

The AI Mirror: A Qualitative Study of Student Autonomy and Dependence in ESL Writing

Maria Chulkstan^{1*}, Maha Hashim², Yeavelin Vasheena³

¹ Sultan Qaboos University, Oman

² German University of Technology, Oman

³ Arabian Gulf University, Bahrain

*Corresponding author's email: mariachulkstan@squ.edu.om

 <https://orcid.org/0009-0007-0992-1155>

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ABSTRACT

Keywords: artificial intelligence, writing skills, learner autonomy, second language acquisition

This article explores the role of Artificial Intelligence (AI) in English as a Second Language (ESL) writing, examining whether it fosters autonomy or promotes dependency. Utilizing a qualitative methodology, semi-structured interviews were conducted following a timed writing task with 40 intermediate-level ESL students across three higher education institutions in Oman. Thematic analysis reveals that AI's impact on student autonomy is highly contingent upon its pedagogical application. When utilized strategically for brainstorming and personalized feedback, AI acts as a scaffolding tool that fosters self-directed learning. Conversely, when students rely on AI to generate complete texts or passively correct errors, they experience cognitive offloading, leading to decreased independence. The study emphasizes the need for educators to cultivate digital literacy, promoting an approach that empowers students to use AI as an intellectual partner rather than a cognitive replacement.

Introduction

In recent years, the integration of technology into education has transformed traditional approaches to language acquisition, with Artificial Intelligence (AI) emerging as a prominent enhancement in English as a Foreign Language (EFL) and English for Specific Purposes (ESP) writing contexts (Al-Raimi et al., 2024; Grassini, 2023; Wu et al., 2024). For language learners, academic writing presents unique cognitive and linguistic challenges that necessitate individualized feedback, iterative practice, and consistent guidance (Harmer, 2004; Kaufer & Ishizaki, 2025; Dhanapal et al., 2024; Song & Song, 2023). However, instructors often face large, diverse cohorts with varying levels of communicative competence, making immediate, personalized feedback highly resource-intensive and time-consuming (Nguyen, 2023; Crompton and Burke, 2023).

To bridge this gap between learner needs and instructor capacity, AI-powered writing

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assistants, such as machine learning-based grammar checkers and style enhancers, serve as a critical educational scaffold (Nguyen, 2023; Naseer & Khawaja, 2025; Wang, 2024; Kaufer & Ishizaki, 2025). These tools provide real-time, personalized instruction tailored to learners' proficiency, offering instant corrections for syntax and vocabulary while letting students learn at their own pace (Nguyen, 2023; Al-Raimi et al., 2024). Furthermore, AI scaffolding facilitates collaborative learning and formative assessment, empowering students to navigate the writing process with a virtual partner that can intervene to guide their compositional efforts (Vetter et al., 2024; Song & Song, 2023; Kamalov et al., 2023; Al-Raimi et al., 2024; Kaufer & Ishizaki, 2025). While integration requires careful calibration to maintain cultural sensitivity and the authenticity of the student voice, AI technology has demonstrated substantial potential to complement traditional pedagogical methods and scaffold writing proficiency (Kaufer & Ishizaki, 2025; Song & Song, 2023; Gkintoni et al., 2025; Ariel & Hayak, 2025; Wang, 2024).

Despite the proliferation of AI tools and their documented benefits to final written output, a significant gap remains in understanding students' internal experience during the writing process. The existing literature has predominantly examined AI integration from an instructional perspective that focuses on curriculum optimization and feedback streamlining while frequently overlooking the intricate cognitive and metacognitive processes that occur during text creation (Wu et al., 2024; Crompton & Burke, 2023; Gkintoni et al., 2025; Kaufer & Ishizaki, 2025; Kamalov et al., 2023). Critical pedagogical questions remain unanswered about whether students critically evaluate AI-generated suggestions, or whether outsourcing cognitive load atrophies essential metacognitive skills like planning and self-assessment. Consequently, this study aims to investigate how students use AI tools in their writing practices and the extent of their subsequent dependence on them. By exploring the thought processes, accountability mechanisms, and decision-making rationale behind AI use, this research seeks to clarify how these technologies shape students' approaches to learning and the development of their academic autonomy.

Literature Review

Student Autonomy in Language Learning

Learner autonomy is not merely the ability to work independently. It is a complex psychological and behavioral construct that represents a student's capacity to take conscious control of their own learning. Influential learning theories converge to provide a multidimensional understanding of this concept, framing it as an interplay among innate needs, cognitive processes, and active participation. As Figure 1 illustrates, theories such as Self-Determination Theory establish autonomy as a basic psychological need that is essential for intrinsic motivation and personal growth (Deci & Ryan, 2008). This is complemented by Social Cognitive Theory, which highlights the cognitive mechanisms involved, such as self-efficacy and self-regulation - the belief in one's ability to succeed and the strategies used to manage one's learning. Furthermore, pedagogical philosophies like Constructivism and Critical Pedagogy underscore the student's role as an active agent and co-creator of knowledge who learns through experience and reflection, rather than as a passive recipient of information.

Figure 1.

Theories underpinning learner autonomy

Self-Determination Theory (Deci & Ryan) 3 basic psychological needs essential for motivation & psychological well-being: • competence • relatedness • autonomy The autonomy component directly supports the development of learner independence.	Social Cognitive Theory (Bandura) Autonomous learners develop beliefs about their capabilities (<i>self-efficacy</i>) and learn to monitor and adjust their learning strategies (<i>self-regulation</i>).	Humanistic Psychology (Rogers and Maslow) Self-actualization and personal growth, viewing autonomy as essential for reaching one's potential.	Critical Pedagogy (Freire) <i>Critical consciousness</i> and <i>empowerment</i> are key aspects of learner autonomy.
Constructivism (Piaget and Vygotsky) • Learners - active builders of knowledge, not passive recipients • Learners construct understanding through <i>experience</i> and <i>reflection</i> - autonomous learning principles.	Andragogy (Knowles) <i>Self-direction</i> and the importance of <i>experience</i> in learning: directly supporting autonomous approaches	Holistic Learning Theory Learning as involving the whole person - cognitive, affective, and social dimensions - all of which contribute to autonomous learning development	Sociocultural Theory Cultural tools and social interaction scaffold the development of autonomous learning capabilities

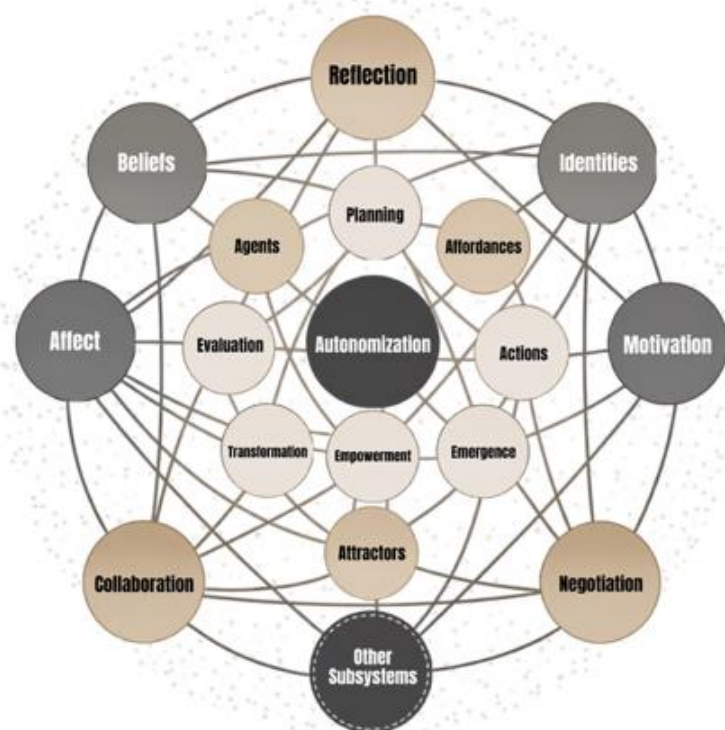
Collectively, these theories inform a holistic view, and in the context of this current study, each provides a distinctive analytical aim for investigating AI integration. Self-Determination Theory aims to evaluate whether AI fulfills or undermines students' intrinsic need for competence. Social Cognitive Theory assesses how AI affects students' self-efficacy and self-regulation during the writing process. Humanistic Psychology explores whether AI supports self-actualization or stifles authentic student voice, while Critical Pedagogy examines whether students engage with AI critically rather than passively. Furthermore, Constructivism asks whether AI serves as a tool for active knowledge construction or passive consumption. Andragogy investigates whether AI supports the self-directed nature of adult learners; Holistic Learning Theory addresses the affective dimensions (such as performance anxiety) that drive AI reliance; and Sociocultural Theory positions AI as a modern cultural artifact that mediates the learning environment. The introduction of AI interacts directly with each of these theoretical pillars, creating a central tension: Does AI function as a tool that empowers these processes, or does it act as a shortcut that undermines them?

To navigate this complexity, Complex Dynamic Systems Theory (CDST) provides a vital framework by conceptualizing autonomy not as a static trait, but as a dynamic, non-linear process that constantly fluctuates (Borges, 2022). This theory is fundamentally connected to autonomy in writing learning because the act of writing itself is an inherently recursive and dynamic cognitive endeavor. Within a CDST framework, a student's writing autonomy emerges from the continuous, moment-by-moment interaction of internal subsystems (such as motivation, self-efficacy, and the deployment of metacognitive strategies) and external environmental attractors (such as task complexity, time constraints, and instructional scaffolding). For instance, a learner might demonstrate high self-regulation and accountability during the initial ideation phase, but experience a sudden collapse in autonomy when faced with demanding syntactic structures during the drafting phase. By applying CDST to writing,

this study argues that the introduction of artificial intelligence acts as a powerful new variable within this fragile ecosystem. The theory allows us to examine how a student's accountability for their written work shifts dynamically in response to the AI, demonstrating that technological dependence or autonomous self-regulation is not a linear outcome, but a complex, emergent behavior shaped by how the student negotiates cognitive load with the tool's immediate affordances.

Figure 2.

Complex Dynamic Systems Theory (Reproduced from Borges, 2022)



Student autonomy in language acquisition is acknowledged as a crucial element in attaining effective and sustainable proficiency. Autonomy is a learner's capacity to assume control over their own educational journey, including goal formulation, self-evaluation, and self-governance (Little, 2022). It empowers learners to take an active role, which is indispensable in language acquisition because it amplifies engagement and cultivates ownership of the educational process. When learners attain autonomy, they can manage their educational endeavors beyond formal instruction, which is vital for mastering a language that requires ongoing exposure, practice, and reflection (Chen & Liu, 2025).

Fostering autonomy in language learning matters, as it directly affects motivation, confidence, and performance. Autonomous learners often show higher motivation because they set personal goals and strategies aligned with their interests and needs (Negi & Laudari, 2022). This motivation leads to more consistent practice and greater resilience when facing challenges. Moreover, by actively engaging in their learning, students develop critical thinking skills and the ability to assess their progress, both of which contribute to greater confidence. This self-confidence allows students to take risks, experiment with the language, and make mistakes - all essential aspects of language acquisition. According to Gultom et al. (2022), learner autonomy is found to be one of the learner characteristics that predict students'

learning achievement. In this study, which included 125 Indonesian undergraduate students, the researchers found a significant positive correlation between learner autonomy and students' writing skills. Other studies support these findings and highlight the correlation between learner autonomy and writing skill acquisition (Ersoy & Çetin, 2023; Andina et al., 2020).

The key prerequisites for developing learner autonomy include psychological foundations (self-efficacy, intrinsic motivation, self-determination needs), cognitive and linguistic skills, and environmental and pedagogical factors. Motivation consistently emerges as the most influential internal prerequisite for learner autonomy across multiple studies. Intrinsic motivation, characterized by genuine interest and enjoyment in learning, more strongly predicts autonomous behaviors than extrinsic motivation driven by external rewards or pressures. The relationship between motivation and autonomy appears bidirectional since intrinsic motivation facilitates autonomous learning behaviors, while successful autonomous learning experiences enhance motivation (Cao & Pho, 2024; Le et al., 2022).

Metacognitive awareness and the ability to execute metacognitive strategies - plan, monitor, and evaluate one's own learning processes - are another crucial prerequisite to learner autonomy. Research demonstrates that explicit instruction in metacognitive strategies significantly enhances both critical thinking and learner autonomy, particularly in complex tasks such as argumentative writing (Aziz et al., 2024). Self-regulation (goal-setting, strategy selection, and progress monitoring) is a core prerequisite that must be systematically developed (Tsai, 2025; Budianto & Mason, 2022).

Language proficiency itself functions as both a prerequisite and an outcome of learner autonomy. Higher language proficiency enables more sophisticated autonomous learning strategies, while autonomous learning practices contribute to proficiency development (Cao & Pho, 2024; Le et al., 2022). This reciprocal relationship suggests that autonomy development must be calibrated to learners' current proficiency levels.

Teacher roles and practices appear pivotal, with multiple studies identifying teachers' capacity to balance support and independence, provide explicit strategy instruction, and create opportunities for learner choice as essential. According to Ruegg (2023), students find it difficult to take control of their learning because of past decisions made for them. Therefore, establishing a supportive environment eases the development of autonomous learning.

Development of Writing Skills

Writing is a multifaceted cognitive endeavor that demands critical thinking and continuous refinement through instruction, practice, and iterative feedback (Harmer, 2004; Graham et al., 2018; Sommers, 1980). Rather than a linear task, it is a recursive, multi-stage process encompassing planning, drafting, editing, and revision. This study specifically explores how students integrate AI tools at each of these crucial stages and the subsequent impact on their autonomy.

Writing in a foreign language further increases this cognitive load, requiring learners to manage micro-level linguistic accuracy (syntax, lexis) and macro-level organizational structures (Cumming, 2001) simultaneously (see Figure 3). This high-order processing relies heavily on controlled attention and working memory (Vanderberg & Swanson, 2007; Jiang & Kalyuga, 2022). Because the act of composition itself serves as a primary mechanism for skill refinement (Kaufer & Ishizaki, 2025), students' writing proficiency advances fundamentally through authentic, independent engagement in the writing process, which is an engagement that AI tools have the potential to either productively scaffold or detrimentally circumvent.

Figure 3.

What does a person learn when writing in a second language? (reproduced from “Learning to Write in a Second Language: Two decades of Research”, A. Cumming, 2001)

	Micro	Macro
TEXT	Syntax and Morphology Lexis	Cohesive devices Text structure
COMPOSING	Searching for words and syntax Attention to language and ideas concurrently	Planning Revising
CONTEXT	Individual development Self-image or identity	Participating in a discourse community Social change

AI as a Scaffolding Tool in Learning Writing

According to the literature, the most frequent purpose of AI use in education is for writing (Pham & Tran, 2025). AI is increasingly used in writing to support content creation, editing, and idea generation. AI-powered tools, such as natural language processing (NLP) models, can generate written content by analyzing large datasets and mimicking human writing patterns (Indurkha & Damerau, 2010). These tools can produce everything from short articles to complex reports, helping writers speed up their workflow. AI is also used for editing and proofreading, with tools like Grammarly providing real-time grammar, style, and tone suggestions that improve writing quality and coherence (Wang, 2024). AI can also help with idea generation and brainstorming by suggesting topics or creating outlines, enhancing writers' creative process (Wang, 2024).

Overall, research demonstrates improvement in students' writing quality in both content and organization (Marzuki et al., 2023). AI tools are praised for improving students' writing and reducing language errors. In a mixed-methods study by Nguyen (2023), EFL teachers at Van Lang University perceived ChatGPT as a useful tutor in writing classes since it could provide immediate responses to any questions, recommend useful reading sources to construct ideas, give feedback on students' work to enhance their language use, and increase their motivation for learning writing. Accordingly, ChatGPT was advantageous to students in the process of learning writing and helped to improve their writing skills.

Other studies argue that AI tools empower students, make them active participants in the learning process, and deepen understanding, reflection, personalization, and collaboration (Wu et al., 2024). Naseer and Khawaja (2025) report a 28% improvement in conceptual mastery among struggling students who used AI-driven adaptive feedback compared with the control group. Student engagement increased by 35%, while cognitive overload dropped by 22%.

Although students rate AI helpfulness and accuracy highly, one disadvantage of AI tools is their tendency to provide factually wrong or out-of-context answers (Pham & Tran, 2025). For instance, an AI tool intended to offer personalized feedback may provide inaccurate or irrelevant resources if the underlying data is flawed. Pillai and Tedesco (2023) describe

“hallucinations” as AI models producing content that looks correct but is false or nonsensical. Instead of enhancing the learning experience, this could potentially impede student progress.

The Autonomy-Dependence Paradox

Numerous studies have found AI tools beneficial for students' learner autonomy (Quinde et al., 2024; Boubker, 2024; Lin, 2025). However, the current literature actively discusses the autonomy-dependence paradox of AI use in education. Artificial intelligence simultaneously serves as a transformative educational tool and a potential threat to cognitive development. Researchers argue that while AI facilitates personalized learning and efficiency, it can lead to digital dependency, reduced memory retention and creativity, and the erosion of critical thinking skills (Zhai et al., 2024).

Although AI reduces the time required for research, data retrieval, and decision-making, it often leads to reduced critical and analytical thinking skills, especially when students become overly dependent on AI-generated content (Zhai et al., 2024). A quantitative study by Lee et al. (2025) determined a negative correlation between higher reliance on AI tools and critical thinking. This is because AI automates many cognitive decisions (information selection, assessing information appropriateness, and synthesizing information), reducing critical thinking. Kim et al. (2023) found that when learners use AI for paraphrasing, they struggle to convey their intent and sound natural. Consistent overreliance on AI while writing significantly decreases students' creativity and ability to think and create independently (Duhaylungsod & Chavez, 2023).

Furthermore, the literature highlights how persuasive design and gamification can cause cognitive overload, shifting student motivation from intrinsic discovery to the pursuit of external rewards. To mitigate these risks, existing research collectively concludes that AI should remain a cognitive enabler rather than a replacement for the essential mental effort required for deep, meaningful learning. In their quantitative study, Zhang and Xu (2025) examine how frequently students use generative AI affects their self-efficacy and technological dependence. A survey of 348 Chinese university students showed that AI use significantly boosts self-efficacy but also increases technological dependence. Another finding was that confidence indirectly promotes dependency through increased efficiency.

Nazir and Yilmaz (2025) found that while AI personalizes learning, it mirrors social media's addictive patterns. Gamification and persuasive design can increase extraneous cognitive load and shift motivation from intrinsic interest to extrinsic rewards, fostering digital addiction. Neuroscience supports the concerns that AI might negatively affect cognitive abilities of learners. AI can reduce extraneous cognitive load but risks "cognitive offloading", where students bypass active recall. Excessive reliance leads to memory decline, reduced critical thinking, and "cognitive fixation" in creative tasks (Gkintoni et al., 2025; Pham & Renandya, 2026).

Previous Studies and the Research Gap

A review of the literature reveals a robust body of studies that focus primarily on the utilitarian and outcome-based impacts of AI in language learning. Extensive research has documented how AI enhances grammatical accuracy, organizational structure, and overall writing quality (Marzuki et al., 2023; Nguyen, 2023), alongside quantitative assessments of student self-efficacy and cognitive load (Zhang & Xu, 2025; Gkintoni et al., 2025). Furthermore, numerous studies have explored integrating these tools primarily from the instructor's perspective or through broad, survey-based methodologies (Nguyen, 2023; Quinde et al., 2024).

However, a distinct research gap remains regarding the internal, qualitative experience of the learner. While previous studies highlight the outcomes of AI use, research on the specific metacognitive strategies students use when interacting with these tools in real time remains scarce. Crucially, the literature lacks an in-depth exploration of the accountability mechanisms at play, specifically, how students negotiate their sense of academic ownership and ethical responsibility when an AI acts as a co-author. Therefore, this study aims to bridge this gap by qualitatively examining the decision-making rationale behind students' use of AI, shifting the focus from the final written product to the cognitive processes that dictate true learner autonomy.

Research Questions

This study seeks to answer the following research questions:

1. How do students select, prompt, and interact with AI tools during different phases of the writing process (e.g., brainstorming, drafting, revising)?
2. What are students' underlying motivations and rationales for integrating AI into their writing, particularly regarding graded versus ungraded tasks?
3. To what extent does reliance on AI assistance affect students' metacognitive self-regulation, accountability for their work, and overall development as autonomous learners?

Methods

Pedagogical Setting & Participants

The sample comprised 40 students (16 males, 24 females; aged 17–19) from three distinct higher education institutions in the Sultanate of Oman. The three institutions were purposively selected because their Foundation and undergraduate programs strictly adhere to the Oman Academic Accreditation Authority (OAAA) standards, ensuring a uniform baseline in academic writing curricula across sites. Convenience sampling was used to recruit accessible, willing participants through established academic networks, while strict inclusion and exclusion criteria ensured sample homogeneity and relevance.

Inclusion Criteria: Participants were required to be native Arabic speakers, currently enrolled in an active English for Specific Purposes (ESP) or Foundation writing module, and possessing an intermediate level of English proficiency (B1-B2 on the Common European Framework of Reference for Languages), as verified by their institutional placement records.

Exclusion Criteria: Students who did not meet the B1-B2 proficiency threshold, or who had not yet received formal instruction on standard academic essay formatting within their current curriculum, were excluded from the study.

Design of the Study

This study employed a qualitative, stimulated recall research design to explore students' experiences, attitudes, and motivations behind their choice of AI tools and the manner of their use in writing. It is important to clarify that this study did not employ an interventional or longitudinal design intended to form, alter, or train student perceptions over time. Rather, a single timed writing task served a specific methodological function: it provided a standardized, immediate anchor for a stimulated recall interview, allowing researchers to investigate students' pre-existing, habitual patterns of AI interaction and decision-making in

real time. This approach allows for the investigation of not just the outcome of AI use (the essay), but the underlying process, rationale, and decision-making that students engaged in, which is central to understanding autonomy and dependence.

Data collection & analysis

Because this study recruited participants across three distinct institutions, we did not use a single standardized writing coursebook; however, we established a strict pedagogical baseline under OAAA guidelines, ensuring all curricula explicitly covered the mechanics of the standard four-paragraph academic essay before the study. Data collection was executed through individual, sequential sessions across the participating institutions. Participants were given 40 minutes to write an essay on a purposefully accessible topic ("Advantages and Disadvantages of Social Media"). This ensured that all participants could complete the task without external assistance, so any use of AI served as optional scaffolding rather than a strict necessity for basic task comprehension.

After each participant completed the writing task, researchers conducted a separate, one-on-one, semi-structured interview lasting approximately 30 minutes. Participants were presented with their completed essays to anchor their reflections on specific compositional decisions. Researchers used a standardized interview protocol to guide interviews and ensure procedural consistency. The protocol covered topics including task difficulty, tool selection, prompting techniques, perceived efficacy, and ethical considerations regarding AI output ownership (see Appendix A for the full interview protocol). In total, 40 individual interview sessions were completed, recorded with participant permission, and transcribed.

The transcribed interviews were imported into Taguette, a qualitative research software, for systematic thematic analysis. To ensure analytical rigor, the coding process was collaborative and iterative. Initially, all three researchers independently open-coded a subset of the data (20% of the transcripts) to establish a preliminary codebook. Following this independent phase, the researchers convened to compare codes, refine definitions, and merge overlapping themes, achieving an inter-coder agreement rate of over 85%. Discrepancies were resolved through negotiated consensus. Once the standardized codebook was finalized, researchers systematically coded the remaining transcripts and held regular peer-debriefing sessions to maintain consistency.

To ensure methodological integrity, the data collection and analysis processes were grounded in Lincoln and Guba's (1985) criteria for trustworthiness:

- **Credibility:** Established through data triangulation, corroborating behavioral evidence (tangible writing choices during the timed task) against perceptual data (verbal rationales provided in the interviews). Investigator triangulation further mitigated individual researcher bias.
- **Transferability:** Supported by a thick description of the research setting—specifically the Omani higher education context, the OAAA curriculum standards, and the B1-B2 proficiency demographics.
- **Dependability:** Maintained through the utilization of Taguette software, which provided a transparent, centralized audit trail of the coding process and the evolution of codes into final themes.
- **Confirmability:** Ensured through constant reflexivity. Interview questions were rigorously piloted and refined to remain neutral, ensuring findings were genuinely shaped by the respondents' narratives rather than researcher preconceptions.

Results/Findings

The thematic analysis of participants' responses revealed several significant themes.

Table 1

Summary of Major Themes, Sub-Themes, and Illustrative Quote

Main theme	Sub-themes and findings	Relevant frequencies	Quotes
1. Using AI Tools	Tool Choice: Preference for ChatGPT, though some sought "academic" alternatives. Prompting: Ranged from single full-essay prompts to sequential, structural prompting. Paraphrasing: Varied investment; many bypassed independent paraphrasing.	5% composed without AI. 25% directly transferred AI text without modification. 22.5% instructed AI to paraphrase its own output.	<i>"Because maybe I don't have the best word or the best sentence to write."</i> <i>"What's the point then of asking ChatGPT if I'm going to paraphrase?"</i> <i>"You asked me to write the essay, so how can I just copy and paste? I haven't done a thing if I just copy and paste."</i>
2. Perceived Helpfulness vs. Hindrance	Utility: Valued for grammatical correction, feedback, and lexical expansion. Hindrance: Bypasses the iterative drafting process; inhibits independent ideation and critical thinking.	N/A	<i>"I think it's easier. But it doesn't help me learn how to write because it's just there... The paragraphs are there completely, so I don't have to think."</i> <i>"Even sometimes without searching something on Google, I'll go straight to AI... it's like an addiction at this point."</i> <i>"How can I get a perfect draft from my first draft?"</i> <i>"AI tool, it brings a form of laziness as well in writing"</i>
3. Advantages and Difficulties	Advantages: Time-efficiency, structural frameworks, error identification. Difficulties: Factual inaccuracies ("hallucinations"), advanced vocabulary exceeding proficiency, misaligned prompt outputs.	90% reported increased grammar, spelling accuracy while using AI. 15% reported difficulties	<i>"[Writing with AI] it's way more accurate in the writing and the structure."</i> <i>"ChatGPT maybe has difficult language"</i> <i>"...difficult words. And difficult means, I don't understand it."</i> <i>"Sometimes it didn't give you the whole information"</i>

			<i>you want..And also it gives you some wrong informations that have no scientific sources."</i>
4. Ethical Considerations	Intellectual Property: Ownership attribution varied based on how much the student modified the text (AI vs. Collaboration vs. User). Task Type: Higher likelihood of AI use for graded assignments. Integrity: Internal conflict between convenience and perceived technological dependence.	60% reported comprehension difficulties due to advanced AI vocabulary	<i>"[Using AI] made things easier, but it took some of the level of skill that I had in writing and in creative ideas. When using AI tools sometimes I feel that the text is meaningless."</i> <i>"There's a part of me that's like, I'm tempted to do it... because I don't want people to think I just only work with AI."</i> <i>"I do believe that what you generate with AI is not fully yours. You can never claim, because at the end of the day, you're not the one that did it"</i>
5. Autonomy and Technological Dependence	Pedagogical Use: AI only facilitates skill development when deliberately used as a tutor/feedback mechanism. Dependence: Dual motivation for error-free composition and time-saving drives complete dependence over collaboration.	N/A	<i>"It is becoming a hindrance maybe or, you know, we are getting too dependent on it."</i> <i>"When I absolutely need them, then I do use them, I don't use them for the whole task... I try to trust myself, even though I would make mistakes in the work that I'm doing."</i>

Using AI Tools

User proficiency in using AI tools was directly related to these technologies' capacity to support learner autonomy. This relationship manifested across multiple dimensions:

a. The Choice of Tools

While ChatGPT predominated as the preferred platform among participants, a subset selected alternative AI systems perceived as "more scientific", "academic", less prone to factual inaccuracies, and capable of providing citations or producing linguistically authentic output. Some participants strategically employed multiple AI platforms serving complementary functions: text generation, paraphrasing, and linguistic accuracy verification. Notably, 2 participants (5%) elected to compose their essays without technological assistance. (*See Table 1 for a comprehensive overview of the thematic framework, corresponding frequencies, and illustrative participant statements*).

b. Prompt Writing

Participants exhibited diverse approaches to prompt construction. Several requested complete essay generation through single prompts, while others solicited discrete structural components (introduction, body paragraphs, conclusion) through sequential prompts. Many utilized AI for ideational generation before transforming these concepts into original compositions. Some participants iteratively refined their prompts to adjust linguistic complexity or solicit evaluative feedback.

c. Paraphrasing

Significant variation emerged regarding participants' compositional investment and paraphrasing efforts. While many leveraged AI for ideational brainstorming before independent composition, others relied exclusively on AI-generated text. Regarding paraphrasing practices, 25% directly transferred AI output without modification. Some attempted independent paraphrasing of AI content, whereas 22.5% instructed AI to paraphrase its own output for enhanced authenticity.

Participants who solicited complete AI-generated essays reported minimal modifications, primarily addressing unfamiliar terminology through selective word substitution. As one participant stated: *"Because maybe I don't have the best word or the best sentence to write."* Another participant questioned the logic of paraphrasing: *"What's the point then of asking ChatGPT if I'm going to paraphrase?"*

The majority utilized AI for ideational development but preferred to paraphrase the technological output. Stated rationales included concerns about lexical and syntactic complexity in AI-generated text and desires for authentic self-expression. Several participants mentioned potential plagiarism detection as a motivating factor.

Some participants utilized AI-generated content merely "for inspiration", prioritizing original expression. As participant #8 articulated:

"You asked me to write the essay, so how can I just copy and paste? I haven't done a thing if I just copy and paste."

Is AI Helpful in Learning?

Participants acknowledged AI's utility for compositional assistance, grammatical correction, and lexical expansion. Some valued AI as a feedback mechanism for identifying errors and enhancing textual coherence.

However, substantial concerns emerged regarding AI's potential impediment to learning. Some participants argued that AI circumvents skill development by providing ready-made responses, inhibiting independent ideation:

"I think it's easier. But it doesn't help me learn how to write because it's just there. Like, I don't brainstorm. The paragraphs are there completely, so I don't have to think."

Others expressed concerns about technological dependency, with one participant acknowledging:

"Even sometimes without searching something on Google, I'll go straight to AI and ask them instead. So it's like an addiction at this point."

Additionally, participants described AI-generated text as unnaturally polished, bypassing the iterative drafting process essential to skill development: *"How can I get a perfect draft from my first draft?"* While acknowledging AI's potential as a self-improvement tool, many

participants maintained that authentic skill development requires independent effort, creativity, and critical thinking rather than relying exclusively on AI-generated content.

Advantages of AI Tools and Related Difficulties

a. Advantages

Most participants acknowledged AI's time-efficiency in providing not only ideational content but also organizational frameworks. Participants concerned with linguistic accuracy took different approaches: some transferred AI-generated text directly without modification for speed, while others used AI as a pedagogical resource, asking for feedback on grammar, spelling, structure, cohesion, and coherence. The latter group recognized this approach as more time-intensive but valued the learning opportunity afforded by error identification and correction.

b. Difficulties

Several participants noted concerns regarding potential factual inaccuracies in AI-generated content, necessitating verification processes. 60% reported comprehension difficulties due to advanced vocabulary exceeding their proficiency level. Additionally, participants identified challenges in prompt formulation, resulting in AI-generated content misaligned with assignment parameters. According to participants, both linguistic complexity and task requirement misalignment could be addressed through iterative prompt refinement.

Ethics

a. Intellectual Property

Perspectives on intellectual property rights regarding AI-generated content varied according to utilization patterns. Participants who incorporated AI output without substantial modification attributed ownership to the AI system. Conversely, those who employed AI solely for ideational development before independent composition characterized the process as "collaboration". A minority perspective (participants #6 and #22) conceptualized AI as an agentless tool, attributing ownership of its output to the user.

b. Use of AI in Graded vs. Ungraded Tasks

Participants reported increased likelihood of AI utilization for graded assignments, motivated by grade optimization, academic performance maintenance, and effort reduction. Many explicitly acknowledged greater personal investment in assessed tasks while demonstrating reduced motivation for ungraded assignments. Many participants recognized potential inequities from inconsistent AI use across the student population, raising academic integrity concerns.

Some acknowledged AI's ubiquity, with participant #19 observing:

"It's so big now to the point you can notice it even without checking."

This awareness generated internal conflict between the temptation to utilize AI for graded tasks and concerns about perceived technological dependence. One participant articulated this tension:

"There's a part of me that's like, I'm tempted to do it, but the other part is going against my temptation because I don't want people to think I just only work with AI, and AI is the only thing I use."

Several participants advocated for institutional policies regulating academic AI utilization.

Most interviewees supported permitting AI for ideational development while maintaining that students' compositions should reflect personal knowledge and individual expression. As interviewee #17 observed:

"[Using AI] made things easier, but it took some of the level of skill that I had in writing and in creative ideas. When using AI tools sometimes I feel that the text is meaningless."

Students' learning and dependence

"It is becoming a hindrance maybe or, you know, we are getting too dependent on it."
(Participant #19)

Most participants indicated that AI systems do not support compositional skill development unless educators deliberately use them as pedagogical resources through specific requests for explanation and evaluative feedback. This pedagogical application necessitates sophisticated prompt engineering to elicit tutorial functionality from AI platforms.

Participants reached consensus that delegating both composition and paraphrasing to AI technologies fails to promote learning outcomes. However, many acknowledged incidental vocabulary acquisition through exposure to AI-generated content.

The data revealed that students' dual motivations - pursuit of error-free composition and desire to save time and effort - often cause complete technological dependence rather than collaborative engagement that might enhance learning. This tension between convenience and skill development emerged clearly in participant reflections:

"When I absolutely need them, then I do use them, I don't use them for the whole task. I use them for part of the tasks that I'm struggling at. I try to trust myself, even though I would make mistakes in the work that I'm doing." (Participant #17)

This statement illustrates the strategic, selective approach some participants adopt to maintain autonomy while leveraging technological support for specific compositional challenges.

Discussion

This study's findings offer a nuanced, empirically grounded perspective on the autonomy-dependence paradox in AI-assisted writing. The results clearly indicate that AI is not an inherently beneficial or detrimental force. Rather, its impact depends on the user's proficiency, metacognitive awareness, and how it is deployed. To fully understand these dynamics, interpret the findings through the multidimensional theoretical framework of learner autonomy established earlier (Fig. 1). Each lens offers a distinct explanation of how AI either facilitates or obstructs the student's journey toward independent writing competence.

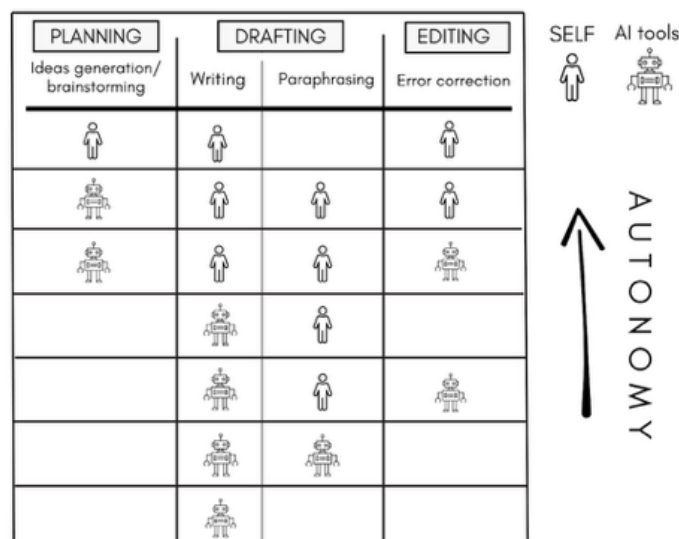
Self-Governance and the Cognitive Effort of Writing

A central principle of learner autonomy is the student's capacity to assume control over their own educational journey (Little, 2022). Our findings show that this control is directly challenged when students delegate the core productive skill of writing to AI (Fig. 4). Through the lens of *Constructivism*, learners must actively build knowledge through experience and reflection. The act of writing is a complex cognitive process that refines critical thinking and solidifies learning through active engagement (Kaufer & Ishizaki, 2025; Harmer, 2004). When participants used AI to generate entire essays, they effectively bypassed this essential mental effort. This behavior clearly reflects the "cognitive offloading" Gkintoni et al. (2025) warn against, where the tool's convenience lets students bypass the very processes necessary

for skill acquisition. Consequently, as students transferred more responsibility to AI, particularly during the critical drafting stage, their autonomy diminished.

Figure 4.

Students investing efforts in various stages of writing



In contrast, participants who strategically used AI for planning (idea generation) or brainstorming retained a high degree of self-governance. In these cases, AI functioned as a scaffolding tool, supporting rather than replacing the student's cognitive work. This aligns with the findings of Zhang and Xu (2025), who noted that AI can boost self-efficacy. However, our study adds a crucial qualifier: this boost in confidence only translates to productive autonomy when the student remains the central author of the text. When the pursuit of efficiency leads to complete delegation, as seen in the 25% of participants who copied AI output directly, it fosters the technological dependence that Zhai et al. (2024) described, ultimately hindering the development of independent writing skills.

Andragogy further explains this behavior by emphasizing the importance of self-direction. While adult and young-adult learners are theoretically capable of self-direction, our data show that the pursuit of efficiency often misdirects this trait. Students strategically chose to use AI more heavily for graded tasks to save time, demonstrating self-direction in task management but sacrificing self-direction in actual learning. Consequently, this complete delegation undermines the core tenets of *Self-Determination Theory (SDT)*. SDT posits that competence and autonomy are basic psychological needs. By outsourcing the cognitive load to AI, students rob themselves of the intrinsic reward and competence-building that comes from independently overcoming a writing challenge, leading to technological dependence (Zhai et al., 2024).

Although existing literature on artificial intelligence integration in composition pedagogy posits a direct correlation between AI utilization and enhanced student motivation, engagement, and textual quality (Kurniati & Fithriani, 2022; Marzuki et al., 2023), questions persist regarding whether such technological mediation genuinely facilitates the acquisition of writing competencies and the development of writing autonomy. Students' evident enthusiasm for platforms such as ChatGPT and QuillBot is understandable, given these tools' ability to provide immediate assistance with paraphrasing, summarization, and linguistic accuracy. Nevertheless, this technological facilitation does not necessarily lead to substantive improvement in students' writing proficiency, particularly when learners invest minimal

cognitive effort in the compositional process. This discrepancy warrants critical examination of the relationship between technological assistance and authentic skill acquisition in academic writing contexts.

Self-Assessment, Revision, and AI as a Sociocultural Scaffold

The literature emphasizes that constructive feedback and revision are indispensable for improving writing proficiency (Szlachta et al., 2023). Our study found that some students leveraged AI in ways that supported this process and, by extension, their autonomy. By writing their own drafts and then using AI to solicit feedback on grammar, structure, and coherence, these students engaged in a form of self-assessment. This practice aligns with the development of metacognitive awareness, the ability to plan, monitor, and evaluate one's own learning, a crucial prerequisite for autonomy (Aziz et al., 2024).

The *Sociocultural Theory* of learning posits that cultural tools and interaction scaffold development. When students used AI for brainstorming or as a feedback partner on their original drafts, AI functioned as a digital mediational tool within the student's Zone of Proximal Development. It supported, rather than replaced, their cognitive work.

This collaborative use of AI is intrinsically linked to *Social Cognitive Theory*. Students who prompted AI to evaluate their grammar, structure, and coherence demonstrated high self-regulation and self-efficacy. They utilized the tool to monitor and adjust their learning strategies, remaining the final arbiters of the suggested changes. In this capacity, AI serves as a responsive resource that supports iterative revision, showing that AI can boost self-efficacy (Zhang & Xu, 2025) when the student remains the text's central author.

Using AI as a feedback partner supports learner autonomy because the student remains the originator of the content and the final arbiter of any suggested changes. The AI serves as a responsive, on-demand resource that facilitates the iterative process of revision. However, it is critical to distinguish this from the non-autonomous act of having the AI both generate and then "paraphrase" its own text. In the latter case, authentic learning and self-assessment were precluded because the student was never required to reflect on their own compositional choices. This confirms that while AI can provide valuable feedback, genuine metacognitive self-reflection remains an irreplaceable component of writing acquisition (Marzuki et al., 2023; Jiang & Kalyuga, 2022).

Risk-Taking, Authentic Voice, and Empowerment

A willingness to experiment and take risks is vital for autonomy, yet our findings suggest an inverse relationship between this trait and AI dependence. *Holistic Learning Theory* reminds us that learning involves the whole person, including affective (emotional) dimensions. Our data reveal that the affective fear of making linguistic errors drove many students to rely entirely on AI to produce a "perfect" draft.

This avoidance, however, comes at the cost of learning. By sidestepping the struggle to find the right words and structure sentences, students miss opportunities to experiment linguistically and develop skills. This observation lends empirical weight to Duhaylungsod and Chavez's (2023) concerns that overreliance on AI can reduce students' creativity and ability to think independently. The AI's polished output, as one participant noted, bypasses the "messy" but essential drafting process. Therefore, the very feature that makes AI attractive - its ability to produce clean, coherent text quickly - can undermine the development of resilience and confidence that comes from overcoming compositional challenges independently. The findings show that students who were willing to "trust themselves", even

if it meant making mistakes, maintained greater control over their learning and demonstrated a higher degree of autonomy.

When students resist this dependence, they do so driven by principles aligned with *Humanistic Psychology*, which views autonomy as essential for self-actualization and personal growth. Participants who rejected fully AI-generated texts cited a desire for authentic self-expression, noting that AI output often felt "meaningless" or lacked their personal voice. They recognized that true personal growth in writing requires their own creative input.

Finally, the development of an autonomous learner in the digital age necessitates *Critical Pedagogy*, which emphasizes critical consciousness and empowerment. This was evident in students who actively questioned the ethical implications of AI, recognized the potential for factual inaccuracies ("hallucinations"), and debated intellectual property rights. Empowered learners do not passively accept AI-generated content; they critically evaluate it. The study shows that fostering true autonomy requires educators to move beyond teaching prompt engineering and instead cultivate this critical consciousness so students can use AI as an intellectual partner rather than a cognitive crutch.

Alternative Explanations: Time Pressure and Task Constraints

While the primary findings attribute students' reliance on artificial intelligence to individual metacognitive awareness and dispositions toward autonomy, alternative explanations must be considered regarding the experimental conditions themselves. Specifically, the imposition of a strict 40-minute time limit for the timed writing task may have served as a powerful extraneous catalyst driving full AI delegation. Under time pressure, students with intermediate (B1-B2) English proficiency may have experienced heightened cognitive load, turning the writing task from a deliberate literacy exercise into a high-stakes survival challenge. In this pressured context, the immediate generation of a complete essay by an AI tool functions less as an expression of passive dependency and more as a pragmatic, stress-induced coping mechanism to meet institutional deadlines. Consequently, what appears as an erosion of learner autonomy in the data may, in part, be an artifact of temporal constraints rather than a permanent psychological state, suggesting that future research should examine whether students exhibit greater autonomous restraint when unconstrained by strict time limits.

Conclusion

This investigation reveals that the integration of AI into the ESL writing classroom presents a fundamental paradox. AI acts like a mirror, reflecting and amplifying the learner's existing disposition toward autonomy or dependence. The findings demonstrate that when students approach AI as a shortcut to a polished product, they engage in cognitive offloading and avoid the essential, often difficult, processes of critical thinking, drafting, and revision. This path fosters a sophisticated dependency that sacrifices long-term skill acquisition for short-term convenience, leaving the writing competence undeveloped.

Conversely, when utilized with intention and metacognitive awareness, AI can become a powerful catalyst for autonomy. Students who used these tools for brainstorming, vocabulary expansion, or as a feedback partner on their own original work increased and enhanced their learning. This strategic collaboration preserves the student's role as the central author and critical thinker.

Therefore, the central challenge for modern education is not a technical one but a pedagogical

one. The imperative is to cultivate the critical digital literacy required to navigate an AI-saturated world. Educators and institutions must promote a pedagogy that prioritizes the *process* over the product, one that designs pre-writing activities grounded in critical debate, integrates diverse sources to foster independent idea generation, and implements assessments that value drafts and reflections as much as the final essay.

Ultimately, the goal cannot be to simply create students who are proficient at prompting an algorithm. It must be to develop discerning, self-directed learners who understand that true intellectual growth occurs in the space of challenge, revision, and authentic creation. By establishing clear ethical guidelines and fostering an environment that values effort and experimentation, we can guide students to use AI not as a replacement for their intellect, but as a tool to amplify their own emerging voice. In doing so, we prepare them not just for academic success, but for a future where the ability to think critically alongside intelligent machines will be the ultimate measure of an autonomous mind.

The following practical implications are proposed for educational practitioners and institutions to mitigate students' disproportionate reliance on artificial intelligence systems in compositional contexts.

a. For Educators

To adapt writing pedagogy for the age of AI, educators must focus on fostering student autonomy and reinforcing the foundational skills of critical and creative thought. A primary responsibility is to teach ethical AI collaboration practices that maintain student ownership of the writing process. To strengthen this autonomy and ensure AI is used as a tool rather than a crutch, educators should require students to complete peer review sessions *before* consulting AI tools and follow up with a reflective analysis where students articulate how these tools specifically affected their writing.

Furthermore, fostering independent thought before the first draft is crucial. This can be achieved by designing pre-writing activities focused on critical thinking, such as in-class discussions, structured debates, and preliminary research. To help students develop their own ideas and planning skills, writing should be integrated with diverse information sources, including readings, podcasts, and videos, which serve as a rich foundation for original analysis.

To make the writing process itself more engaging and skill-oriented, educators should assign tasks based on real-world scenarios. This approach enhances student engagement by demonstrating the practical application of their skills. Within these tasks, instructors can promote vocabulary expansion and grammatical experimentation through guided language exploration exercises, encouraging students to take creative risks with their expression.

Finally, effective instruction hinges on providing clear structure and accessible support. This involves offering clearly structured writing prompts that are carefully tailored to student proficiency levels while still allowing sufficient space for personal expression. Alongside well-designed prompts, educators must ensure students have continuous access to comprehensive writing resources, such as style guides, grammar handbooks, and interactive learning materials, to support their independent development.

b. For Institutions:

To effectively navigate the challenges and opportunities presented by artificial intelligence in academic writing, institutions must implement a proactive and multi-faceted strategy that reinforces pedagogical best practices and upholds academic integrity.

At the foundational level, this requires establishing clear and comprehensive institutional policies that define the appropriate use of AI as a supportive learning tool, distinguishing it from its misuse as a substitute for original thought. To support this, administrators must create explicit academic integrity guidelines that directly address AI-generated content. These guidelines should include updated definitions of plagiarism and establish clear citation requirements for when and how AI assistance must be acknowledged.

With a clear policy framework in place, the focus must shift to empowering educators. Institutions should develop and deliver robust faculty training programs specifically addressing the effective pedagogical integration of AI in writing instruction. This ensures that faculty are equipped not only to enforce integrity policies but also to leverage AI tools constructively in their classrooms.

This pedagogical evolution must be reflected in curriculum and assignment design. To foster skills that AI cannot replicate, faculty should incorporate assignments specifically designed to develop students' critical thinking and creative expression. Alongside these, faculty should require research-based writing projects to develop crucial information literacy. Such projects compel students to move beyond simple text generation and engage deeply in the process of gathering, analyzing, and synthesizing multiple sources to build a coherent argument.

Finally, this strategy must be supported by robust assessment practices and dedicated student support systems. Assessment methods should evaluate the entire writing process, through the submission of drafts, outlines, and reflective components, rather than focusing solely on the final product. Requiring students to give an oral presentation of their written work is another powerful technique that deepens their understanding and confirms authentic ownership of their ideas. To facilitate this development, institutions should invest in dedicated writing support centers staffed with qualified tutors who can provide one-on-one guidance focused on building the foundational skills of critical analysis and effective composition.

Limitations and Further Research

Although this study's findings offer valuable insights for educators and institutions navigating artificial intelligence in language learning, the research is subject to several methodological limitations. As with any qualitative study, researchers' perspectives and biases may have introduced subjectivity. The researchers addressed this by creating neutral, bias-free questions that were piloted and refined. Furthermore, to ensure consistent interpretations, the researchers discussed and compared their interpretations, with peer debriefing sessions validating the thematic outcomes and resolving discrepancies through negotiated consensus. Additionally, while utilizing a multi-site sample across three higher education institutions in Oman captured diverse perspectives within a defined demographic, the sample size inherently limits broad statistical generalizability.

These limitations open several fertile avenues for future research. First, given that the present study relied on a single timed writing task, future investigations should employ longitudinal designs to track how students' patterns of AI utilization, technological dependence, and writing autonomy evolve over an entire academic semester or multi-year program. Second, researchers should conduct comparative studies across varying language proficiency levels (e.g., comparing beginner, intermediate, and advanced learners) and diverse L1 backgrounds to determine whether reliance on AI manifests differently depending on a student's linguistic competence and cultural context. Third, classroom intervention studies are needed to design, implement, and evaluate explicit pedagogical frameworks, such as structured prompt-engineering training or mandatory pre-writing reflection logs, to measure whether targeted

instruction can mitigate technological dependence and foster sustainable learner autonomy. Finally, future work could integrate real-time screen-recording software and keystroke logging to capture the exact cognitive micro-moments of AI interaction, providing an even richer triangulation of behavioral data alongside stimulated-recall interviews.

Declaration of the use of AI

During the preparation of this work, the authors used Gemini Pro for proofreading and spell-checking. The authors reviewed and edited the content as needed and take full responsibility for the publication's content.

Declaration of competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Ethical statement

All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional research committees. The Institutional Review Boards (IRBs) of the participating higher education institutions in Oman granted ethical approval for this multi-site research. Informed consent was obtained from all individual participants included in the study. Before the writing tasks and semi-structured interviews began, participants were fully briefed on the study's objectives and gave explicit permission to record and transcribe their responses for thematic analysis.

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Biodata

Maria Chulkstan (MA, MSc, CELTA) is an academic with over 18 years of dedicated experience in Higher Education. Currently a faculty member at Sultan Qaboos University (Oman), her work is centered on enhancing the student learning experience. Her research explores the crucial intersections of learner autonomy, metacognition, and motivation.

Maha Hashim (MPhil, CELTA), currently working at GUTech (Oman), is an ELT professional with 20 years of expertise in higher education in Oman, teaching diverse learners. Dedicated to fostering academic excellence, she is deeply passionate about digital literacy, AI in education, assessment methodologies, and strategies for enhancing effective learning.

Yeavelin Vasheena (MPhil, MA, CELTA, DELTA) is dedicated to promoting academic excellence and student success. With over 18 years of experience teaching English in Oman, Bahrain, and India, her research interests focus on the intersection of science and language and the role of emerging technologies in language education.

Appendix A: Semi-Structured Interview Protocol

Part 1: Task Execution and Tool Selection

1. How confident were you in your ability to complete this specific essay topic without any external support?
2. Walk me through your exact decision to use an AI tool for this task. At what stage of the writing process (planning, drafting, editing) did you decide to use it?
3. Were there other tools you considered? Why did you select this specific AI platform over others?

Part 2: Prompting and Text Generation

4. Can you show me the exact prompt(s) you typed into the AI? Why did you phrase it that way?
5. When the AI generated this output, what was your initial reaction to the quality and vocabulary?
6. How much of the AI-generated text did you change or rewrite in your own words? Can you point to a specific sentence you changed and explain why?
7. If you did not paraphrase certain sections, what was your reasoning for keeping the AI's exact wording?

Part 3: Perceived Efficacy and Autonomy

8. In what specific ways do you feel this tool helped you *develop* your writing skills, versus simply helping you *complete* the task faster?
9. When you use AI for writing, do you feel you are in control of the essay, or do you feel the AI is taking over the creative process?
10. Do you find yourself relying on these tools more for graded assignments or ungraded practice? Why?

Part 4: Ethics and Academic Integrity

11. Do you feel that using AI tools in a graded academic assignment provides an unfair advantage over students who do not use them?
12. If a student uses AI to generate ideas but writes the essay themselves, is that cheating? What if they use it to write the whole essay?
13. Ultimately, who do you believe owns the rights to the final text you submitted today: you, or the AI platform?