

Artificial Intelligence Use and Writing Confidence among Diploma Students: From Academic Assistance to Potential Dependence

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ABSTRACT

The utilisation of Artificial Intelligence (AI) has become increasingly embedded in students' academic practices, yet its relationship with students' confidence in writing and independent learning remains contested. This exploratory study examined how diploma students use AI tools, perceive their usefulness, and experience confidence and uncertainty in AI-supported and AI-free academic writing. A cross-sectional descriptive-correlational survey was administered to 62 diploma students. The questionnaire measured AI-use practices, perceived AI confidence and usefulness, AI-supported writing confidence, independent writing confidence, writing anxiety without AI, and perceived AI-dependent confidence. Descriptive statistics, Cronbach's alpha, Pearson correlations and an exploratory thematic coding of open-ended responses were used. The AI-supported writing use was strongly associated with AI-assisted writing confidence ($r=.728$, $p<.001$) and moderately associated with AI-dependent confidence ($r=.515$, $p<.001$), but it was not significantly associated with independent writing confidence ($r=.077$, $p=.554$). Open-ended responses reflected clear benefits in brainstorming, grammar and vocabulary development, and writing fluency, alongside concerns about dependence, reduced critical thinking, originality, and inaccurate information. The findings suggest that AI is functioning primarily as a confidence-supporting academic aid, but frequent use does not automatically translate into stronger confidence in writing independently. The study highlights the need for AI literacy and assessment practices that preserve students' cognitive agency while enabling responsible use of AI in the learning process, particularly the ones involving writing skills.

Keywords: artificial intelligence, writing confidence, diploma students, AI literacy, academic writing

INTRODUCTION

Artificial intelligence has rapidly changed the ways students search for information, generate ideas, revise languages and complete academic tasks. In higher education, students increasingly encounter AI not as a separate technological subject but as an everyday learning companion. While using AI can be perceived as simple as typing in a question or other prompt, the reality is that it is still not straightforward for the students to get exactly the output that they expect (Miao et.al.,2023). However, based on a finding of a research conducted by Mahapatra et.al. (2024), the use of AI as in ChatGPT has significantly improved students' academic writing skills, and students' perceptions of the impact were also overwhelmingly positive. The educational value of AI is indeed closely connected to how students position themselves in relation to the technology.

Recent research conducted by Kim et.al (2025) reported that students perceived generative AI-assisted writing could benefit them in three areas, including the writing process, performance, and their affective domain. Conversely, another research on AI dependency has associated with lower creativity and reduced critical and independent thinking (Zhang et.al., 2024). Large-scale evidence indicated that AI tools are now commonly used by students to serve different purposes such as ChatGPT for brainstorming, summarising information and locating research-related material, Canva for designing digital materials, and Grammarly for language purposes, despite recognising limitations in reliability and critical-thinking support offered (Zhai et al., 2024; Zhao et al., 2024). The outcomes are especially important for academic writing, where confidence may improve when

students receive immediate language and idea support, but excessive assistance may also weaken opportunities for students to practise generating, organising and evaluating ideas independently.

Apparently, academic writing confidence is not identical to confidence in using AI. A student may feel highly competent in prompting an AI system while remaining uncertain about their own ability to write without it. This distinction is important for diploma-level students, who are still developing academic literacy, disciplinary knowledge and independent learning habits. A potential inverse relationship between AI familiarity and academic success were statistically highlighted in a research done by Mansoor et.al. (2024) in which over-reliance on AI may hinder rather than enhance performance. Indeed, numerous existing studies have examined students' perceptions of AI and academic writing, but there is value in examining the relationship between AI-usage, AI-assisted confidence, independent writing confidence, and perceived dependence within a specific diploma-student context.

This study therefore investigates how diploma students integrate AI tools into their academic journey and daily academic practices, with particular attention to writing confidence. In determining the correlation, three research questions are addressed: (1) What AI tools and academic purposes are most commonly used by diploma students? (2) How confident are students about using AI for academic productivity? and (3) What benefits and concerns do students describe in their own words related to AI usage? The study is exploratory and does not claim that AI use causes changes in confidence. Instead, it examines patterns of association and students' reported experiences. This distinction is important because the cross-sectional design captures perceptions at one point in time.

METHODOLOGY

Research design and participants

A quantitative, cross-sectional descriptive-correlational design was used, supplemented by exploratory qualitative coding of one open-ended survey question. The data contained 62 completed responses from diploma students. Respondents represented Semester 1 (n=26, 41.9%), Semester 2 (n=28, 45.2%), Semester 3 (n=4, 6.5%) and Semester 4 (n=4, 6.5%). The sample comprised 40 female students (64.5%) and 22 male students (35.5%). Because the sample was obtained from an accessible student population, findings should be interpreted as context-specific rather than representative of all diploma students.

Instrument and measures

The questionnaire comprised demographic questions, AI-use questions, 5-point ratings of AI confidence and usefulness, a course-level perception item, Likert-scale statements, and one open-ended question. The Likert statements were grouped into five exploratory constructs: AI-supported writing use (6 items), AI-assisted writing confidence (6 items), independent writing confidence (6 items), writing anxiety without AI (5 items), and AI-dependent confidence (6 items). Responses were coded from 1 (Strongly Disagree) to 5 (Strongly Agree). The instrument should be described as researcher-developed or adapted unless the researcher has documentary evidence of a previously validated scale.

Internal consistency was examined using Cronbach's alpha. All five constructs exceeded .77, with the highest reliability for AI-assisted writing confidence ($\alpha=.893$). These coefficients support the use of composite scores for exploratory analysis, while future studies should establish content validity and conduct confirmatory validation with a larger sample.

Construct	Cronbach's α
AI-supported writing use	0.779
AI-assisted writing confidence	0.893
Independent writing confidence	0.880

Writing anxiety without AI	0.873
AI-dependent confidence	0.863

Table 1. Internal consistency of the exploratory constructs.

Data analysis

Descriptive statistics were used to summarise frequencies, percentages and construct means. Pearson's correlation coefficients were calculated to examine associations among the composite constructs. Independent-samples t-tests were used only as exploratory comparisons by gender. Qualitative responses were reviewed and coded into recurring themes; because themes were coded from short self-reports and could overlap within a single response, frequencies should be interpreted as indicative rather than as mutually exclusive categories. Statistical significance was evaluated at $p < .05$.

RESULTS

Patterns of AI use

The results recorded ChatGPT, Claude or Gemini were used by 59 respondents (95.2%), making general-purpose conversational AI by far the most common tool category within this research group context. Canva AI/design tools were reported to be used by 18 (29.0%), Grammarly/writing assistants by 15 (24.2%), and coding assistants utilised by 12 students respectively (19.4%).

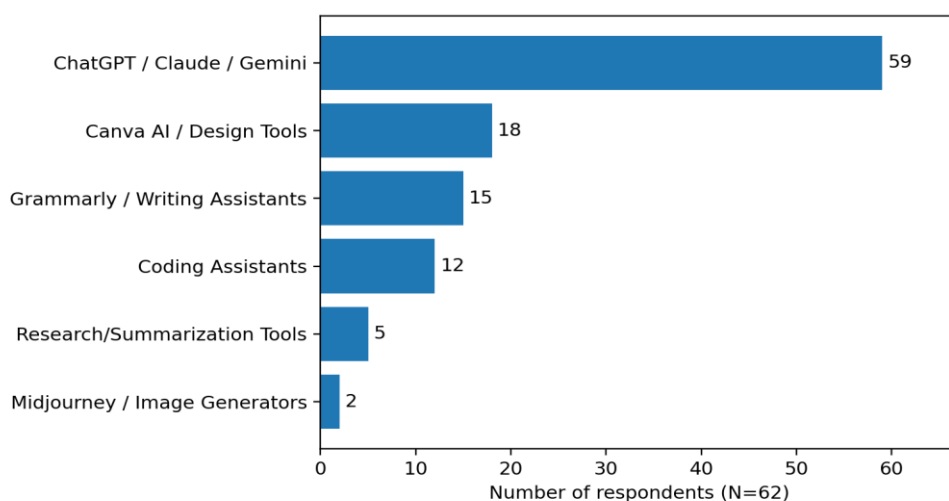


Figure 1. AI tools reported as being used regularly by diploma students.

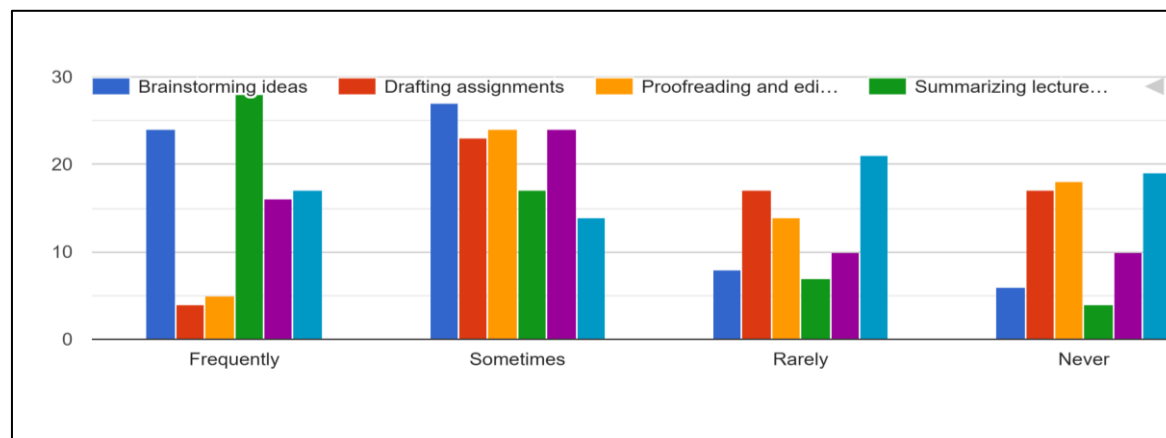


Figure 2. AI tools reported as being used in academic writing

For academic purposes, the most frequently reported uses of AI tools were summarising lecture notes/articles (28 responses), brainstorming ideas (24), language translation (17), and coding/debugging (16). Proofreading/editing and drafting assignments were more commonly positioned in the “sometimes” category than the “frequently” category, suggesting that students may use AI selectively depending on the task.

Students’ confidence on AI writing productivity

Students generally reported moderate-to-high confidence in using AI effectively. The modal rating was 4 ($n=33$), followed by 3 ($n=21$). Overall, 40 students (64.5%) rated their AI-use confidence at 4 or 5. Perceived usefulness was even more positive: 48 students (77.4%) rated AI usefulness at 4 or 5. Course-level perceptions were more mixed, with 32 students (51.6%) selecting Neutral, 16 (25.8%) selecting Encouraged and 11 (17.7%) selecting Strongly Encouraged.

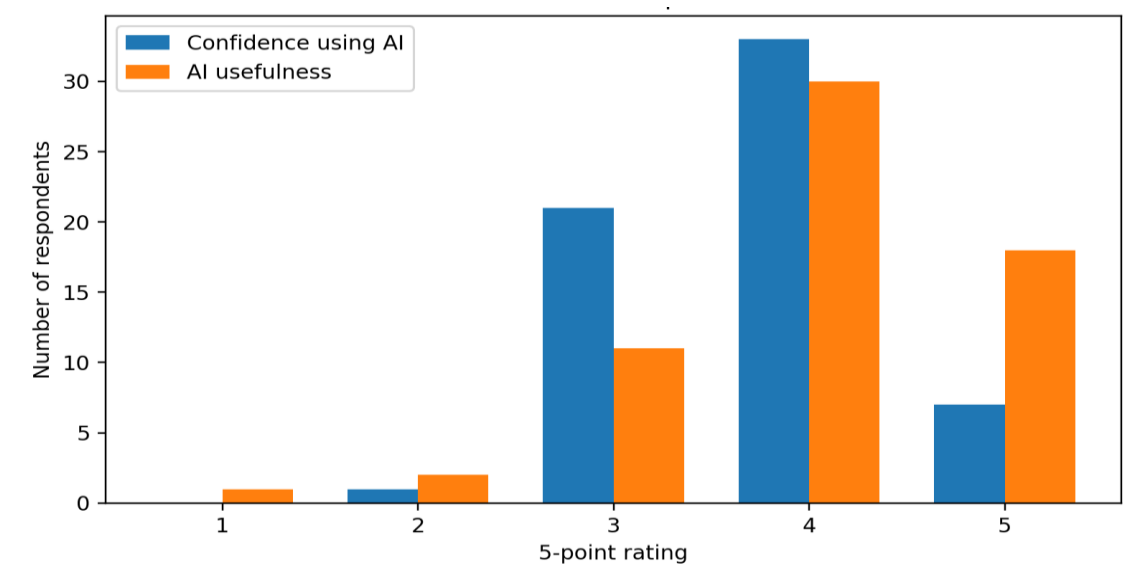


Figure 3. Distribution of self-rated AI confidence and perceived usefulness.

Independent writing confidence was the highest construct ($M=3.69$), slightly above AI-assisted writing confidence ($M=3.49$). AI-supported writing use averaged 3.47. Writing anxiety without AI was lower ($M=2.69$), as was AI-dependent confidence ($M=2.80$). The pattern is important: students reported benefiting from AI without, on average, endorsing strong dependence on it.

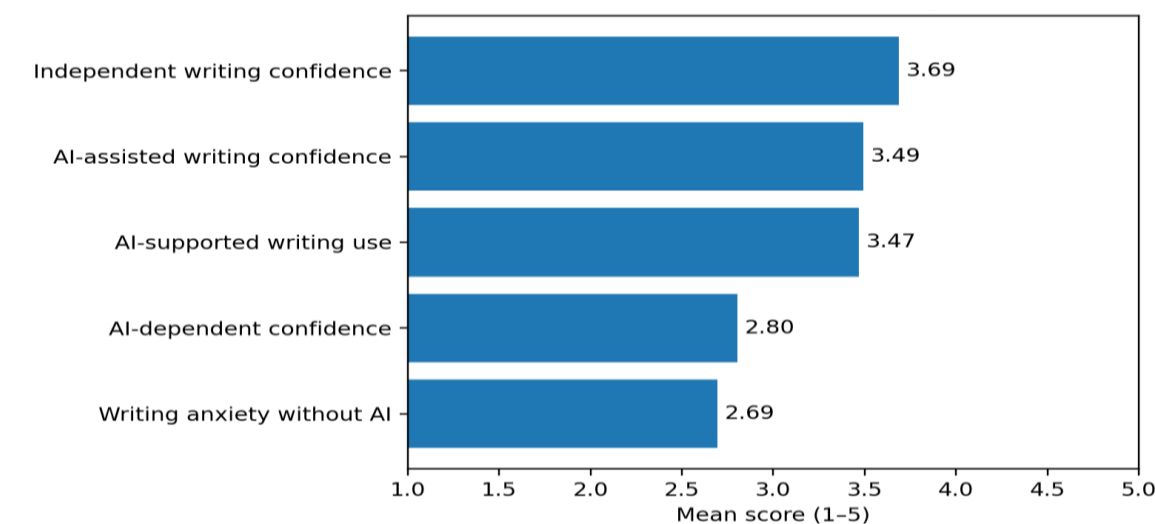


Figure 4. Mean scores for the main survey constructs.

Students' concerns and open-ended experiences

The most prominent concern was loss of critical thinking skills (n=30, 48.4%), followed by no concerns (n=11, 17.7%) and plagiarism/academic integrity (n=11, 17.7%). Dependence on technology (n=5, 8.1%), data privacy (n=3, 4.8%) and inaccurate information/hallucinations (n=2, 3.2%) were less frequently selected.

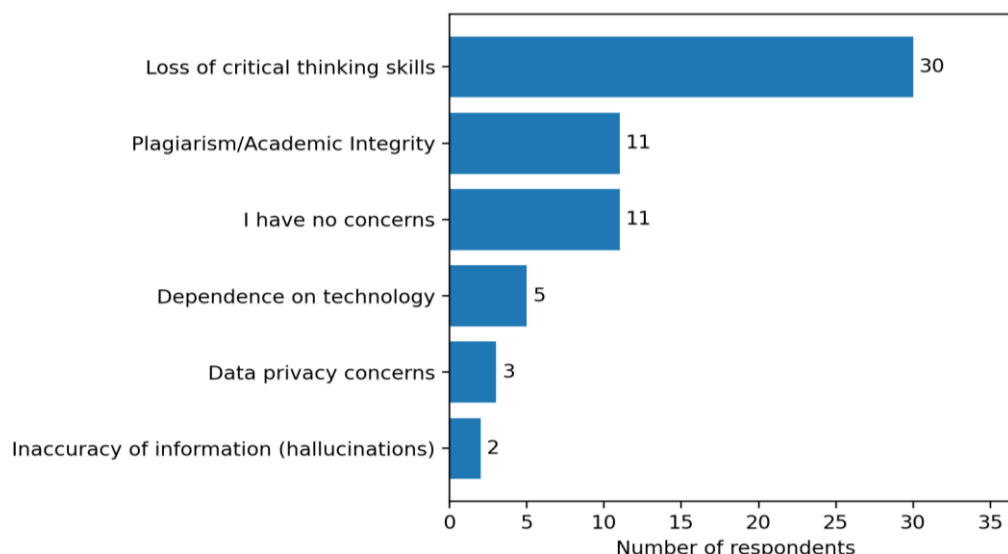


Figure 5. Students' reported concerns about AI in education.

Exploratory theme	Responses coded	% of N
Ideas/brainstorming	28	45.2%
Language improvement	19	30.6%
Efficiency/productivity	18	29.0%
Confidence/clarity gains	17	27.4%
Dependence/over-reliance	12	19.4%
Critical thinking/originality concerns	6	9.7%
Accuracy concerns	3	4.8%

Table 2. Indicative themes from the open-ended responses (overlapping codes).

The open-ended responses reinforced the quantitative findings. Students commonly described AI as useful for generating ideas, overcoming difficulty starting a task, improving grammar and vocabulary, and making writing clearer or more efficient. At the same time, several students explicitly worried that frequent use could reduce their ability to think independently, weaken originality, or make them dependent on AI. Some respondents also noted that AI can produce inaccurate information or language that does not sound like their own voice. These comments suggest an ambivalent relationship: AI is perceived as both a scaffold for confidence and a potential threat to independent authorship.

DISCUSSION

The findings suggest that diploma students within this research context are not simply "using AI" in a single way. Rather, they are integrating AI into multiple stages of academic work, especially brainstorming, summarising, translation and language-related support. The dominance of ChatGPT/Claude/Gemini is consistent

with wider higher-education research showing that students use AI for brainstorming, summarisation and information-related tasks. The present study extends this picture by showing that students distinguish between using AI as a support tool and relying on it as a confidence source.

The strongest statistical relationship was between AI-supported writing use and AI-assisted writing confidence ($r=.728$). This is theoretically plausible: students who frequently use AI for writing-related activities may perceive greater competence when the technology is available. However, the absence of a significant relationship between AI use and independent writing confidence ($r=.077$) is particularly important. The data do not support the assumption that more frequent AI use automatically develops students' confidence as independent writers. Indeed, the data suggested that AI may make a task feel more manageable without necessarily strengthening the underlying skills.

Nevertheless, the moderate association between AI use and AI-dependent confidence ($r=.515$) provides a second caution. Students who use AI more frequently were also more likely to report confidence-related dependence on AI. This does not establish harmful dependency, but it indicates that educators should distinguish between productive reliance, in which AI provides feedback or scaffolding, and unproductive reliance, in which the learner becomes uncertain about completing a task without AI.

In fact, the qualitative data obtained from the open-ended questions strengthen the interpretation obtained through the quantitative analysis. Students repeatedly described AI as a way to generate ideas, improve grammar and make writing smoother, but many also articulated a need to retain their own thinking and voice. This aligns with research advocating human-centred and critical approaches to AI literacy, in which students learn not merely how to operate AI tools but how to evaluate their outputs, recognise limitations and retain responsibility for academic decisions.

Overall, the concern about loss of critical thinking was the most frequently selected concern in the survey. This finding is educationally significant because critical thinking is not only an ethical issue surrounding AI; it is also a learning outcome that can be weakened when students outsource cognitive work. Therefore, the appropriate response is unlikely to be either unrestricted AI use or complete prohibition. Instead, academic programme may benefit from explicit AI-use boundaries, process-based assessment, reflection on AI outputs, source verification, and tasks that require students to show their own reasoning before and after AI assistance.

CONCLUSION

This exploratory study provides a focused picture of how 62 diploma students integrate AI into academic life. Students reported high exposure to general-purpose AI, substantial perceived usefulness, and relatively strong confidence when AI was available. At the same time, independent writing confidence remained distinct from AI-assisted confidence, and frequent AI use was not significantly related to confidence in writing independently. Students themselves recognised this tension, describing AI as helpful for ideas, language and productivity while expressing concerns about dependence, critical thinking, originality and accuracy.

For educators, the key implication is to move beyond the question of whether students should use AI and toward the question of how AI should be used to strengthen learning. AI literacy should include prompt skills, verification, source evaluation, ethical use, reflection and the deliberate practice of completing some tasks independently. Assessment design can also require evidence of students' thinking processes, drafts, reflections and revisions so that AI becomes a scaffold rather than a substitute for learning.

The study is limited by its small, context-specific sample, cross-sectional design, self-reported measures and exploratory instrument. The open-ended thematic coding was also indicative rather than a full qualitative analysis. Future research should recruit a larger and more diverse sample, validate the constructs statistically, examine changes longitudinally, and compare AI-supported performance with unaided writing performance. Such work would help determine whether students' confidence in AI-supported writing eventually transfers into durable confidence as independent writers.

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