—particularly for non-native English speakers—technological tools began to emerge as supplementary support mechanisms.

The earliest digital writing aids were integrated into standard word processing software, such as Microsoft Word's spell check and grammar correction features. These tools primarily targeted surface-level errors, offering automated corrections for spelling, punctuation, and basic grammar. Although limited in scope, they marked the beginning of a technological shift in academic writing practices (Johns, 2011).

The next significant development was the emergence of dedicated grammar checkers and style enhancement platforms, most notably Grammarly, ProWritingAid, and Hemingway Editor. These tools combined rule-based language processing with probabilistic models to provide more sophisticated feedback on sentence structure, tone, conciseness, and clarity. Grammarly, for example, offers real-time feedback on grammar, punctuation, and word choice, and has become widely adopted in academic contexts for its user-friendly interface and detailed explanations (Wilson & Czik, 2021). Over time, a broader ecosystem of AI-powered writing assistants has emerged, including QuillBot, which focuses on paraphrasing and summarizing; Slick Write, which provides in-depth analysis of sentence structure and readability; LanguageTool, a multilingual grammar checker with open-source flexibility; and Ginger Software, known for its contextual grammar correction and translation features. These tools are particularly valued by doctoral students for supporting revision and self-editing processes, especially when writing in English as a second or foreign language.

With the advancement of artificial intelligence, particularly natural language processing (NLP) and machine learning, a new generation of writing assistants has emerged. Transformer-based models such as OpenAI's Generative Pre-trained Transformer (GPT) have introduced a paradigm shift in writing support. Unlike earlier tools that focused primarily on correcting existing text, GPT-based applications such as ChatGPT, Jasper AI, and Writesonic can generate coherent and contextually relevant content from prompts, summarizing texts, paraphrasing complex passages, and even suggesting academic arguments or outlines (Kasneci et al., 2023).

These generative AI tools represent a fundamental evolution in writing support: they do not merely correct but co-author. Their ability to respond interactively to user prompts, refine academic language, and simulate scholarly tone makes them particularly appealing to doctoral students navigating the complexities of thesis writing, research article preparation, or grant proposals. However, this leap in functionality also raises critical concerns about authorship, originality, and ethical boundaries in academic writing (Lund & Wang, 2023).

As AI tools continue to become more integrated into everyday writing practices, researchers and educators are increasingly examining their role not only as aids to linguistic accuracy but also as influential agents in shaping academic thought, writing identity, and scholarly communication. The evolution from basic grammar checkers to advanced AI writing assistants reflects a broader trend in academia: the convergence of human cognition and artificial intelligence in the co-construction of academic knowledge.

2.3.   *Emergence and Capabilities of Generative AI*

The emergence of generative AI has profoundly transformed academic writing, providing novel tools that support scholars and students throughout the entire writing process. Initially, academic writing benefited from simpler AI applications like grammar and spell checkers—examples include Grammarly and ProWritingAid—which enhanced surface-level accuracy and style (Graesser et al., 2004). These early tools laid the foundation for integrating AI in writing, but their functionality remained largely corrective rather than generative.

The landscape changed dramatically with the development of large language models (LLMs) such as OpenAI's GPT series (GPT-2 in 2019, GPT-3 in 2020, and GPT-4 in 2023), which brought generative capabilities to the forefront (Radford et al., 2019; Brown et al., 2020). These models can produce coherent, contextually relevant text, enabling AI to move beyond editing into content creation. Tools like ChatGPT utilize these models to interactively assist users in drafting essays, summarizing research articles, brainstorming ideas, and providing detailed feedback (Roumeliotis & Tselikas, 2023; Li et al., 2024).

Alongside ChatGPT, several other generative AI tools have been developed for academic writing:

- ✓ Jasper AI: An AI writing assistant that helps generate academic content, create outlines, and suggest improvements to style and tone. It is widely used for both creative and scholarly writing.
- ✓ QuillBot: Known for its paraphrasing and summarization functions, QuillBot assists writers in restructuring sentences and improving clarity while avoiding plagiarism.
- ✓ Writefull: This tool focuses on academic language enhancement by providing feedback on grammar, vocabulary, and usage based on vast corpora of scholarly texts, supporting non-native English speakers in maintaining academic tone.
- ✓ Scite.ai: While not a text generator, Scite uses AI to analyze citations and evidence strength, helping researchers critically evaluate literature and integrate citations more effectively in their writing.

The emergence of these tools marks a significant evolution—from assistance with basic language accuracy to comprehensive support in research writing tasks, including literature review synthesis, argument structuring, and stylistic refinement (DuBose & Marshall, 2023; Bolaños et al., 2024). These tools have proven especially beneficial for undergraduate and graduate students struggling with academic writing challenges such as writer's block, organizing complex ideas, and overcoming language barriers (Dwivedi et al., 2023; Imad, 2024). For instance, ChatGPT has been used to generate first drafts of essays, which students then revise critically, while QuillBot helps rephrase complex sentences to improve readability.

In a nutshell, the emergence of generative AI tools such as ChatGPT, Jasper, QuillBot, and Writefull marks a pivotal moment in academic writing. These technologies enable more inclusive, efficient, and sophisticated approaches to scholarly communication—provided that their integration is guided by ethical standards and pedagogical awareness.

2.4.   *Benefits and Limitations of AI Writing Tools in Academic Contexts*

AI writing tools have increasingly become integral to academic work, offering significant benefits that improve both the quality and efficiency of writing. These tools enhance clarity, grammar, coherence, and style, enabling students and researchers to focus more on critical thinking and higher-order writing tasks rather than on surface-level editing (Tran, 2024). Research shows that doctoral students who engage with AI tools iteratively—using AI-generated suggestions as a part of a continuous writing process—achieve better outcomes than those who use these tools passively (Nguyen et al., 2024). In specialized academic domains, such as medical writing, AI automates repetitive tasks, ensures consistent formatting and referencing, and suggests coherent text, improving productivity and precision (Karuppal, 2025).

However, despite these advantages, AI writing tools face notable limitations that affect their effectiveness in diverse academic contexts. Many tools struggle to accommodate the specialized jargon, disciplinary conventions, and unique writing styles that vary across fields, potentially leading to inappropriate or inaccurate outputs (Khalifa & Albadawy, 2024). Ethical concerns regarding AI-generated content also persist, with students in regions such as South Asia expressing worries about plagiarism and academic integrity, underscoring the urgent need for clear institutional guidelines and responsible AI use (Hossain et al., 2025).

Generative AI models like ChatGPT introduce further complexities due to their reliance on vast datasets derived from publicly available internet sources. These models may unintentionally replicate content from original sources too closely, raising risks of plagiarism and copyright infringement if the outputs are not carefully reviewed (Athaluri et al., 2025). A critical issue known as "AI hallucination" occurs when AI produces plausible but factually incorrect or fabricated information, posing serious risks in precision-critical fields such as medicine (Nguyen et al., 2024; Athaluri et al., 2025). Furthermore, AI tools frequently generate inaccurate or fabricated references, which can undermine the scholarly reliability of academic work, highlighting the essential role of human verification and oversight (Athaluri et al., 2025; Nguyen et al., 2024).

Given these challenges, experts caution against the uncritical reliance on generative AI to produce unedited academic content or references. Researchers are urged to rigorously verify AI outputs to maintain academic standards. Tools like Grammarly are widely embraced for improving grammar, spelling, style, and detecting potential plagiarism (Alam et al., 2023; Faisal & Carabella, 2023), but overdependence on such tools risks weakening students' independent writing and critical editing skills (Narayan, 2024). Access disparities also arise, as the premium costs of many AI tools may limit availability for some students, creating equity concerns (Halaweh, 2023). Privacy, data security, and algorithmic bias remain critical ethical issues demanding ongoing attention (Camilleri, 2024; Holmsen, 2024).

Moreover, the ease of obtaining AI-generated answers might diminish meaningful interactions between students and educators, while students may find it challenging to critically evaluate source quality and citation accuracy when heavily relying on AI outputs (van Niekerk et al., 2025; Ngo, 2023). Despite these concerns, AI writing tools continue to offer valuable pedagogical benefits when used responsibly, supporting skill development and enhancing writing quality alongside human judgment (Nguyen et al., 2024; Roe et al., 2023).

In the broader educational landscape, the benefits of AI extend beyond writing. AI supports flexible and personalized learning, virtual mentorship, engagement through interactive technologies like VR, and improved administrative efficiency (Sadiku et al., 2022). However, the adoption of AI also involves challenges such as privacy concerns, ethical dilemmas, costs, and the need for AI literacy among educators and students alike.

In summary, AI writing tools embody a nuanced balance of strengths and limitations for doctoral researchers and the academic community at large. Their potential to enhance efficiency and quality is significant but must be carefully managed through ethical use, rigorous human oversight, equitable access, and sustained educational support to preserve academic integrity and promote meaningful learning.

2.5. *Doctoral Researchers and AI Tool Adoption*

The adoption of artificial intelligence (AI) tools among doctoral researchers represents a complex and underexplored dimension of academic writing development in higher education. While AI technologies such as Grammarly, ChatGPT, and citation managers are becoming increasingly integrated into academic workflows, the ways in which PhD students engage with these tools differ significantly from the patterns observed at the undergraduate level (Nguyen et al., 2024; Roe et al., 2023). Doctoral researchers tend to adopt AI not only for surface-level corrections but for higher-order writing tasks such

as improving argument structure, synthesizing literature, managing iterative drafts, and enhancing clarity in complex disciplinary writing (Tran, 2024; Karuppal, 2025). A notable divide exists between tech-oriented doctoral candidates who actively explore and integrate AI tools for productivity and innovation, and more traditional scholars who maintain a cautious stance, often citing concerns around tool accuracy, ethical implications, and academic integrity (Hossain et al., 2025; Camilleri, 2024).

These contrasting attitudes often reflect broader disciplinary differences. Doctoral students in STEM fields are generally more receptive to AI technologies, using them for tasks such as scientific summarization, data visualization, coding support, and reference formatting. In contrast, researchers in the humanities may view AI with skepticism, emphasizing the importance of originality, rhetorical nuance, and authorial voice—qualities that generative AI tools often fail to emulate adequately (Khalifa & Albadawy, 2024; Holmsen, 2024). Social sciences occupy a middle ground, where AI is used for analytical clarity, literature synthesis, and research communication, but often under close human oversight (Nguyen et al., 2024). Despite the potential benefits, such as increased writing efficiency, reduced cognitive load, and improved drafting speed, concerns remain that overreliance on AI may weaken independent academic writing skills and reduce critical engagement with scholarly material (Narayan, 2024; Al-Marzouqi & Samara, 2023). Additionally, the phenomenon of "AI hallucination," in which tools generate factually inaccurate or entirely fabricated information, poses a serious risk in disciplines where precision and evidence-based writing are fundamental (Athaluri et al., 2025; van Niekerk et al., 2025).

Institutional and supervisory influences also play a critical role in shaping doctoral students' engagement with AI tools. While some supervisors encourage strategic, transparent use of AI—particularly for proofreading or exploring ideas—others express strong reservations, particularly considering unclear institutional policies and the potential for AI-generated content to blur authorship boundaries (Camilleri, 2024; Holmsen, 2024). Policies on AI usage in postgraduate research often remain ambiguous or are still evolving, leading to inconsistencies in practice across departments and institutions. This lack of clarity can create confusion among doctoral students, who may hesitate to adopt tools fully for fear of academic misconduct or misalignment with supervisory expectations (Ngo, 2023; Halaweh, 2023).

While artificial intelligence (AI) tools are increasingly integrated into academic writing, existing research has predominantly focused on undergraduate education, leaving the specific experiences, needs, and practices of doctoral students underexplored. Doctoral researchers engage in sustained, discipline-specific inquiry involving complex, iterative writing processes that require long-term project management, critical synthesis, and original knowledge production, making their interaction with AI tools qualitatively distinct from that of undergraduates (Roe et al., 2023; Khalifa & Albadawy, 2024). Moreover, institutional factors, including ambiguous policies and varied supervisory attitudes, further complicate ethical and effective AI use in doctoral research, alongside concerns about AI accuracy and academic integrity.

2.6. Previous Studies

Recent studies have begun to explore the attitudes of Arab and Algerian researchers and educators toward the use of artificial intelligence (AI) tools in academic contexts, particularly in scientific and educational research. Youssef and Ghunaim (2023) found that a large sample of Arab researchers held generally positive attitudes toward the use of ChatGPT in psychological and educational research, with variations linked to demographic variables. Similarly, Ismail (2023), drawing on comparative insights from the UAE and Hong Kong, emphasized the need for institutional investment in AI integration, including establishing specialized departments to train educators in AI use and ethics.

Mohamed and Elballat (2024) investigated faculty perspectives on students' use of AI tools in scientific research and found that while tools like Semantic Scholar and Connected Papers were viewed positively, there is an urgent need for faculty training in AI literacy. Their findings underscore concerns

about responsible AI use in academia and call for curriculum reforms incorporating secure and ethical AI practices.

Torchi, Heddouche, and Bencherif (2024) conducted a descriptive survey examining Algerian doctoral students' perceptions of ChatGPT. Using an online questionnaire distributed to 70 PhD candidates across diverse departments, the study investigated students' knowledge, attitudes, and concerns regarding ChatGPT's use in higher education. Findings revealed a generally positive view of ChatGPT as an efficient tool for research-related tasks, information retrieval, and academic writing support, with many students accessing the system primarily via mobile devices. However, concerns were raised about ethical issues, overreliance on AI, and the potential negative impact on academic originality and critical thinking skills. Nonetheless, substantial anxiety was reported regarding ChatGPT's potential to undermine educational goals and intellectual abilities, highlighting the need for balanced integration of AI tools with pedagogical support. These findings align with prior research emphasizing ChatGPT's utility alongside ethical and educational challenges in AI adoption (Chinonso et al., 2023; Nash & Cooper, 2023; Rahman & Watanobe, 2023; Zhai, 2022).

Another study by Belkhir (2024) who conducted a non-experimental, cross-sectional study using a quantitative design to assess attitudes toward the use of artificial intelligence (AI) technologies in academic research among EFL doctorate students of the Department of English at the University of Tlemcen, Algeria. The findings revealed that while AI tools were recognized for their usefulness in supporting research tasks such as setting objectives, writing, and decision-making, significant barriers hindered their adoption, including time constraints, limited knowledge, and financial challenges. Notably, only a minority of respondents demonstrated a strong positive attitude toward AI integration in research. The study concluded with a call for institutional policies to enhance doctoral students' awareness and academic staff's competencies regarding emerging technologies in research, emphasizing the growing relevance of AI in contemporary academic practices.

Complementing these regional insights, Belmir and Daira (2025) examined Algerian researchers' attitudes toward AI applications in scientific research, revealing generally positive perceptions despite significant challenges. These obstacles include ethical concerns, resistance from some researchers, financial costs, privacy and data security issues, and limited support for the Arabic language, with ethical and financial barriers being the most prominent. Their findings align with prior studies highlighting researchers' familiarity with AI tools like ChatGPT alongside apprehensions regarding data manipulation and academic integrity (Yaroshenko & Iaroshenko, 2023; Ismail, 2023).

Sebbah (2025) conducted a mixed-method study involving 305 Algerian EFL students to investigate their familiarity, usage patterns, and attitudes toward generative AI tools in the learning process. The findings revealed that students were most familiar with widely used tools like ChatGPT and Grammarly, which they utilized primarily for writing assistance and simplifying complex lessons. Less familiar tools received limited use, suggesting a preference for applications that provide direct support for writing and comprehension. While students appreciated the efficiency and scaffolding AI offers, they also expressed concerns about potential negative effects on motivation, creativity, and critical thinking due to over-reliance. Despite these concerns, the overall attitude toward AI tools was positive, with students emphasizing the need for ethical guidelines, responsible use, and training to integrate AI effectively within Algerian higher education.

Collectively, these studies highlight a growing acceptance of AI across the Arab academic world, while emphasizing the critical need for clear ethical standards, robust training programs, legal frameworks, and institutional policies to mitigate risks and optimize AI's potential in scientific research and education.

Despite the promising potential of AI to enhance doctoral productivity and writing quality, important pedagogical, ethical, and disciplinary questions remain unresolved. The scarcity of empirical studies examining how PhD students use, evaluate, and benefit from AI tools limits understanding of the pedagogical and institutional frameworks needed to support their responsible integration. This study

seeks to address these gaps by exploring doctoral students' engagement with AI, aiming to inform policy, training, and practice that foster ethical, effective, and discipline-aware AI use in advanced academic contexts.

3. Methodology

3.1. Participants

Given that our study examines the use of AI tools in academic writing, we targeted a sample of 30 PhD students specialising in English Language from various universities and diverse fields of study as shown in (Table 3.1). This cohort was purposefully selected due to their likely familiarity with and active use of AI tools, driven by the considerable academic demands they face. The participants predominantly come from English language-related disciplines, with a marked emphasis on applied linguistics, English for specific purposes (ESP), didactics, and literature. This focused academic background aligns closely with the study's objectives, as it centres on AI tool usage within language-intensive fields where the quality and precision of academic writing are especially critical. Therefore, purposive sampling was the most appropriate method to meet the specific needs of our investigation. Purposive sampling involves selecting participants based on their relevance and typicality to the research topic. It is commonly used to study specific groups, such as principals, senior managers, disaffected students, or particular classes of students. However, this method is inherently selective and may introduce bias, as it does not aim to represent the wider population and should not be generalized beyond the targeted group (Cohen, Manion & Morrison, 2000).

Table 3.1: participants' Fields of study

Field of Study	Percentage
Applied Linguistics	33.33%
English for Specific Purposes (ESP) / TEFL / Didactics	26.67%
English Literature and Civilization	23.33%
Language Sciences / Linguistics	16.67%

3.2. Data Collection

Researchers depended on a mixed method approach to elicit and gather data through a Google form questionnaire (Appendix 1) sent via social media to colleagues and other PhD students in special groups. The questionnaire consists of 10 quantitative and 3 qualitative questions. The quantitative section includes multiple-choice and yes/no items on demographics, familiarity, and usage of AI tools, as well as two sets of Likert-scale statements assessing perceptions of usefulness and ethical concerns. The qualitative section contains three open-ended questions that allow participants to elaborate on their experiences, concerns, and recommendations regarding AI-assisted academic writing.

4. Data Analysis

4.1. Training on academic writing

Doctoral students with formal training in academic writing (46.7%) and those without (53.3%) have varying levels of confidence and ethical awareness when using AI tools. Formal training includes teachers' advice on appropriate use, ensuring students can enhance their skills. However, students without guidance may rely more heavily on AI without understanding its proper use. Many express concerns on social media about the legitimacy of AI tools fearing that their work may be rejected or deemed unethical if AI assistance is disclosed or detected, highlighting the need for clear institutional guidelines and formal training to guide students in ethical use of AI in academic writing.

4.2. Familiarity with AI-Assisted Academic Writing Tools

All participants (100%) reported being aware of AI tools designed to assist academic writing, such as Grammarly, QuillBot, ChatGPT, and Writefull. This universal awareness reflects the growing visibility and accessibility of these technologies among doctoral students. It suggests that AI tools have become a recognized component of the academic writing landscape, likely influencing students' writing practices and attitudes. Such widespread familiarity also underscores the relevance of investigating how these tools are perceived, adopted, and integrated into doctoral students' scholarly workflows.

4.3. Usage Patterns and Purposes of AI Tools in Doctoral Academic Writing

The data in (Table 4.2) reveals that ChatGPT (80%), Grammarly (70%), and QuillBot (60%) are the most commonly used AI tools among doctoral students, reflecting their popularity and versatility in supporting academic writing tasks. Participants typically use about two to three different AI tools, indicating a tendency to combine resources to address various aspects of the writing process. In terms of usage purposes, (Table 4.3) shows that the majority rely on these tools for grammar correction (66.7%), paraphrasing (60%), and generating ideas or outlines (60%), which underscores their role in enhancing writing accuracy, creativity, and organization. Citation and referencing (43.3%) and summarizing texts (36.7%) are also important functions, demonstrating how AI assists with managing complex academic requirements. Less frequently, students use AI for translating academic texts (13.3%) or other unspecified tasks (20%). Together, these findings highlight the multifaceted role AI tools play in doctoral students' academic writing workflows, serving as valuable aids across different writing challenges.

Table 4.2: Frequency and Percentage of AI Tools Used by Doctoral Students

AI Tool	Frequency of Use	Percentage (%)
ChatGPT	24	80.0
Grammarly	21	70.0
QuillBot	18	60.0
DeepL	4	13.3
Other	4	13.3
Writefull	3	10.0

The table.4.3 below shows different purposes for which participants use AI tools, including grammar correction, paraphrasing, generating ideas/outlines, citation and referencing, summarizing texts, translating academic texts, and other uses, with corresponding frequencies and percentages.

Table 4.3: Main Purposes for Using AI Tools in Academic Writing

Purpose	Frequency	Percentage (%)
Grammar correction	20	66.7
Paraphrasing	18	60.0
Generating ideas/outlines	18	60.0
Citation and referencing	13	43.3
Summarizing texts	11	36.7
Other	6	20.0
Translating academic texts	4	13.3

4.4.   Doctoral Students' Perceptions on AI Tools' Benefits in Doctoral Writing

Figure 4.1 below illustrates participants' levels of agreement with statements about the impact of AI tools on academic writing, including quality, time-saving, idea organization, confidence, and language error reduction.

Figure 4.1: Doctoral students' perceptions of AI tools in academic writing.
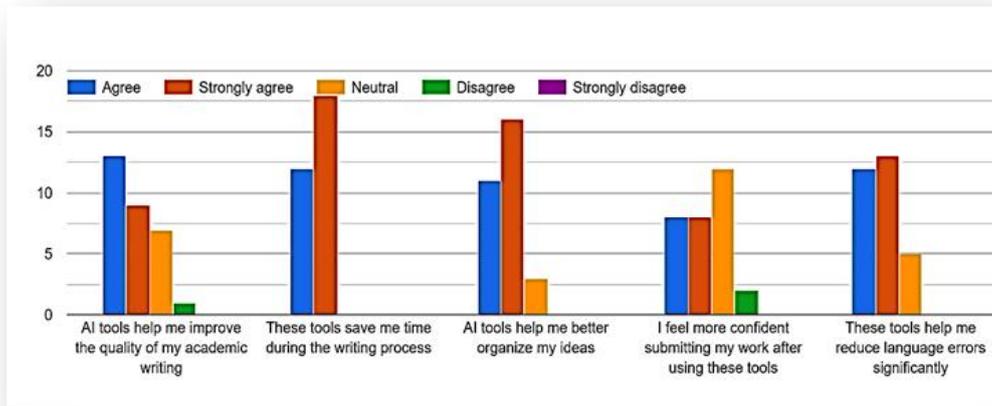
Findings reveal predominantly positive attitudes across multiple dimensions. A significant portion of respondents (73.3%) agree or strongly agree that AI tools help improve the quality of their academic writing, highlighting the perceived value of these technologies in enhancing language accuracy and stylistic expression. Even more notably, all participants (100%) affirm that AI tools save time during the writing process, underscoring the efficiency gains associated with their use. Regarding the organisation of ideas, over 90% of students agree or strongly agree that AI tools assist in structuring their thoughts, suggesting a crucial role for AI in supporting cognitive and compositional aspects of writing. However, confidence in submitting work after using AI tools is somewhat more varied; while just over half (53.4%) express agreement, a substantial proportion remains neutral or uncertain. This ambivalence may reflect ongoing concerns about academic integrity, reliability, or personal accountability when AI tools are integrated into the writing process. Collectively, these findings suggest that doctoral students recognise and appreciate the practical benefits of AI tools but maintain a cautious stance towards their influence on scholarly confidence and ethical considerations.

4.5.   Ethical and Practical Issues of AI in Academic Writing Among Doctoral Students

The percentage distribution of responses reveals insightful trends regarding doctoral students' ethical concerns and practices related to AI tool usage in academic writing. Notably, a substantial proportion of students (26.7% strongly agree and 43.3% agree) express concern that using AI tools may be considered unethical or akin to cheating. This majority view highlights significant apprehension about the moral implications of AI assistance, although a minority remain neutral or disagree, indicating some divergence in ethical perceptions within the cohort.

Regarding the disclosure of AI tool use, responses are more varied. While nearly half (46.7%) agree or strongly agree with the importance of disclosing AI assistance, a sizeable proportion (30%) disagree, and 23.3% remain neutral. This split suggests uncertainty or differing opinions on transparency practices, reflecting the complex nature of integrating AI within established academic norms.

Concerns about overreliance on AI negatively affecting writing development are widely acknowledged, with 80% of respondents agreeing or strongly agreeing. This strong consensus

underscores the perceived risk that excessive dependence on AI could undermine the development of critical academic skills and intellectual autonomy.

Finally, there is overwhelming support for the provision of clear university guidelines on AI tool usage, with 100% of participants agreeing or strongly agreeing. This unanimous stance points to a pressing demand for institutional frameworks to guide ethical and responsible AI integration, thereby addressing students' concerns and fostering academic integrity. In summary, these findings depict a doctoral student body that is both cautious and conscientious about the ethical use of AI in academic writing. While recognising the practical benefits of AI tools, students advocate for transparency, balanced usage, and clear institutional guidance to navigate the ethical complexities posed by these emerging technologies.

Figure 4.2: Ethical and Concerns about AI Tools in Academic Writing
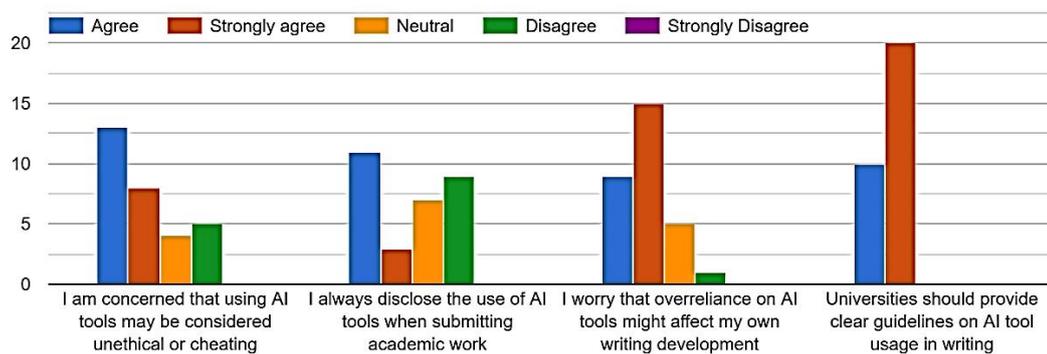
When asked about the effectiveness AI tools on their academic writing, doctoral students' responses indicate a broadly positive influence, highlighting several key benefits. Many participants underscored improvements in language quality, including refining style, expanding vocabulary, enhancing clarity, and correcting grammatical and punctuation errors. AI tools were also credited with aiding idea organization, brainstorming, and structuring, which contributed to more coherent and convincing academic texts. Several students reported significant time savings and increased writing efficiency, with some describing how tasks that previously took weeks could now be completed in just days. Further, AI tools provided valuable support during stages such as revision, proofreading, and citation management, thereby alleviating some of the supervisory burden. Importantly, many respondents positioned AI as an assistive resource rather than a substitute for their writing, reflecting a cautious but strategic use that promotes skill development while mitigating overreliance. However, a minority expressed concerns about potential drawbacks, such as reduced creativity and the inclusion of irrelevant information, signalling the need for critical engagement with these technologies. Overall, these insights suggest that AI tools function as effective scaffolding instruments that enhance doctoral students' academic writing capabilities, provided they are used ethically and judiciously.

In a question about any concerns related to the growing of use of AI tools in academic writing, doctoral students' responses reflect a variety of views, with a strong emphasis on the potential negative impacts of overreliance on these tools. Many doctoral students worry that excessive dependence on AI could diminish critical thinking skills, creativity, and intellectual autonomy, potentially impairing the development of essential academic abilities. There is a recurring concern that AI may foster passive learning, where students rely on tools to generate ideas or complete writing tasks, thereby undermining originality and personal effort. Several respondents also highlighted ethical concerns, including plagiarism and the blurring of boundaries between authentic student work and AI-generated content. Additionally, issues of equity were raised, as unequal access to advanced AI tools might exacerbate disparities among students. However, some participants expressed a more balanced view, recognizing AI's potential as a valuable aid if used responsibly and ethically. They called for clear guidelines and

educational measures to ensure that AI tools support, rather than replace, genuine scholarly engagement. In sum, these insights highlight the importance of institutions addressing both the benefits and risks of AI integration in academic writing through effective policies, training, and awareness initiatives.

Doctoral students highlight numerous recommendations through which they emphasize a balanced and ethical approach to using AI tools in academic writing. Many respondents stressed the importance of maintaining critical engagement and personal intellectual input, advocating for AI to serve as an assistive resource rather than a substitute for original thought and analysis. Common advice includes carefully reviewing and editing AI-generated suggestions to ensure accuracy, relevance, and alignment with one's voice and style. Ethical considerations are also emphasized, with a call for transparency in AI use and adherence to academic integrity standards. Practical suggestions include employing AI for specific tasks, such as brainstorming, language refinement, and organization, as well as time-saving activities like citation management while consciously avoiding using AI to generate entire texts. On the whole, the collective guidance reflects a thoughtful recognition of AI's potential benefits when used responsibly, balanced by an awareness of its limitations and the need to preserve human agency in scholarly work.

5. Discussion

The study examines doctoral students' awareness, usage, perceptions, and ethical considerations regarding AI-assisted academic writing tools. The majority of participants had formal training in academic writing, including guidance on the ethical use of AI, while 53.3% lacked such training. All participants were familiar with AI writing tools, such as ChatGPT, Grammarly, and QuillBot, with ChatGPT being the most widely used (80%). These tools are used for grammar correction, paraphrasing, idea generation, citation management, and summarizing. Participants generally viewed AI tools positively, acknowledging benefits such as improved writing quality (73.3%), time savings (100%), and better idea organization (over 90%). However, confidence in submitting AI-assisted work was more varied, reflecting ongoing concerns about academic integrity. However, confidence in submitting AI-assisted work varied due to concerns about academic integrity. Ethical concerns were prominent, with 70% fearing AI use might be considered unethical and 80% worried about overreliance harming writing skill development. Students emphasized the use of AI tools as assistive aids, advocating for critical engagement, transparency, and adherence to academic integrity.

The present findings contribute to the emerging body of research examining doctoral students' engagement with AI-assisted academic writing tools, aligning with and extending previous studies from the Arab and Algerian academic contexts. Consistent with Youssef and Ghunaim (2023) and Torchi, Heddouche, and Bencherif (2024), doctoral students demonstrated widespread awareness and adoption of AI technologies such as ChatGPT, Grammarly, and QuillBot. This universal familiarity underscores AI's integration into scholarly workflows and confirms its status as an essential component of contemporary academic writing (Sebbah, 2025).

Echoing Mohamed and Elballat's (2024) emphasis on institutional support, this study highlights the pivotal role of formal academic writing training in fostering ethical awareness and proper AI use. The differential confidence and ethical concerns observed between students with and without formal guidance reveal a critical need for structured pedagogical interventions. These findings align with Ismail's (2023) call for dedicated institutional investment in developing AI literacy and ethical frameworks within higher education.

Participants predominantly positive perceptions of AI tools' benefits—improvements in writing quality, time efficiency, and idea organization—mirror prior research demonstrating AI's scaffolding role in enhancing academic productivity (Belkhir, 2024; Chinonso et al., 2023). However, the ambivalence regarding confidence in submitting AI-assisted work, coupled with widespread concerns about overreliance undermining critical thinking and originality, parallels the ethical apprehensions

documented by Torchi et al. (2024) and Nash and Cooper (2023). This ambivalence signals an ongoing tension between embracing technological affordances and preserving scholarly integrity.

The ethical dilemmas surrounding AI use, including concerns about plagiarism, cheating, and the blurred boundaries between original and AI-generated content, further underscore the urgent need for transparent institutional policies. The unanimous demand among participants for clear guidelines reflects a consensus also observed by Belmir and Daira (2025), who noted significant ethical and financial barriers impeding responsible AI adoption. Moreover, concerns about inequity in AI access underscore an often-overlooked dimension of digital divides within academic contexts (Sebbah, 2025).

Crucially, doctoral students advocated for a balanced approach in which AI functions as an assistive rather than a substitutive tool, promoting critical engagement and preserving intellectual autonomy. This stance aligns with prior calls for nuanced AI integration strategies that safeguard creativity and cognitive skill development (Rahman & Watanabe, 2023; Zhai, 2022). The emphasis on ethical use, transparency, and ongoing training aligns with regional studies that emphasize the need for curriculum reforms and faculty development to prepare both students and educators for the evolving academic landscape (Ismail, 2023; Mohamed & Elballat, 2024).

In summary, the study's findings reinforce existing evidence that while AI tools offer substantial practical benefits for doctoral academic writing, their ethical and pedagogical implications require proactive institutional responses. Formal training, clear guidelines, and critical digital literacy initiatives are imperative to maximize AI's potential as a supportive resource while mitigating risks to academic integrity, equity, and intellectual growth. Future research should investigate the longitudinal effects of AI integration on doctoral students' writing proficiency and develop context-sensitive frameworks that address the nuanced challenges of AI adoption in diverse academic settings.

6. Conclusion

This study reveals that Algerian doctoral students in language-related disciplines possess strong familiarity with AI tools such as ChatGPT, Grammarly, and QuillBot, frequently employing them to assist with grammar correction, paraphrasing, and idea organisation. The prevalent use of multiple AI tools underscores their adaptive approach to the complexities of academic writing.

Participants generally perceive AI tools as beneficial, notably in enhancing writing quality and improving efficiency. However, confidence in submitting AI-assisted work varies, indicating ongoing uncertainty about the acceptability and reliability of these technologies within academic contexts.

Ethical considerations feature prominently, with students expressing diverse views on the legitimacy of AI use and the necessity for disclosure. Concerns regarding overreliance on AI potentially undermining critical thinking and writing skills further highlight the nuanced challenges these tools present. Importantly, there is broad agreement on the need for clear institutional guidelines to support responsible AI use.

Concisely, doctoral students advocate for a balanced and ethical application of AI tools, as complementary aids rather than substitutes for original scholarship. The findings call for universities to implement comprehensive training and policy frameworks to ensure that AI integration enhances academic integrity and fosters the development of essential scholarly competencies.

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Appendix 1

Questionnaire: Doctoral Students' Perceptions of AI Assistive Tools in Academic Writing

You are kindly invited to participate in this research study, which aims to explore the use of AI tools in academic writing among PhD students. All responses will be treated with strict confidentiality and used solely for academic research purposes.

Section 1: Demographics

1. Age: ____

2. Gender: ☐ Male ☐ Female ☐ Prefer not to say

3. Field of Study: _____

4. Year of Doctoral Study: ☐ 1st ☐ 2nd ☐ 3rd+

5. Have you received formal training on academic writing? ☐ Yes ☐ No

Section 2: Familiarity and Usage

6. Are you aware of AI tools designed to assist academic writing (e.g., Grammarly, QuillBot, ChatGPT, Writefull)? ☐ Yes ☐ No

7. Which of the following AI tools have you used for academic writing? (Select all that apply)

☐ Grammarly ☐ QuillBot ☐ ChatGPT ☐ Writefull ☐ DeepL ☐ Other: _____

8. For what purposes do you mainly use these tools? (Select all that apply)

☐ Grammar correction ☐ Paraphrasing ☐ Generating ideas/outlines

☐ Summarizing texts ☐ Translating academic texts ☐ Citation and referencing ☐

Other: _____

Section 3: Perceptions of Usefulness

9. The following statements relate to your experience using AI tools in academic writing. Please indicate your level of agreement by selecting the appropriate option.

(Scale: 1 = Strongly Disagree, 5 = Strongly Agree)

1. AI tools help me improve the quality of my academic writing.
2. These tools save me time during the writing process.
3. AI tools help me better organize my ideas.
4. I feel more confident submitting my work after using these tools.
5. These tools help me reduce language errors significantly.

Section 4: Concerns and Ethics

10. The following statements explore your concerns and ethical views regarding the use of AI tools in academic writing. Please indicate your level of agreement by selecting the appropriate option.

(Scale: 1 = Strongly Disagree, 5 = Strongly Agree)

1. I am concerned that using AI tools may be considered unethical or cheating.
2. I always disclose the use of AI tools when submitting academic work.
3. I worry that overreliance on AI tools might affect my own writing development.
4. Universities should provide clear guidelines on AI tool usage in writing.

Section 5: Open-Ended Questions

11. In what ways have AI tools influenced your academic writing process?

12. Do you have any concerns about the growing use of AI in academic writing?

13. What recommendations would you give to other doctoral students regarding the use of AI tools in writing?