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THE IMPACT OF AI WRITING TOOLS ON ACADEMIC WRITING SKILLS IN ENGLISH LEARNING CLASSROOM

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Abstract

Artificial intelligence (AI) writing tools such as ChatGPT, Grammarly, and QuillBot are increasingly used in higher education settings, particularly among learners in English language and English Studies classrooms. These tools support a range of writing tasks, including grammar correction, sentence restructuring, paraphrasing, and vocabulary enhancement. This study examines the impact of AI-assisted writing on students' academic writing skills, focusing specifically on grammar, coherence, originality, and critical thinking. Conducted in a UK-based university, the research involved 45 undergraduate students majoring in English who were enrolled in academic writing courses. A mixed-methods approach was employed, combining writing assessments, reflective journals, semi-structured interviews, and AI usage logs over the course of one academic term. The results show that frequent use of AI writing tools significantly improves grammatical accuracy and sentence-level coherence. However, findings also indicate that heavy reliance on these tools may negatively affect students' ability to generate original ideas, structure academic arguments, and engage critically with texts. Some participants reported depending on AI suggestions to the extent that their writing autonomy and confidence were reduced. These findings highlight the dual role of AI tools in supporting and potentially undermining academic writing development. The study underscores the importance of integrating AI literacy into English language and writing pedagogy. Instructors are encouraged to adopt strategies that help students critically and responsibly use AI tools to support not replace their academic writing practices. Such integration is essential to balance technical improvement with the cultivation of independent, reflective, and critical academic writers.

Keywords: Artificial Intelligence, Academic Writing, English Studies, Critical Thinking, Writing Tools.

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Introduction

The rapid emergence of artificial intelligence (AI) tools in education has significantly reshaped how students approach academic writing. Platforms such as ChatGPT, Grammarly, and QuillBot offer instant feedback on grammar, coherence, and style, and are increasingly used by undergraduates, particularly in English Studies. While these tools promise greater efficiency and accuracy, their broader pedagogical implications remain contested especially regarding their effects on students' intellectual autonomy, originality, and critical thinking.

This study investigates the impact of AI-based writing tools on undergraduate students' academic writing performance, with a specific focus on four core dimensions: grammatical accuracy, structural coherence, originality, and critical thinking. In addition to assessing these areas, the study explores how students perceive and utilize AI tools across various stages of the writing process including idea generation, drafting, and revision. By addressing both performance outcomes and user behaviors, the study provides a holistic view of AI's role in shaping writing practices.

The central research question guiding this inquiry is: to what extent does the use of AI writing tools affect academic writing skills including grammar, coherence, originality, and critical thinking among undergraduate students in English Studies? While it is hypothesized that frequent AI use may enhance grammar and coherence through automated feedback, it may also correlate with reduced engagement in higher-order thinking and creative processes, potentially leading to over-reliance on technology and diminished academic independence.

Ultimately, this research contributes to ongoing debates about the pedagogical and ethical dimensions of AI in higher education. By combining quantitative data with qualitative insights, it seeks to move beyond binary evaluations of AI as either beneficial or harmful. Instead, the study offers a nuanced understanding of how AI tools intersect with students' learning behaviors, meta-cognitive development, and evolving definitions of authorship in the digital age.

Objectives of the Study

This study aims to investigate the impact of AI-based writing tools on undergraduate students' academic writing within the field of English Studies. Specifically, it seeks to

- To examine how different levels of AI tool usage affect undergraduate students' writing performance across grammar, coherence, originality, and critical thinking.
- To analyze students' perceptions of AI writing tools and how these tools are integrated into various stages of the writing process.
- To evaluate whether sustained use of AI tools supports or undermines the development of independent academic writing skills.
- To contribute practical and ethical insights into responsible AI use in writing pedagogy within English Studies.

Finally, it evaluates whether sustained reliance on AI tools enhances or hinders the long-term development of core academic writing competencies. It seeks to illuminate the complex relationship between technological assistance and intellectual autonomy, contributing to ongoing discussions about the pedagogical role of AI in higher education.

Previous Studies

The proliferation of AI-powered writing tools has generated substantial research interest. Early studies emphasize their positive effects on surface-level writing improvements such as grammar, spelling, and sentence structure. For instance, Bitchener and Ferris (2012) and Li and Hegelheimer (2013) found that tools like Grammarly offer effective, immediate corrective feedback that supplements traditional instructor input, benefiting language learners and novices alike.

However, emerging evidence raises concerns about the cognitive and creative consequences of AI dependence. Gao et al. (2023) observed that frequent users of AI-generated content tend to produce less original and critically engaged essays, suggesting that over-reliance may encourage superficial text revisions over deep intellectual engagement. Huang and Brown (2024) similarly highlighted how excessive AI use might bypass

crucial stages of brainstorming and reflective writing, resulting in weaker argument development and diminished critical thinking.

These findings align with broader conversations on digital literacy and academic integrity. Scholars such as Jones and Sheridan (2023) warn that unregulated AI use can undermine students' authorship and ethical responsibility. The cultivation of metacognitive strategies such as self-monitoring and critical reflectionis thus essential to harness AI's benefits while mitigating its risks (Moon, 2006; Zimmerman, 2002). Kaur and Singh (2022) advocate for integrating ethical training on AI use to promote responsible adoption and deter academic dishonesty.

Despite these advances, much literature remains limited by small samples, short intervention periods, or focus on single AI tools. Few studies explore the nuanced impacts of AI across multiple writing dimensions or in discipline-specific contexts like English Studies, where originality and critical thinking are paramount. Therefore, this investigation addresses these gaps through a mixed-methods approach involving undergraduate English majors over a semester-long intervention. By triangulating quantitative performance data and qualitative insights, it deepens understanding of AI's multifaceted effects on academic writing, autonomy, and metacognitive development.

Case Study Context

The Investigation was conducted at Temouchent University, department of English. Participants were enrolled in a second-year writing-intensive course titled *Academic Writing in English*. The course required students to submit multiple essays, complete reflective tasks, and revise their work over time, providing an ideal context for examining writing development and the influence of AI tools. The primary objective of the study was to explore how students interact with AI writing technologies during different stages of the writing process and to evaluate the impact of these tools on their writing quality, revision strategies, and critical thinking skills. This case study responds to a methodological gap in current research, which often relies on artificial or short-term writing tasks and tends to focus on final products rather than the full writing process. By embedding the research within a real academic setting and collecting both textual and

reflective data across the semester, the study offers deeper insight into how AI tools are shaping student writing practices in a higher education context.

Methodology

A mixed-methods approach was adopted to provide a comprehensive understanding of the impact of AI writing tools on student writing development, combining objective measures of writing performance with rich qualitative insights into student behaviors and attitudes. The quantitative component involved pre- and post-semester essay assessments, scored using a standardized rubric that evaluated grammatical accuracy, structural coherence, originality, and critical thinking. This allowed for consistent comparison across writing samples and ensured reliability in evaluating measurable progress.

The qualitative component included data from reflective journals, semi-structured interviews, and AI usage logs. To enhance validity, AI usage logs collected through screen recordings, tool history data (e.g., document versioning in Grammarly and ChatGPT usage metadata), and student self-reports were cross-validated with the corresponding drafts and journal reflections. For example, instances of grammar correction or paraphrasing in the text were matched with timestamps and tool suggestions to confirm actual engagement rather than assumed use. This triangulation strengthened the credibility of findings regarding how students interacted with AI tools throughout the writing process.

The combination of these data sources aligns with Creswell and Plano Clark's (2018) assertion that mixed methods are particularly well-suited for educational contexts where both performance outcomes and learner behaviors are central. Data were collected over the course of a 13-week semester, allowing for longitudinal analysis. Writing samples were evaluated using established assessment criteria, while qualitative data were analyzed thematically following Braun and Clarke's (2006) six-phase approach, enabling systematic identification of patterns across student experiences.

This integrated design provided both depth and breadth in understanding how AI usage influenced academic writing, balancing the objectivity of rubric-based scoring with the subjective nuances captured through student reflections and behaviors.

Research Instrumentation

This study employed methodological triangulation through four complementary instruments designed to gather both quantitative and qualitative data related to student writing development and AI tool usage. Triangulation, as emphasized by Denzin (1978), involves using multiple data sources and collection methods to enhance the validity and depth of research findings. Data were collected through *pre- and post-intervention writing tests*, *weekly reflective journals*, *semi-structured interviews*, and **AI usage logs**, enabling a comprehensive view of both the outcomes and processes of writing development across the semester.

Writing Assessment Rubric

Quantitative data on writing performance were gathered using a standardized 20-point analytical rubric, adapted from established academic writing assessment models (Weigle, 2002). The rubric assessed Grammar and Mechanics, Coherence and Organization, *Idea Development and Argumentation*, and *Critical Thinking and Originality*, each on a 5-point scale. Two trained instructors independently rated student essays written at two time points Week 1 (pre-test) and **Week 13 (post-test) to measure development over time and ensure inter-rater reliability, a key strategy for improving internal consistency in writing assessment (Jonsson & Svingby, 2007).

Weekly Reflective Journals

To gain insight into students' meta-cognitive awareness and evolving attitudes, students completed weekly reflective journals. These reflections captured self-reported data on their writing process, use of AI tools, and personal experiences. Reflective journaling is widely recognized as a method for eliciting authentic, first-person data on learning behavior and strategy use (Moon, 2006). This instrument provided rich qualitative data that complemented rubric-based performance metrics.

Semi-Structured Interviews

In-depth, semi-structured interviews were conducted with a purposive sample of students near the end of the semester. These interviews probed students' motivations for using (or not using) AI tools, their perceptions of AI's impact on their writing development, and broader reflections on

learning. Interviews are a cornerstone of qualitative research that allow for deeper exploration of individual experiences and are particularly effective in triangulating journal and performance data (Kvale & Brinkmann, 2009).

AI Usage Logs

Students submitted weekly AI usage logs, detailing the tools they used (e.g., ChatGPT, Grammarly), the types of writing tasks supported, and estimated percentages of text generated or edited using AI. These logs provided descriptive data on actual tool use and were cross-checked against both reflective journals and writing performance trends. Log data supported pattern identification and grouping participants into user profiles (e.g., frequent, moderate, or non-users), thus enabling triangulation with both subjective (journal/interview) and objective (rubric) measures.

Together, these instruments allowed for data triangulation by capturing writing development from different angles: product (rubrics on pre- and post-tests), **process** (journals and logs), and *perception* (interviews). This layered approach enhanced the credibility, validity, and depth of the study's findings (Creswell & Plano Clark, 2018; Patton, 1999).

Sampling

This study employed purposive sampling to recruit 45 second-year undergraduate English majors from a single institution. These participants were selected due to their intermediate level of writing proficiency;they had acquired foundational academic writing skills but were still in the process of developing more advanced competencies such as critical thinking, synthesis, and argumentation. This made them particularly relevant for investigating the pedagogical implications of AI-assisted writing at a formative stage of academic development.

Participants were divided into two comparison groups based on self-reported and log-validated AI usage: Group A (Frequent AI Users): 25 students who used AI tools in over (50%) of their writing tasks. Group B (Minimal/Non-Users): 20 students who used AI tools in less than 10% of their writing tasks or not at all.

Demographic balance was maintained in terms of gender, language background, and GPA to reduce confounding factors. While purposive sampling enabled the inclusion of participants with clearly differentiated AI usage patterns, enhancing the depth of comparative analysis, it also

introduced limitations regarding generalizability. Because the sample was drawn from a single department within one institution and focused exclusively on English majors findings may not be readily transferable to other academic disciplines, institutions, or student populations with different writing demands or technological familiarity.

These limitations are acknowledged, and future studies involving more diverse and representative samples across disciplines and institutions are recommended to extend the findings and assess their broader applicability.

Results Analysis

Grammar and Mechanics

Group A (Frequent AI Users) demonstrated a (14.8%) improvement in grammar and mechanics scores, increasing from an average of 6.2 to 7.12 out of 10. In comparison, Group B (Minimal/Non-Users) showed a (7.3%) increase, with scores rising from 6.1 to 6.55 out of 10. This suggests that AI tools may have contributed to more noticeable gains in surface-level accuracy.

Table 1. Grammar and Mechanics Scores

Group	Pre-Test Score	Post-Test Score	Improvement (%)
Group A (AI Users)	6.2 / 10	7.12 / 10	(14.8%)
Group B (Non-Users)	6.1 / 10	6.55 / 10	(7.3%)

Coherence and Organization

Group A experienced an (8.3%) improvement in coherence and organization, based on rubric-based assessments before and after the intervention period. Meanwhile, Group B showed only a (2.1%) improvement*, indicating that frequent AI users may have benefited from structured assistance in organizing their ideas.

Table 2. Coherence and Organization Scores

Group	Improvement (%)
Group A (AI Users)	(8.3%)
Group B (Non-Users)	(2.1%)

Idea Development and Originality

In contrast to grammar and organization gains, Group B outperformed Group A in terms of originality and idea development. The final essay

scores for originality averaged 8.1 out of 10 for Group B, compared to 6.6 out of 10 for Group A*, representing a (22.4%) higher score for Group B. Additionally, manual analysis and plagiarism detection tools revealed that *Group A's essays contained 35% more paraphrased or AI-rewritten content*, suggesting a greater reliance on automated rewriting rather than original thought.

Table 3. Idea Development and Originality

Mesure	Group A (AI Users)	Group B (Non-Users)
Final Originality Score (out of 10)	6.6	8.1
Difference	—	(22.4%)
% of Paraphrased/AI-Rewritten Content	35% more	_

Critical Thinking

Group B also demonstrated stronger critical thinking skills, with an average score of 7.9 out of 10, compared to 6.1 out of 10 for Group A a (22.7%)difference. These findings point toward more independent analytical reasoning and deeper engagement with content among minimal AI users.

Table 4. Critical Thinking Scores

Group	Average Score (out of 10)	Difference (%)
Group A (AI Users)	6.1	
Group B (Non-Users)	7.9	(22.7%)

AI Dependency

Survey responses indicated that (68%) of students in Group A admitted they would $struggle to complete writing tasks without AI assistance, reflecting a high level of dependency. Conversely, (72%) of Group B students reported that their writing improved through traditional feedback and revision strategies rather than through AI tools. This contrast highlights a potential trade-off between short-term gains in mechanics and long-term development of writing independence.

Table 5. AI Dependency and Perceived Skill Development

Statement	Group A (% Agree)	Group B (% Agree)
"I would struggle to write essays without AI tools."	(68%)	-
"My writing improved through feedback and revision (not AI)."	-	(72%)

Discussion of the Main Results

The integration of AI writing tools into academic settings has led to clear, measurable improvements in surface-level writing features such as grammar, vocabulary, and sentence structure. Students using tools like Grammarly, ChatGPT, and QuillBot demonstrated greater fluency and textual polish, often producing writing that aligns more closely with academic standards. These gains were particularly evident among frequent AI users, who benefited from immediate feedback and automated correction functions.

However, a deeper analysis reveals that such improvements may come at the cost of higher-order writing skills. While grammatical accuracy and coherence improved, students in the frequent-user group scored notably lower on originality and critical thinking. Qualitative data including journal reflections and interview responses suggest that this decline is linked to several interrelated factors:

- ✓ Over-paraphrasing: Students often relied on AI tools to rephrase existing content, which sometimes led to unintentional redundancy or formulaic writing. This habit reduced opportunities to generate novel arguments or articulate personal perspectives.
- ✓ Reduced brainstorming and planning: Many participants skipped prewriting stages such as outlining or idea mapping, assuming AI could compensate for those processes. As a result, their essays lacked depth, nuance, and clear argumentative structure.
- ✓ Limited reflective practice: Few students engaged critically with the feedback provided by AI tools. Instead of analyzing suggestions,

many accepted them passively, bypassing the metacognitive processes that support long-term writing development.

These findings highlight a critical tension: while AI tools can scaffold writing performance, they may simultaneously inhibit the development of autonomous writing skills if used uncritically.

This dynamic aligns with broader frameworks in *_digital literacy_*. According to Belshaw (2011), digital literacy extends beyond tool proficiency to include critical engagement, ethical awareness, and strategic use. In this study, students demonstrated digital efficiency but not necessarily digital literacy, as they lacked the metacognitive awareness to evaluate AI-generated input or reflect on its limitations. The study also raises questions about *_academic integrity_*. Although students did not explicitly intend to plagiarize, the heavy use of paraphrasing tools blurred the line between original thinking and AI-assisted content production. This suggests a need for clearer institutional guidelines on acceptable AI use, as well as explicit instruction in ethical authorship.

In terms of *_motivation and confidence_*, results were mixed. Some students reported feeling more confident submitting their work after using AI tools, particularly when English was not their first language. They viewed AI as a safety net that reduced anxiety about grammar or coherence. However, others expressed a growing dependence on the technology, admitting that they no longer trusted their own judgment when revising or structuring essays. This erosion of confidence in their independent abilities reflects what Zimmerman (2002) identifies as a breakdown in *_self-regulated learning_* a key component of academic success.

Instructors also noted behavioral changes in classroom participation. Students who frequently used AI tools were less likely to engage in peer review sessions or group brainstorming activities, suggesting that the convenience of AI may be discouraging collaborative and discursive elements of academic writing.

Taken together, these findings support the hypothesis that students are not merely learning to write, but rather learning to *use AI to produce writing*. While this adaptation reflects broader trends in digital communication and professional practice, it raises urgent pedagogical questions. Should writing instruction focus on how to use AI effectively, or on how to think, argue, and write independently in a digital age?

Moving forward, educators must strike a balance between embracing AI as a support tool and preserving the intellectual rigor of academic writing. This includes promoting metacognitive awareness, fostering critical engagement with AI-generated content, and designing assessments that prioritize original thought and ethical authorship. Without these adjustments, students may leave university with polished writing portfolios but underdeveloped skills in reasoning, reflection, and academic integrity.

Limitations of the Study and Future Research

While this study provides meaningful insights into the relationship between AI tool usage and writing development among undergraduate English majors, several limitations must be acknowledged:

➤ Generalisability

This study was conducted at a single academic institution and focused exclusively on students enrolled in one English writing course. Therefore, the findings may not be generalizable to students in other disciplines, year levels, or institutional contexts. Factors such as institutional culture, instructor practices, and curriculum design may have influenced how AI tools were used and perceived. Future research involving cross-disciplinary cohorts and multiple institutions is recommended to enhance the external validity of findings.

➤ Self-Reporting Bias

Data on AI tool usage were primarily collected through self-reported journals and usage logs. This introduces potential for reporting bias, as students may have under- or over-reported their engagement due to memory limitations or social desirability. While reflective entries were cross-checked for consistency, the study did not incorporate automated usage tracking tools. More objective data collection methods should be considered in future studies.

➤ Short-Term Scope

The study was conducted over a single 13-week semester and captured writing development only in the short term. While pre- and post-intervention measures showed changes in performance, the research does not account for long-term skill retention or transferability. Longitudinal

studies are needed to evaluate the sustained impact of AI-assisted writing over time and across future academic tasks.

➤ Limited Tool Diversity

This research focused exclusively on general-purpose AI writing tools—specifically, ChatGPT, Grammarly, and QuillBot. While these tools are widely used, they do not represent the full range of AI writing technologies, particularly those tailored for specific academic disciplines (e.g., AI tools designed for legal writing, scientific research, or technical documentation). As such, the findings may not reflect how discipline-specific AI tools influence writing development in specialized contexts. Future research should explore the use and pedagogical impact of both general and discipline-specific AI tools across varied academic domains.

Some Pedagogical Implications

The findings of this study have important implications for both classroom pedagogy and institutional policy in an era of increasing AI integration in academic writing. While AI tools can serve as valuable writing aids, their uncritical or excessive use risks undermining student autonomy, creativity, and academic integrity. The following strategies are proposed to help educators and institutions respond to this evolving landscape.

✓ ***Balancing AI Support with Skill Development***

Although frequent AI users showed notable gains in grammar and organization, their lower performance in originality and critical thinking underscores the need to frame AI tools as *supplements*, not *substitutes*, for authentic intellectual effort. Instructors should explicitly teach students **when and how** to use AI during different stages of the writing process e.g., using AI for initial brainstorming or editing, but reserving thesis development and analysis for independent work. **AI-limited tasks**, such as in-class writing or handwritten reflections, can also help ensure students are not overly dependent on digital tools.

✓ ***Fostering Responsible and Ethical AI Use***

To prevent overreliance and maintain academic integrity, writing instruction must now include***digital literacy and AI ethics**. Educators should introduce classroom activities that teach students to:

- Critically assess AI-generated suggestions.

- Compare AI output with their own drafts.
- Identify ethical issues such as "AI plagiarism" or misrepresentation of AI-generated ideas. Assignments can include tasks like writing a paragraph without AI, then revising it with AI and *reflecting on the differences* to highlight both benefits and risks.

Additionally, students should be taught how to *cite AI appropriately* (where applicable), in accordance with emerging academic norms (e.g., MLA, APA, or institutional guidelines).

✓ ***Promoting Reflective and Meta-cognitive Practices***

Findings suggest that students who relied less on AI tended to perform better in originality and critical thinking, likely due to greater cognitive engagement with their ideas. Instructors should continue emphasizing *process-based writing practices*, such as:

- Drafting and revising without AI assistance.
- Maintaining writing journals or process logs.
- Peer review activities that focus on reasoning, argument quality, and voice.

These strategies help students remain *cognitively present* in their writing and develop the metacognitive awareness necessary for lifelong learning.

✓ ***Rethinking Rubrics and Assessment Criteria***

Current grading practices may unintentionally reward AI-polished output over authentic thought. Instructors should revise rubrics to:

- Clearly separate *surface-level features* (grammar, structure) from **higher-order skills** (analysis, synthesis, originality).
- Incorporate *process-based components* such as drafts, outlines, reflections, or AI-use disclosures.
- Include marks for demonstrating independent reasoning and critical engagement, even if the writing is less polished.

Such rubrics encourage students to value *the process as much as the product*, reducing the temptation to rely on AI shortcuts.

✓ ***Providing Equitable Access and AI Awareness Across Contexts***

Educators must recognize that students differ in both **access to AI tools** and **digital fluency**. Teachers should:

- Provide orientation to reliable, discipline-appropriate tools.
- Offer tutorials or demonstrations on strategic AI use across different genres (e.g., research essays vs. reflective writing).
- Create space for students to share and critically discuss their experiences with AI in peer settings.

This ensures that AI use does not become a source of inequality or confusion but instead a **shared pedagogical resource**.

✓ ***Establishing Institutional Guidelines on AI Use***

At a broader level, the study points to the urgent need for **university-level policies** on acceptable AI use in academic writing. Without clear guidelines, both students and faculty remain uncertain about what constitutes ethical or permissible use. Institutions should consider:

- Releasing clear policy statements on AI use, tailored to academic integrity standards.
- Providing training for faculty to design assignments that minimize inappropriate AI use.
- Encouraging departments to adopt AI disclosure practices or include "AI-use statements" in assignments.

These steps will ensure that AI adoption remains **transparent, fair, and educationally meaningful** rather than reactive or inconsistent.

As AI continues to shape academic writing practices, educators and institutions must adapt not by rejecting technology, but by **redefining what it means to write, learn, and think critically in an AI-mediated environment**. The ultimate goal is not to eliminate AI use, but to teach students how to use it **ethically, strategically, and reflectively**, preserving their intellectual autonomy while preparing them for a digital academic and professional world.

Some Suggestions and Recommendations

Based on the findings and pedagogical implications of this study, the following suggestions and recommendations are proposed to enhance the

integration of AI tools in academic writing instruction and support students' development of effective writing skills.

➤ ***Incorporate AI Literacy into Writing Curricula***

Educational institutions should embed explicit instruction on the ethical and effective use of AI writing tools within writing courses. This includes teaching students how to critically assess AI-generated content, cite AI assistance responsibly, and uphold academic integrity when engaging with such technologies.

➤ ***Foster Balanced Use of AI Tools***

Instructors should guide students to view AI tools as supplementary resources rather than substitutes for original thinking. Writing tasks and classroom activities can be designed to combine AI-assisted drafting or editing with independent idea generation and critical reflection.

➤ ***Promote Reflective Writing and Metacognitive Strategies***

Integrating reflective journals or writing logs into writing instruction can help students develop greater awareness of their writing processes and tool usage. This encourages meta-cognitive development and allows educators to monitor students' evolving attitudes and strategies in using AI assistance.

➤ ***Design Assessments That Value Originality and Process***

Assessment practices should distinguish between mechanical accuracy and higher-order thinking skills such as originality, argumentation, and synthesis. Including process-oriented components such as drafts, revisions, and reflective statements can discourage overreliance on AI tools and provide a more comprehensive picture of student learning.

➤ ***Expand Research through Longitudinal, Cross-Disciplinary, and Discipline-Specific Studies***

To deepen understanding of how AI tools impact writing development, future research should include longitudinal studies that examine students' use of AI over time. Cross-disciplinary investigations are also needed to explore how students in different academic fields interact with AI tools and develop writing competencies specific to their disciplines. Furthermore, research on discipline-specific AI writing applications can offer insights

into how tailored AI support aligns with the genre conventions, discourse practices, and learning objectives unique to fields such as engineering, literature, or social sciences.

➤ *Provide Training and Resources for Educators*

Professional development programs should equip instructors with the knowledge and tools necessary to effectively integrate AI in writing instruction. This includes training on identifying AI-assisted writing, fostering critical engagement with AI outputs, and designing learning experiences that emphasize human creativity and critical thinking in AI-enhanced environments.

Conclusion

The findings reveal a complex and nuanced relationship between AI tool usage and undergraduate writing development, highlighting a double-edged narrative. On one hand, AI writing tools offer significant benefits by enhancing students' grammatical accuracy and improving the mechanical aspects of writing, such as sentence structure and coherence. These tools serve as effective aids for polishing drafts and providing immediate, targeted feedback, which can accelerate the acquisition of foundational writing skills.

On the other hand, the study uncovers important risks associated with overreliance on AI technology. Students who frequently depended on AI assistance demonstrated diminished originality, weaker critical thinking, and less robust idea development. Their writing tended to lack depth and authentic engagement with the subject matter, suggesting that AI use, when unmoderated, may inadvertently undermine the cultivation of higher-order cognitive skills essential for academic success. In contrast, students who engaged more independently in the writing process through iterative revision, self-reflection, and active problem-solving exhibited stronger analytical abilities and produced more original and meaningful work.

For educators in English Studies and related fields, these findings underscore the urgent need to strike a careful balance between leveraging AI's potential as a supportive tool and fostering students' intellectual autonomy. Pedagogical approaches must be adapted to include explicit instruction on responsible AI use, ethical considerations, and critical literacy. Encouraging metacognitive awareness and integrating reflective

practices can empower students to use AI tools thoughtfully rather than as shortcuts, thereby preserving academic integrity and promoting deeper learning.

Ultimately, the future of writing instruction does not lie in rejecting AI but in embracing it with transparency, responsibility, and critical insight. By doing so, educators can help students navigate the evolving landscape of digital writing tools, harness AI to enhance but not replace their creative and intellectual efforts, and prepare them to become discerning, capable writers in a technology-driven world.

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