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Mediating Writing Development with Generative AI in College Classrooms: A Qualitative Case Study of Instructional Practice

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Abstract. Generative artificial intelligence (AI) is now embedded in higher education writing instruction, yet its pedagogical value depends on how it is used in classroom practice. This qualitative case study examined how AI was integrated into an undergraduate writing course at a private university in East Java, Indonesia, and how it mediated students' idea generation, organization, argumentation, and authorial voice over one semester. Data were collected through classroom observations, interviews with one instructor and fifteen students, and analysis of course documents, drafts, feedback, and AI interaction records. The data were analyzed using reflexive thematic analysis informed by Sociocultural Theory, Activity Theory, and Critical GAI Literacy. The findings indicated that AI functioned mainly as a mediational scaffold, supporting idea generation and organization more consistently than argumentation and authorial voice. Its role varied across planning, drafting, revising, and feedback, while teacher guidance, assessment, classroom rules, and peer interaction shaped whether AI became support for learning or a shortcut. The study highlights AI integration as a socially mediated and ethically negotiated pedagogical process.

Keywords: academic writing; Activity Theory; Critical GAI Literacy; generative artificial intelligence; Sociocultural Theory.

1. INTRODUCTION

The rapid expansion of generative artificial intelligence (AI) in higher education has created both new opportunities and new uncertainties for writing instruction. Earlier research had already shown that AI applications in higher education were developing faster than educators' pedagogical understanding of them (Zawacki-Richter et al., 2019). With the emergence of large language models, this concern has become more urgent. Recent scholarship highlights the potential of generative AI to support idea generation, feedback, and personalized assistance, while also raising concerns about bias, overreliance, and academic integrity (Farrokhnia et al., 2024; Kasneci et al., 2023; Tlili et al., 2023). More recent reviews further suggest that the central question is no longer whether AI should be used, but how it is being implemented in teaching and learning (Qian, 2025; Wang et al., 2025). In this context, UNESCO (2023) warns that generative AI is advancing more quickly than the policy and pedagogical frameworks needed to govern its responsible use.

This development is particularly significant in college writing instruction because academic writing involves more than grammatical accuracy. Students are expected to generate ideas, organize them coherently, construct arguments, engage with evidence, and project an authorial voice appropriate to academic discourse. Recent studies show that students already use AI in many of these areas, especially for brainstorming, structuring, drafting, and revising texts (Baldrich et al., 2025; Cummings et al., 2024). At the same time, van Niekerk et al. (2025)

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argue that academic writing is especially vulnerable to substitution by AI because students can rely on these tools to complete substantial parts of the composing process. This makes AI not only a technological issue, but also a pedagogical one.

The pedagogical value of AI, however, cannot be assumed. On the one hand, generative AI may reduce barriers to writing by helping students overcome writer's block, generate possible directions, and improve textual organization and fluency. On the other hand, sustained use may weaken students' agency if AI becomes a substitute for judgment rather than a scaffold for learning. Bedington et al. (2024), for example, found that semester-long classroom integration of generative AI raised continuing concerns about authorship, agency, evaluation, and overreliance. In a related study, Connell Pensky et al (2025) showed that generative AI, when paired with explicit instruction, could improve productivity and quality in graduate-level professional writing, suggesting that pedagogical framing matters greatly. Similarly, Li & Wu (2025) argue that the benefits of generative AI in academic writing coexist with serious challenges related to originality, critical thinking, and policy guidance. These studies suggest that AI should be understood not as inherently beneficial or harmful, but as a resource whose educational value depends on how it is used in classroom practice.

This issue becomes even more important when writing is viewed as a developmental process. Academic writing is not simply the production of acceptable text; it is also a process through which students learn to think, organize ideas, argue critically, and position themselves as writers. As Mhilli (2023) notes, authorial voice is central to academic writing because it reflects stance, identity, and rhetorical presence. Even revision, which is often treated as a relatively safe use of AI, remains complex. Radtke & Rummel (2025) show that students' revision behavior changes depending on whether they know a text is AI-generated. This suggests that AI may influence not only what students write, but also how they understand authorship and writing itself.

For this reason, examining AI in writing classrooms requires more than outcome-based evaluation. Measures of productivity, surface quality, or score improvement do not fully explain how students engage with AI, how teachers mediate its use, or how writing practices evolve over time. Belkina et al. (2025) note that one of the major limitations in the current literature is the lack of detailed evidence about how generative AI is actually implemented in authentic teaching settings. In writing-specific research, this concern is equally clear. Kim et al. (2026) show that student–AI interaction patterns are associated with differences in academic writing performance, while Yeung (2025) demonstrates that engagement with AI-supported feedback includes behavioral, cognitive, and affective dimensions. Together, these studies

indicate that the educational value of AI lies not only in the tool itself, but also in how it is experienced, mediated, and negotiated in classroom practice.

Against this background, the present study explores how AI is used in college writing classes to support students' idea generation, organization, argumentation, and authorial voice over time. This focus is important because these dimensions of writing are closely interconnected and develop through repeated stages of planning, drafting, feedback, and revision. By examining classroom practices and participants' experiences, the study aims to offer a more human-centered understanding of AI-supported writing instruction in higher education. More specifically, it responds to the need to examine not only whether AI supports writing development, but also how its use is shaped by teacher mediation, student agency, and classroom conditions over time.

Accordingly, the study is guided by the following research questions: (1) How is AI integrated into college writing instruction to mediate students' development of idea generation, organization, argumentation, and authorial voice over time?; (2) How do students and instructors engage with AI across the stages of planning, drafting, revising, and feedback in college writing classes?; (3) How do classroom conditions, including teacher guidance, assessment expectations, classroom rules, and peer interaction, shape students' engagement with AI in writing instruction?

2. LITERATURE REVIEW

Research on AI in higher education has moved from a narrow concern with efficiency toward broader pedagogical questions about teaching, learning, and academic practice. Early reviews showed that AI research in higher education was often driven more by technological innovation than by educators' needs or classroom realities Zawacki-Richter et al. (2019). With the rise of generative AI, this imbalance has become even more visible. Recent studies highlight both the transformative potential and the instability of large language models in educational settings, particularly in relation to trust, ethics, and instructional judgment (Kasneci et al., 2023; Tlili et al., 2023). More recent systematic reviews confirm that higher education is now grappling with how generative AI should be integrated across different instructional contexts, although much of the evidence still emphasizes applications and outcomes rather than classroom processes (Belkina et al., 2025; Feng et al., 2025; Qian, 2025; Wang et al., 2025; Zhang et al., 2024).

This broader concern is especially important in writing instruction because AI is no longer simply an external tool that students occasionally consult. Instead, it is becoming part

of the composing process itself. In this context, one of the most widely reported affordances of generative AI is its support for idea generation. Baldrich et al. (2025) demonstrate that students frequently use AI for brainstorming, outlining, and initiating academic texts, especially during the early stages of composing. In first-year writing contexts, students have used AI to generate research questions, consider counterarguments, and discover entry points into a topic, suggesting that AI can reduce the difficulty of getting started (Cummings et al., 2024). Similarly, students perceive AI-assisted writing as particularly useful when they need help clarifying directions and moving from hesitation to drafting (Kim et al., 2025).

At the same time, the educational value of AI-supported idea generation depends on how students engage with the ideas it produces. Kim et al. (2026) show that differences in student–AI interaction patterns are associated with different writing outcomes, while Oubibi (2025) links generative AI use with postgraduate students' engagement and academic confidence. Chen et al. (2026) further show that AI can influence graduate students' affective engagement in source-based L2 academic writing. These studies suggest that AI-supported idea generation is not merely cognitive, but also motivational and affective. The key pedagogical question, therefore, is not simply whether AI can produce ideas, but whether it encourages students' own thinking rather than replacing it.

AI has also been associated with support for writing organization. Students often use AI to generate outlines, reorganize ideas, improve coherence, and refine the progression of paragraphs and sections (Baldrich et al., 2025; Kim et al., 2025). For novice academic writers, this support is especially attractive because organization is often one of the most difficult aspects of composing. Cummings et al. (2024) found that students used generative AI not only to initiate texts but also to explore possible organizational patterns and alternative phrasings. This suggests that AI can function as a form of rhetorical scaffolding by making structural possibilities more visible.

However, organization is not merely a technical arrangement of ideas; it also requires rhetorical judgment about emphasis, relevance, sequencing, and audience. Kim et al. (2026) therefore offer an important qualification: the value of AI for organization depends not only on whether students use it, but on how they interact with it while shaping a text. If students adopt AI-generated structures uncritically, they may produce more coherent texts without necessarily developing stronger rhetorical awareness. This means that AI may support organization, but only when students remain active decision-makers in the composing process.

A similar tension appears in relation to argumentation. Academic writing requires students to formulate claims, position themselves among competing ideas, and build reasoned

support for their conclusions. AI appears to offer practical support in this area. Cummings et al. (2024) found that students used AI to generate counterarguments and explore alternative lines of reasoning. Kim et al. (2026) likewise suggest that AI-supported writing can strengthen content and structure, both of which are closely related to argumentative development. These findings indicate that AI may make the architecture of argument more manageable, especially for less experienced writers.

Yet argumentation depends on more than structure. It also requires judgment, evaluation, and ownership of reasoning. Singh et al. (2025), in their work on AI-supported authorial voice in argumentative writing, show that AI can assist rhetorical development, but not in a way that makes the human writer unnecessary. Similarly, Nañola et al. (2025) demonstrate that authorial voice remains a potentially distinguishing feature between AI-generated and student-authored academic essays. These findings suggest that students may produce structurally sound arguments with AI assistance while still relying too heavily on prefabricated reasoning. The pedagogical issue, therefore, is not simply whether AI helps students construct arguments, but whether it supports the development of reasoning itself.

Among the dimensions of AI-supported writing, authorial voice remains one of the most contested. Mhilli (2023) explains that voice is closely tied to stance, identity, and rhetorical presence in academic writing, which makes it central to students' development as writers rather than a superficial feature of style. Because generative AI can shape wording, phrasing, and textual flow, it raises a fundamental concern about whether the resulting text still reflects the student's own voice. The emerging literature suggests that the answer is complex rather than binary. Singh et al. (2025) found that AI-supported writing technology could strengthen both authorship beliefs and aspects of authorial voice performance in ESL students' argumentative essays, suggesting that AI may help students refine expression rather than simply replace it. At the same time, the same study shows that students still valued teacher feedback as necessary for validating that development. In a different line of analysis, Nañola et al. (2025) demonstrate that voice remains analytically useful for distinguishing human- and AI-authored academic texts. Taken together, these studies imply that AI does not simply erase voice, but neither does it leave voice untouched. Instead, AI appears to alter the conditions under which voice is negotiated, performed, and recognized in academic writing.

The complexity of AI integration becomes even more apparent in advanced academic writing and L2 contexts. Feng et al. (2025), in their systematic review of AI in second language writing, show that research has expanded rapidly but remains uneven across contexts, participants, and purposes. Within doctoral and advanced academic writing, scholars have

increasingly emphasized the need for more critical and ethically informed forms of AI use. Ou et al. (2024), for example, argue for the cultivation of critical GAI literacy in doctoral academic writing, emphasizing that advanced writers need more than functional skill; they also need the capacity to use AI critically, strategically, and ethically. Recent qualitative studies reinforce this point. Hoomanfard & Shamsi (2025) show that L2 doctoral students use generative AI in dissertation writing while also expressing concerns about AI-induced plagiarism and significant training needs. Zou et al. (2025) similarly demonstrate that doctoral students engage in multiple strategies when using GAI chatbots in L2 writing, indicating that AI use is mediated by purpose, context, and writer agency rather than being uniform or automatic. These studies suggest that AI integration in higher education writing cannot be understood adequately through general student perceptions alone, because more advanced writers reveal the ethical, strategic, and literacy-related complexity of sustained AI use in academic work.

Another important strand of the literature concerns AI-supported feedback and automated writing evaluation. Although generative AI has intensified interest in this area, the field did not begin with ChatGPT. Li et al. (2015) had already argued that the role of automated writing evaluation in L2 writing instruction needed to be reconsidered in pedagogical rather than purely technological terms. More recent reviews confirm that research on automated writing evaluation and automated written feedback has grown substantially, but the findings remain mixed and context-sensitive (Huawei & Aryadoust, 2023; Shi & Aryadoust, 2024). These reviews suggest that automated systems can be helpful, but their validity and instructional usefulness depend on how feedback is interpreted, trusted, and acted upon by students and teachers. Generative AI has shifted this discussion by making automated feedback more dialogic and more persuasive. Yeung (2025) shows that students' engagement with GAI-supported automated writing evaluation feedback is not merely behavioral; it is also cognitive and affective. AI-supported feedback, therefore, cannot be treated as a neutral aid. It is part of a broader pedagogical relationship involving trust, judgment, revision, and agency.

Taken together, the literature shows that AI-supported writing cannot be understood only in terms of technical assistance or measurable outcomes. However, several important gaps remain. Existing research is often either broad, emphasizing general opportunities and risks, or narrow, focusing on discrete functions such as idea generation, revision, or automated feedback. As a result, limited attention has been given to how AI is integrated over time in authentic college writing classrooms and how it shapes interconnected dimensions of writing development, including idea generation, organization, argumentation, and authorial voice. Moreover, although critical literacy, ethical awareness, and responsible AI use have received

increasing attention, these perspectives have not yet been sufficiently connected to routine classroom practice and teacher mediation. This study responds to these gaps by investigating AI-supported writing instruction as a situated pedagogical process in higher education.

This study is grounded in Sociocultural Theory, which views writing as a socially situated and tool-mediated practice. From this perspective, AI is understood as a mediational tool that can shape how students generate ideas, organize texts, revise drafts, and reflect on their writing. Its educational value, however, does not lie in the tool itself, but in how it is used within classroom interaction and instructional practice.

To analyze this mediation more systematically, the study adopts Activity Theory as its primary analytical framework. Activity Theory explains human activity through the relationship among subject, tool, and object, while also considering the influence of rules, community, and division of labor within an activity system (Engeström, 1987). In this study, the subjects are students and instructors, the tool is AI, and the object is the development of idea generation, organization, argumentation, and authorial voice. This framework is particularly useful because it enables the study to examine how AI use is shaped by classroom expectations, teacher guidance, peer interaction, and assessment practices rather than by the technology alone.

In addition, the study draws on Critical GAI Literacy as a supporting lens for interpreting issues of authorship, ethical judgment, and selective AI use. Ou et al. (2024) argue that students need more than technical skill when using generative AI in academic writing; they also need the ability to evaluate AI-generated output critically, preserve ownership of their texts, and make responsible decisions about its use. This perspective is relevant because AI in writing classrooms raises questions not only about effectiveness, but also about agency, responsibility, and writer identity. Sociocultural Theory, Activity Theory, and Critical GAI Literacy provide a coherent framework for examining AI integration as a socially mediated, pedagogically regulated, and ethically negotiated process in college writing instruction.

3. RESEARCH METHOD

This study adopted a qualitative case study design to examine how AI was integrated into college writing instruction and how such integration mediated students' development of idea generation, organization, argumentation, and authorial voice over time. A qualitative case study was appropriate because the study focused on a bounded instructional context and sought to understand a complex educational phenomenon in its real-life setting through multiple sources of evidence (Yin, 2018). This design was particularly relevant in the context of AI-

supported writing, where students' engagement with AI is shaped by classroom mediation, task stages, ethical expectations, and interaction patterns rather than by the technology alone (Alyasin & Shah, 2026; Zou et al., 2025).

The study was conducted in a fourth-semester undergraduate college writing course at a private higher education institution in East Java, Indonesia over one academic semester. The case was bounded by one semester, one course, and the activity of AI-supported classroom writing instruction. Participants were recruited through purposive sampling because the study required individuals who were directly involved in classroom writing activities in which AI was used for planning, drafting, revising, or feedback. The participants consisted of one writing instructor and 26 students enrolled in the course. From this group, 15 students were recruited for semi-structured interviews based on frequency of AI use, variation in engagement, or willingness to participate. This sampling strategy was appropriate because the aim was to obtain information-rich cases rather than statistical representation (Ahmad & Wilkins, 2024).

Data were collected from three main sources: classroom observations, semi-structured interviews, and document and artifact analysis. Classroom observations were used to document how AI was introduced, modeled, discussed, and used during different stages of writing instruction. Interviews with the instructor and a purposive subset of students were conducted to explore participants' perceptions, experiences, and decisions regarding AI use in planning, drafting, revising, and feedback. Documents and artifacts included the course syllabus, assignment prompts, assessment rubrics, students' drafts, teacher feedback, and, where participants consented, AI interaction records such as prompts, chat logs, or screenshots. This combination of methods was appropriate because recent methodological and AI-writing studies suggest that interviews, observations, and artifacts are particularly valuable for capturing classroom practice as it is enacted rather than merely reported (Chand, 2025; Zou et al., 2025).

Data collection took place throughout the semester. Eleven classroom observations were conducted across key instructional stages, especially during brainstorming, outlining, drafting, revising, and feedback activities. Each observation lasted approximately an hour, and field notes were used to record classroom interaction, AI-related instructional decisions, and issues relevant to the research questions. Semi-structured interviews were conducted after participants had accumulated sustained experience with AI-supported writing tasks, allowing them to reflect on both routine practices and emerging tensions. The instructor participated in 12 interviews because the researchers needed a follow-up interview, and 15 students were interviewed individually. Each interview lasted approximately ten minutes and was audio-recorded and transcribed verbatim. Artifact collection occurred alongside observations and

interviews and included first drafts, revised drafts, reflective notes, AI prompt screenshots, and feedback sheets. This process-oriented procedure was important because recent studies indicate that AI use in writing changes across time, task type, and writing stage (Alyasin & Shah, 2026; Kim et al., 2026; Zou et al., 2025).

The data were analyzed through reflexive thematic analysis, supported by the study's theoretical framework. This approach was appropriate because it offered a flexible yet systematic way to identify patterns of meaning across qualitative data while remaining theoretically grounded (Braun & Clarke, 2021; Byrne, 2022). Analysis began with repeated reading of field notes, interview transcripts, and collected documents to build familiarity with the dataset. Initial codes were then generated across the full dataset through manual coding. These codes were compared across data sources and grouped into potential themes, which were subsequently reviewed, refined, and named in relation to the research questions.

The analysis was guided both deductively and inductively. Deductively, Activity Theory sensitized the analysis to key dimensions of the classroom activity system, including subject, tool, object, rules, community, division of labor, and contradictions. Inductively, the analysis remained open to patterns emerging from participants' own accounts and classroom practices. This combined strategy was appropriate because recent AI-writing studies show that writing with AI is shaped both by theoretically visible structures and by participants' evolving interpretations of the tool in practice (Alyasin & Shah, 2026; Ou et al., 2024; Zou et al., 2025).

Several strategies were used to enhance the trustworthiness of the study. Data triangulation allowed the phenomenon to be examined from multiple perspectives by comparing interviews, classroom observations, and written artifacts. Researcher reflexivity was maintained through analytic memos that documented emerging interpretations, methodological decisions, and possible assumptions. Member reflection was used selectively by sharing summaries or preliminary interpretations with participants to confirm that the analysis represented their views accurately. An audit trail was also maintained to document coding decisions, theme development, and changes made during analysis. These procedures are consistent with recent discussions of qualitative rigor, which emphasize triangulation, reflexivity, transparency, and careful reporting as central to credible qualitative research, including reflexive thematic analysis (Braun & Clarke, 2024; Cena et al., 2024).

Ethical considerations were central to the study because it involved classroom practice, student writing, and potentially sensitive AI interaction records. Institutional ethical approval was obtained before data collection began. All participants were informed about the purpose of the study, the voluntary nature of participation, and their right to withdraw at any time

without penalty. Pseudonyms were used in all transcripts, field notes, and written reports to protect confidentiality. Where AI chat logs, prompts, or screenshots were collected, only materials voluntarily shared by participants were included, and all identifying information was removed. These procedures were especially important in AI-related writing research because recent scholarship has highlighted concerns about authorship, ownership, privacy, and the responsible use of AI-generated content in academic settings (Hoomanfard & Shamsi, 2025; Ou et al., 2024).

4. RESULTS AND DISCUSSION

The analysis generated three interrelated areas of findings corresponding to the research questions. Overall, the findings show that AI was integrated into college writing instruction as a mediational and pedagogical tool rather than as an autonomous writing solution. Its contribution was most visible in helping students generate ideas and organize texts, whereas its role in argumentation and authorial voice was more conditional and more dependent on teacher guidance, classroom expectations, and students' critical engagement. This pattern supports previous research suggesting that the educational value of AI in writing lies not simply in the tool itself, but in how it is mediated through writing processes, interaction patterns, and instructional context (Alyasin & Shah, 2026; Kim et al., 2026; Ou et al., 2024). Table 1 summarizes the major findings across the three research questions.

Table 1. Overview of Findings by Research Question

Research Question	Main Finding	Main Data Sources	Interpretation
RQ1. How is AI integrated into college writing instruction to mediate students' development of idea generation, organization, argumentation, and authorial voice over time?	AI functioned mainly as a mediational scaffold. It supported idea generation and organization more consistently than argumentation and authorial voice.	Student interviews, classroom observations, draft artifacts	AI was most useful when students treated it as support for thinking rather than as a replacement for writing.
RQ2. How do students and instructors engage with AI across the stages of planning, drafting, revising, and feedback in college writing classes?	AI use varied across stages. It was most active in planning and drafting, more selective in revision, and more cautious in feedback.	Student interviews, observation notes, draft comparisons	The educational role of AI was stage-specific rather than uniform.
RQ3. How do classroom conditions, including	Teacher guidance, task design, and	Instructor interview,	AI use was socially regulated and

teacher guidance, assessment expectations, classroom rules, and peer interaction, shape students' engagement with AI in writing instruction?	classroom rules strongly shaped whether AI became a scaffold or a shortcut.	syllabus, rubric, observations, student interviews	pedagogically conditioned, not merely individually chosen.

AI Integration and the Mediation of Idea Generation, Organization, Argumentation, and Authorial Voice

The findings demonstrate that AI was integrated into college writing instruction primarily as a mediational tool rather than as an autonomous writing solution. Across the semester, AI was used most often to support idea generation and organization, whereas its contribution to argumentation and authorial voice was more limited and more dependent on teacher mediation and student judgment. In this sense, AI functioned as a scaffold that supported students' engagement with writing rather than as a substitute for writing itself. This finding is consistent with the sociocultural view that learning is mediated by tools and shaped through interaction (Vygotsky, 1978). It also aligns with recent research suggesting that AI-supported writing should be understood through mediation, agency, and instructional context rather than through tool performance alone (Alyasin & Shah, 2026; Kim et al., 2026; Ou et al., 2024).

In relation to idea generation, AI helped students enter the writing task more easily. Students used it to narrow topics, generate possible thesis statements, and identify directions for paragraph development. As Alya explained, "When I did not know how to begin, I asked AI for several possible directions, and that helped me choose one that matched my opinion" (SI-03). Observation data reflected the same pattern: "During the brainstorming stage, several students opened ChatGPT and used it to generate possible essay angles before writing their own outlines" (CO-02). The teacher interview reinforced this finding. Ms. Rina stated, "I allowed students to use AI at the beginning because many of them had difficulty starting. But I reminded them that the ideas from AI were only prompts, not final answers" (TI-01). Together, these data suggest that AI reduced initial hesitation and made it easier for students to begin writing. This finding is broadly comparable to Prabawanthi et al. (2025), who reported that students were generally ready to use ChatGPT and perceived it as useful for brainstorming and writing support, although their confidence and self-directed use were not equally strong across all areas. Similarly, this finding supports earlier studies showing that students frequently use AI for brainstorming, outlining, and initiating texts in the early stages of composing (Baldrich et al., 2025; Cummings et al., 2024; Kim et al., 2025). The present study extends that

literature by showing that the value of AI at this stage depended less on idea generation itself than on whether students treated AI output as a prompt for further thinking rather than as a ready-made answer.

From a sociocultural perspective, this pattern indicates that AI mediated students' early participation in writing by helping them move from uncertainty to action. However, mediation did not automatically lead to stronger writing development. As Vygotsky (1978) emphasizes, tools contribute to development only when learners engage with them meaningfully. In this respect, the finding also resonates with Kim et al. (2026), who show that differences in student–AI interaction patterns are associated with different writing outcomes. The present study therefore confirms that AI can lower the threshold for participation, but it also suggests that the educational value of that support depends on student agency and teacher framing rather than on the tool alone.

With regard to organization, AI appeared to provide more consistent support. Students frequently used it to generate outlines, improve paragraph sequencing, refine transitions, and clarify the progression of ideas. Bagas noted, "AI helped me arrange my essay because it showed me what should come first, second, and third" (SI-11). In one draft comparison, Nadia's revised essay showed clearer paragraph order and stronger transitions after AI consultation (DA-07). This interpretation was confirmed by the teacher interview: "I noticed that AI was especially useful when students already had ideas but did not know how to arrange them logically. It helped them with structure more than with content depth" (TI-02). These findings suggest that AI was particularly effective in making structural possibilities more visible. This result is consistent with earlier studies showing that students often use AI to generate outlines, reorganize ideas, and improve textual coherence (Baldrich et al., 2025; Cummings et al., 2024; Kim et al., 2025). However, the present study adds a sharper pedagogical distinction by showing that organizational improvement did not necessarily translate into deeper rhetorical or conceptual development.

This result can be interpreted through both Sociocultural Theory and Activity Theory. Socioculturally, AI mediated students' movement from fragmented ideas toward more coherent textual organization. From an activity-theoretical perspective, the tool supported one dimension of the object of activity—namely, textual organization—more effectively than other dimensions of writing. Yet stronger organization did not automatically lead to stronger arguments. Some essays became more coherent without becoming more conceptually developed. This finding therefore extends Kim et al. (2026), who associate AI use with improved structure, by showing that structural support and intellectual depth should not be

treated as equivalent. In other words, AI supported the formal architecture of writing more readily than its deeper intellectual substance.

The role of AI in argumentation was more uneven. Some students used AI to generate claims, counterarguments, or possible supporting points. Dina stated, "When I wanted to think about the opposite side, I asked AI what another opinion could be" (SI-14). Observation notes likewise showed that students used AI during argumentative tasks to test alternative lines of reasoning (CO-08). However, draft analysis revealed that essays could appear more argumentative on the surface while still relying on weak evidence or limited evaluation (DA-10). This interpretation was echoed by the teacher, who observed, "AI could help students produce a clearer claim and some supporting points, but it could not guarantee that the argument was critical or well supported. Students still needed to think about the evidence and their own position" (TI-03). This finding partly supports earlier research suggesting that AI can assist the architecture of argument by helping students generate claims and alternative perspectives (Cummings et al., 2024; Kim et al., 2025). At the same time, it complicates that literature by showing that support for argumentative structure did not necessarily lead to support for argumentative reasoning.

Viewed through Activity Theory, this finding suggests that AI supported the formal side of the object of activity, but not necessarily its deeper epistemic dimension. In other words, AI helped students construct the appearance of argument more easily than the substance of argument. This reveals a contradiction within the activity system: AI increased textual efficiency while sometimes reducing the demand for deeper reasoning (Engeström, 1987). The finding also aligns with Singh et al. (2025), who suggest that AI can assist rhetorical development without making the human writer unnecessary. The present study adds that, in classroom practice, this contradiction becomes visible when argumentative fluency improves while evidence use and evaluative judgment remain weak.

The role of AI in authorial voice was the most contested. Students often valued AI because it made their writing more fluent and more formal, yet some also felt that the resulting text sounded less personal. As Alya put it, "The sentence became better, but sometimes it did not sound like me" (SI-09). Similarly, Rizky observed, "AI helped me sound more academic, but I had to rewrite some parts because they felt too artificial" (SI-18). This concern was also evident in the teacher interview. Ms. Rina commented, "I was most careful when students used AI to polish language, because sometimes the writing became too smooth but lost the student's personal stance" (TI-04). Draft artifacts further showed that several students initially accepted AI-generated phrasing but later revised it so that it aligned more closely with their intended

meaning (DA-12). This finding is closely aligned with previous studies suggesting that AI does not simply erase voice, but reshapes the conditions under which voice is negotiated and recognized in academic writing (Mhilli, 2023; Nañola et al., 2025; Singh et al., 2025).

These findings are especially well explained through Critical GAI Literacy, which emphasizes students' ability to evaluate AI-generated language critically, preserve ownership, and decide what to keep, revise, or reject (Ou et al., 2024). At the same time, from a sociocultural perspective, voice remained tied to students' active participation in meaning-making rather than to the tool itself. The present study extends prior work by showing that voice was not simply preserved or lost; rather, it was actively negotiated through selective revision, rejection, and personalization of AI-generated language. At the same time, AI did not erase authorship, but it did change the conditions under which authorship was expressed and maintained.

These findings show that AI supported writing development unevenly. It was most directly helpful in idea generation and organization, whereas its role in argumentation and authorial voice remained more conditional and more pedagogically fragile. This pattern confirms the broader literature suggesting that AI-supported writing should be understood not as a uniform benefit, but as a differentiated and context-dependent pedagogical process (Alyasin & Shah, 2026; Kim et al., 2026; Ou et al., 2024). The present study contributes to that literature by showing more clearly how these differences emerge across writing dimensions within the same classroom setting.

Engagement with AI Across Planning, Drafting, Revising, and Feedback

The findings show that students and instructors engaged with AI in stage-specific ways. AI use varied across planning, drafting, revising, and feedback rather than operating as a single uniform practice. This supports the view that AI-assisted writing must be understood as a process-based activity rather than as a fixed form of tool use (Kim et al., 2026).

During the planning stage, AI was used most actively. Students relied on it to generate possible topics, tentative thesis statements, and directions for development. Nadia explained, "Before writing, I usually used AI to see possible ideas, so I could decide my focus faster" (SI-05). Observation data similarly showed that students frequently used AI during brainstorming before they began full paragraph writing (CO-03). The teacher interview confirms the importance of this stage. Ms. Rina stated, "Most students used AI in the planning stage. I think this was the stage where AI was most helpful, because it reduced their fear of the blank page" (TI-05). At the same time, she noted that this stage became problematic when students allowed AI to determine the direction of the essay too early. This finding is consistent with previous

research showing that students often use AI during the earliest stages of composing to reduce difficulty and generate starting points (Baldrich et al., 2025; Kim et al., 2025). What the present study adds is that planning was also the stage where dependence first became visible, making it not only the point of greatest support but also the point of earliest pedagogical risk.

From a sociocultural perspective, planning was the stage where AI most clearly mediated participation in writing. However, mediation remained productive only when it expanded students' agency rather than narrowing it (Vygotsky, 1978). Thus, the planning stage revealed both the potential and the limitation of AI as a mediational resource. This finding strengthens existing literature by showing that the pedagogical significance of AI in planning lies not only in idea generation, but in how teacher guidance and student judgment determine whether that support remains developmental.

During the drafting stage, AI was used to elaborate ideas, refine sentence structure, and improve paragraph organization. Bagas commented, "After I had the main point, I used AI to help expand the paragraph and make the sentences clearer" (SI-06). Observation notes showed that students often moved back and forth between their drafts and AI windows while composing paragraphs (CO-06). The teacher described drafting as a stage of negotiation rather than simple use: "In drafting, I wanted students to use AI as a support for expression, but not as something they could copy directly. I kept reminding them to rewrite and adapt the output" (TI-06). This finding supports earlier work showing that AI can assist elaboration and textual refinement during drafting (Kim et al., 2025, 2026). However, the present study extends that literature by showing that drafting with AI was not merely a matter of assistance, but an ongoing negotiation between convenience and control.

This pattern is clearly explained through Activity Theory. Drafting was not merely interaction between a student and a tool; it was shaped by classroom rules, teacher expectations, and the division of labor between student effort and AI assistance. In this context, drafting revealed a tension between convenience and control, showing that AI-assisted drafting was socially regulated rather than individually determined (Engeström, 1987). This interpretation adds to previous empirical studies by highlighting the classroom system that made certain uses of AI acceptable, productive, or problematic.

During revision, AI was used more selectively. Students consulted it to improve transitions, clarify wording, and compare different versions of a sentence or paragraph. Dina observed, "I used AI more in revision because I already had my own writing, so I only needed help to improve it" (SI-10). This was visible in the artifacts, where revised drafts often displayed greater coherence and sentence-level fluency after AI consultation (DA-09). The

teacher identified revision as a particularly significant stage: “Revision was where I could see whether students still owned their writing. If they only used AI to polish but still kept their meaning, it helped. But if the revised version no longer reflected their voice, that became a problem” (TI-07). This finding is consistent with research showing that AI-supported revision and feedback can improve fluency and surface-level quality (Huawei & Aryadoust, 2023; Li & Wu, 2025; Yeung, 2025). Yet the present study contributes a more nuanced insight: revision became the stage where ownership was most visibly negotiated.

Revision is especially important through Critical GAI Literacy because it shows that students had to evaluate not only correctness, but also ownership and representativeness. Revision with AI was beneficial only when students remained the final authority over meaning. Once that authority shifted too far toward the tool, improvement in fluency came at the expense of rhetorical ownership. This finding extends previous research by showing that revision with AI is not only a technical matter of improvement, but also a pedagogical site where voice and authorship become especially visible.

In the feedback stage, students sometimes used AI to interpret teacher comments or suggest possible revisions. Rizky explained, “If I did not fully understand the lecturer’s comment, I asked AI to explain it in simpler words” (SI-15). However, teacher feedback remained the strongest point of reference. Observation notes showed that the instructor often encouraged students to compare AI suggestions with her comments rather than accept them automatically (CO-10). The teacher confirmed this directly: “I did not want AI to replace my feedback. I wanted students to use it only to clarify, not to decide for them what the revision should be” (TI-08). This finding is broadly consistent with Yeung's (2025) argument that students’ engagement with AI-supported feedback is behavioral, cognitive, and affective rather than merely technical. The present study adds that, within classroom practice, AI did not displace teacher feedback but functioned as a secondary interpretive resource.

From the standpoint of Activity Theory, feedback remained embedded within the classroom activity system rather than being transferred fully to the tool. The teacher continued to occupy a central role in the division of labor and remained the authoritative guide in judging writing quality (Engeström, 1987). AI therefore functioned as a supplementary aid rather than as an independent feedback authority. This clarifies an important point in relation to previous research: AI-supported feedback may be dialogic and persuasive, but its instructional value remains contingent on how it is situated within teacher-led classroom practice.

The findings for this second area indicate that AI use was stage-specific rather than uniform. It was most active in planning and drafting, more selective in revision, and more

cautious in feedback. This overall pattern extends previous research by showing that AI's pedagogical role changes across the writing process rather than remaining stable from one stage to another.

Before presenting the second table, it is useful to show how the themes were supported through triangulation across interviews, classroom observations, writing artifacts, and course documents. This matters because recent studies on AI-assisted writing suggest that students' engagement with AI is not fully captured through self-report alone; it becomes clearer when interview accounts are read alongside classroom routines and textual evidence (Alyasin & Shah, 2026; Yeung, 2025; Zou et al., 2025). Accordingly, Table 2 presents a sample data display showing how the themes were supported across interviews, classroom observations, draft artifacts, and course documents.

Table 2. Sample Data Display by Theme

Theme	Student interview data	Teacher interview data	Observation data	Artifact / document data	Interpretation
AI as idea-generation scaffold	"I used AI to see possible directions before writing my thesis." (SI-03)	"AI helped students get started." (TI-01)	Students used AI during brainstorming before outlining. (CO-02)	Outline became more focused after AI consultation. (DA-04)	AI lowered the entry barrier to writing but still required student judgment.
AI as organizational scaffold	"AI helped me arrange what should come first and next." (SI-11)	"It supported structure more than depth." (TI-02)	Students checked AI for paragraph sequence during drafting. (CO-05)	Revised essay showed clearer transitions and paragraph order. (DA-07)	AI supported structure more reliably than deeper reasoning.
AI as support for argumentation	"I used AI to think about the opposite side." (SI-14)	"It helped claims, not always reasoning." (TI-03)	Students used AI to test alternative lines of reasoning. (CO-08)	Essay showed clearer claims but weak evidence. (DA-10)	AI supported argumentative form more than critical evaluation.
Voice as negotiation	"The writing became better, but it did not always sound like me." (SI-09)	"Sometimes the text became too smooth." (TI-04)	Students revised AI-generated phrasing after discussion. (CO-10)	AI-generated sentences were personalized in later drafts. (DA-12)	Voice was negotiated through revision rather than simply preserved or lost.

Planning-stage engagement	"I used AI first to find my focus." (SI-05)	"Planning was where AI helped most." (TI-05)	Students used AI during brainstorming before drafting. (CO-03)	Early outlines reflected AI-assisted topic narrowing. (DA-05)	AI was most visible and most useful at the planning stage.
Drafting-stage negotiation	"I used AI to expand the paragraph." (SI-06)	"Students still had to adapt the output." (TI-06)	Students moved between drafts and AI windows while writing. (CO-06)	Drafts showed partial uptake and revision of AI-generated wording. (DA-08)	Drafting with AI involved negotiation between support and control.
Revision and ownership	"I used AI to improve what I had already written." (SI-10)	"Revision showed whether they still owned the text." (TI-07)	Students used AI to refine wording and transitions. (CO-09)	Revised drafts showed stronger fluency but varying voice retention. (DA-09)	Revision was the stage where ownership became most visible.
Classroom mediation of AI use	"Our lecturer reminded us AI was only a tool." (SI-02)	"I had to guide them clearly." (TI-09)	Instructor modeled critical comparison of AI output. (CO-04)	Rubric required reflection on writing process and revisions. (CD-02)	Teacher guidance and assessment shaped whether AI became support or shortcut.

Note: The number after the code shows the specific excerpt or item in that category.

a. SI-03 = Student Interview, excerpt number 3
b. TI-02 = Teacher Interview, excerpt number 2
c. CO-02 = Classroom Observation, excerpt number 2
d. DA-04 = Draft Artifact, item number 4
e. CD-02 = Course Document, item number 2

Classroom Conditions Shaping Students' Engagement with AI

The findings show that classroom conditions strongly shaped students' engagement with AI. AI use did not occur as a purely individual act; rather, it was influenced by teacher guidance, assessment expectations, classroom rules, and peer interaction. This is one of the strongest findings of the study because it confirms that AI integration is best understood as part of a classroom activity system rather than as a direct student–tool relationship.

Teacher guidance emerged as the most influential condition. Students used AI more productively when the instructor explicitly modeled appropriate use, clarified acceptable boundaries, and asked students to justify their choices. Alya explained, "Our lecturer always

reminded us that AI is just a tool, so we still had to decide if the answer was relevant" (SI-02). Observation notes also recorded moments in which the instructor demonstrated how to compare AI suggestions critically instead of copying them directly (CO-04). The teacher herself made this role explicit: "I felt that if I did not guide them clearly, they would use AI too freely. So I always tried to show when AI could help and when students had to rely on their own judgment" (TI-09). This finding supports previous scholarship emphasizing that AI's pedagogical value depends heavily on instructional framing rather than access alone (Ou et al., 2024; Zou et al., 2025). The present study adds that teacher guidance was not simply supportive in a general sense; it actively determined whether AI functioned as scaffold or shortcut.

This finding is highly compatible with Activity Theory because it shows that the tool did not determine activity by itself. Instead, the rules of the classroom and the instructor's mediation shaped how the tool was used. Teacher guidance therefore functioned as a key regulatory element in the activity system (Engeström, 1987). From a sociocultural perspective, the teacher also played a central role in shaping how AI-mediated activity became meaningful for students (Vygotsky, 1978).

Assessment expectations also played a major role. The course required students to submit multiple drafts, reflective comments, and revision notes. Fajar stated, "Because we had to explain our process, I could not just paste the AI answer. I had to show what I changed and why" (SI-07). This was supported by the course rubric, which emphasized process, revision, and originality (CD-02). The teacher interview clarified the reasoning behind this design. Ms. Rina explained, "I focused on the process because I knew that if I only assessed the final essay, students might depend too much on AI. I wanted to see their decisions, not only the polished product" (TI-10). This finding complements earlier literature on AI-supported writing by showing more concretely how assessment practices shape the educational meaning of AI use. While previous studies often emphasize outcomes or perceptions, the present study shows that assessment design itself became a mechanism for regulating AI engagement in everyday classroom practice.

Through Activity Theory, this can be understood as a case in which assessment acted as a rule shaping the object of activity. Assessment did not merely evaluate learning after it occurred; it structured how learning unfolded by limiting passive AI use and foregrounding students' decisions. This adds an important pedagogical layer to earlier studies by locating AI use within the broader classroom system of expectations and accountability.

Classroom rules and ethical expectations further shaped engagement with AI. Rules about when AI could be used, whether AI-generated wording had to be revised, and how

students should reflect on their use of AI appeared to increase students' awareness of responsibility and ownership. Observation notes show that when AI use was discussed explicitly as an ethical and authorial issue, students became more cautious and more reflective (CO-09). The teacher interview reinforces this interpretation. As Ms. Rina noted, "I did not want students to think of AI only as something practical. I wanted them to understand that using AI also means being responsible for what you submit as your writing" (TI-11). This finding is consistent with prior work on Critical GAI Literacy, which emphasizes that responsible AI use requires more than technical skill; it also requires ethical evaluation and awareness of authorship (Hoomanfard & Shamsi, 2025; Ou et al., 2024). The present study extends that perspective by showing how such awareness was shaped within routine classroom processes rather than only in advanced or doctoral writing contexts.

Peer interaction also influenced how students understood and used AI. Some students learned from one another by sharing prompts, comparing outputs, and discussing revision strategies. Nadia explained, "Sometimes my friend showed me a better prompt, and that helped me use AI more effectively" (SI-13). Yet peer interaction also sometimes normalized overdependence, especially when students treated AI-generated language as a benchmark for good writing (CO-11). The teacher observed a similar pattern: "Some students learned useful strategies from their friends, but sometimes they also copied the same way of depending on AI" (TI-12). This finding adds an important social dimension to previous research. Whereas much of the literature focuses on individual students' interaction with AI, the present study shows that AI use was also shaped by peer norms and shared classroom practices.

From an activity-theoretical perspective, this finding shows that the community element of the activity system shaped AI use in important ways (Engeström, 1987). This also complements Sociocultural Theory, which emphasizes that learning is always mediated through interaction with others, not just through individual engagement with tools (Vygotsky, 1978). At the same time, peer interaction did not merely accompany AI use; it helped normalize, reinforce, or challenge particular ways of using the tool.

The findings for this third research area show that classroom conditions actively shaped whether AI functioned as a scaffold for writing development or as a shortcut that weakened student agency. Teacher guidance played a central role in structuring how students used AI, while classroom rules and assessment expectations shaped the broader conditions in which that use took place. At the same time, AI use was not simply an individual choice, but part of a socially organized classroom practice. This is one of the clearest ways in which the present

study extends previous research: it shows that AI integration in writing classrooms is pedagogical and relational at its core, not merely technological.

Across the three areas, the findings suggest that AI integration in college writing instruction is best understood as a mediated, uneven, and context-dependent process. AI most clearly supported idea generation and organization, whereas its role in argumentation and authorial voice remained more limited and more contested. This interpretation is consistent with recent literature showing that AI-supported writing should be examined through mediation, interaction, and classroom context rather than through output quality alone (Alyasin & Shah, 2026; Belkina et al., 2025; Kim et al., 2026; Yeung, 2025). The present study adds to that literature by showing how these broader claims become visible in one authentic classroom setting across dimensions of writing, stages of composing, and classroom conditions.

From the perspective of Sociocultural Theory, AI functioned as a mediational means that could support students' participation in writing only when learners remained active and agentive (Vygotsky, 1978). From the perspective of Activity Theory, AI use was shaped by the wider classroom system, including rules, community, and division of labor, while major contradictions emerged between efficiency and depth, support and dependence, and fluency and authorship (Engeström, 1987). These theoretical perspectives explain why AI was helpful in some aspects of writing but more problematic in others. At the same time, they also help position the findings within previous empirical research by showing why earlier studies sometimes report AI as supportive while others emphasize risk: the educational value of AI depends on the classroom system in which it is embedded.

From the perspective of Critical GAI Literacy, effective AI use depended on students' ability to evaluate output critically, preserve ownership, and make ethically responsible decisions about what to keep, revise, or reject. Taken together, these frameworks suggest that writing development remained fundamentally relational and pedagogically mediated. AI did not replace teacher guidance, peer interaction, classroom norms, or ethical judgment. Instead, it operated within those conditions. For that reason, the study supports a human-centered model of AI integration, in which AI is positioned as a tool for support, exploration, and reflection rather than as a substitute for writing itself. This final interpretation not only aligns with previous research, but also clarifies the study's contribution: AI is most educationally valuable when it remains embedded in a pedagogical process that protects student agency, authorship, and critical engagement.

5. CONCLUSION AND SUGGESTIONS

This study concludes that AI can contribute meaningfully to college writing instruction when it is used as a pedagogical support rather than as a substitute for writing. Its educational value lies not only in what it can do, but in how it is used across stages of writing and how it is shaped by teacher guidance, assessment, classroom rules, and peer interaction. The study therefore suggests that effective AI integration in writing classrooms requires clear instructional framing, process-oriented assessment, and sustained attention to students' agency, authorship, and critical judgment. Future research should examine AI-supported writing in other contexts and over longer periods in order to better understand its influence on students' development as academic writers.

REFERENCES

Ahmad, M., & Wilkins, S. (2024). Purposive sampling in qualitative research: A framework for the entire journey. *Quality & Quantity*, *59*, 1461–1479. https://doi.org/10.1007/s11135-024-02022-5

Alyasin, A., & Shah, M. A. (2026). Human-AI collaboration in academic writing : Exploring university students ' agency through a sociocultural lens. *Ampersand*, *16*, 100256. https://doi.org/10.1016/j.amper.2026.100256

Baldrich, K., Carmen, P.-G., & María Santamarina-Sancho. (2025). Artificial intelligence in academic literacy : empirical evidence on reading and writing practices in higher education. *Frontiers in Educatiion*, *November*, 1–10. https://doi.org/10.3389/feduc.2025.1701238

Bedington, A., Halcomb, E. F., Mckee, H. A., Sargent, T., & Smith, A. (2024). Writing with generative AI and human-machine teaming : Insights and recommendations from faculty and students. *Computers and Composition*, *71*, 102833. https://doi.org/10.1016/j.compcom.2024.102833

Belkina, M., Daniel, S., Nikolic, S., Haque, R., Lyden, S., Neal, P., Grundy, S., & Hassan, G. M. (2025). Computers and Education : Artificial Intelligence Implementing generative AI (GenAI) in higher education : A systematic review of case studies. *Computers and Education: Artificial Intelligence*, *8*, 100407. https://doi.org/10.1016/j.caeai.2025.100407

Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide*. SAGE.

Braun, V., & Clarke, V. (2024). Supporting best practice in reflexive thematic analysis reporting in Palliative Medicine: A review of published research and introduction to the Reflexive Thematic Analysis Reporting Guidelines (RTARG). *Palliative Medicine*, *38*(6), 608–616. https://doi.org/10.1177/02692163241234800

Byrne, D. (2022). A worked example of Braun and Clarke ' s approach to reflexive thematic analysis. *Quality & Quantity*, *56*(3), 1391–1412. https://doi.org/10.1007/s11135-021-01182-y

Cena, E., Brooks, J., Day, W., Goodman, S., Rousaki, A., Ruby-granger, V., & Seymour-smith, S. (2024). Quality Criteria : General and Speci fi c Guidelines for Qualitative Approaches in Psychology Research . A Concise Guide for Novice Researchers and

Reviewers. *International Journal of Qualitative Methods*, *23*, 1–23. https://doi.org/10.1177/16094069241282843

Chand, S. P. (2025). Methods of Data Collection in Qualitative Research: Interviews, Focus Groups, Observations, and Document Analysis. *Advances in Educational Research and Evaluation*, *6*(1), 303–317. https://doi.org/10.25082/aere.2025.01.001

Chen, Z., Zhu, J., Mcgrane, J., Hopfenbeck, T. N., Wang, Y., & Ji, Y. (2026). Computers & Education More inspiration and attention : How Generative AI tools impact graduate students ' affective engagement in L2 source-based academic writing. *Computers & Education*, *242*, 105495. https://doi.org/10.1016/j.compedu.2025.105495

Connell Pensky, A. E., Usdan, J. H., & Chang, H. (2025). Generative AI's Impact on Graduate Student Professional Writing Productivity and Quality. *International Journal of Artificial Intelligence in Education*, *35*, 4057–4082. https://doi.org/10.1007/s40593-025-00528-z

Cummings, R. E., Monroe, S. M., & Watkins, M. (2024). Generative AI in first-year writing: An early analysis of affordances, limitations, and a framework for the future. *Computers and Composition*, *71*, 102827. https://doi.org/10.1016/j.compcom.2024.102827

Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research* (2nd ed.). Cambridge University Press.

Farrokhnia, M., Banihashem, S. K., Noroozi, O., & Wals, A. (2024). A SWOT analysis of ChatGPT: Implications for educational practice and research. *Innovations in Education and Teaching International*, *61*(3), 460–474. https://doi.org/10.1080/14703297.2023.2195846

Feng, H., Li, K., & Zhang, L. J. (2025). What does AI bring to second language writing ? A systematic review (2014-2024). *Language Learning & Technology*, *29*(1), 1–27. https://doi.org/10.64152/10125/73629

Hoomanfard, M., & Shamsi, Y. (2025). Journal of English for Academic Purposes Generative AI in dissertation writing : L2 doctoral students ' self-reported use , AI-giarism , and perceived training needs. *Journal of English for Academic Purposes*, *78*, 101570. https://doi.org/10.1016/j.jeap.2025.101570

Huawei, S., & Aryadoust, V. (2023). A systematic review of automated writing evaluation systems. *Education and Information Technologies*, *28*, 771–795. https://doi.org/10.1007/s10639-022-11200-7

Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., Gasser, U., Groh, G., Günnemann, S., Hüllermeier, E., Krusche, S., Kutyniok, G., Michaeli, T., Nerdel, C., Pfeffer, J., Poquet, O., Sailer, M., Schmidt, A., Seidel, T., … Kasneci, G. (2023). ChatGPT for good ? On opportunities and challenges of large language models for education. *Learning and Individual Differences*, *103*, 102274. https://doi.org/10.1016/j.lindif.2023.102274

Kim, J., Lee, S., Detrick, R., Wang, J., & Li, N. (2026). Students-Generative AI interaction patterns and its impact on academic writing. *Journal of Computing in Higher Education*, *38*, 504–525. https://doi.org/10.1007/s12528-025-09444-6

Kim, J., Yu, S., Detrick, R., & Li, N. (2025). Exploring students' perspectives on Generative AI-assisted academic writing. In *Education and Information Technologies* (Vol. 30, Issue 1). https://doi.org/10.1007/s10639-024-12878-7

Li, H., & Wu, X. (2025). The use of generative AI tools in academic writing: A systematic review of research trends and thematic insights. *AI and Ethics*, *5*, 5821–5840. https://doi.org/10.1007/s43681-025-00827-0

Li, J., Link, S., & Hegelheimer, V. (2015). ScienceDirect Rethinking the role of automated writing evaluation (AWE) feedback in ESL writing instruction. *Journal of Second Language Writing*, *27*, 1–18. https://doi.org/10.1016/j.jslw.2014.10.004

Mhilli, O. (2023). Social Sciences & Humanities Open Authorial voice in writing : A literature review. *Social Sciences & Humanities Open*, *8*(1), 100550. https://doi.org/10.1016/j.ssaho.2023.100550

Nañola, E. L., Arroyo, R. L., Hermosura, N. J. T., Ragil, M., Sabanal, J. N. U., & Mendoza, H. B. (2025). Recognizing the artificial: A comparative voice analysis of AI-Generated and L2 undergraduate student-authored academic essays. *System*, *130*, 103611. https://doi.org/10.1016/j.system.2025.103611

Ou, A. W., Khuder, B., Franzetti, S., & Negretti, R. (2024). Conceptualising and cultivating Critical GAI Literacy in doctoral academic writing. *Journal of Second Language Writing*, *66*, 101156. https://doi.org/10.1016/j.jslw.2024.101156

Oubibi, M. (2025). Generative artificial intelligence: Postgraduate student's digital adaptability, engagement and academic confidence. *Journal of Computers in Education*. https://doi.org/10.1007/s40692-025-00364-z

Prabawanthi, P. P. W. P., Santosa, M. H., & Indrayani, L. (2025). Investigating The Readiness and Satisfaction of Students and Lecturers For The Integration of Chatgpt in English Academic Writing at Ganesha University of Education. *Jurnal Pendidikan dan Sastra Inggris*, *5*(3), 01–33. https://doi.org/10.55606/jupensi.v5i3.5763

Qian, Y. (2025). Pedagogical Applications of Generative AI in Higher Education: A Systematic Review of the Field. *TechTrends*, *69*, 1105–1120. https://doi.org/10.1007/s11528-025-01100-1

Radtke, A., & Rummel, N. (2025). Generative AI in academic writing: Does information on authorship impact learners' revision behavior? *Computers and Education: Artificial Intelligence*, *8*, 100350. https://doi.org/10.1016/j.caeai.2024.100350

Shi, H., & Aryadoust, V. (2024). A systematic review of AI-based automated written feedback research. *ReCALL*, *36*(2), 187–209. https://doi.org/10.1017/S0958344023000265

Singh, J. K., Daniel, B. K., & Koh, J. H. L. (2025). Empowering authorship with AI: A novel academic writing technology for authorial voice. *International Journal of Artificial Intelligence in Education*, *35*, 3406–3428. https://doi.org/10.1007/s40593-025-00503-8

Tlili, A., Shehata, B., Adarkwah, M. A., Bozkurt, A., Hickey, D. T., Huang, R., & Agyemang, B. (2023). What if the devil is my guardian angel: ChatGPT as a case study of using chatbots in education. *Smart Learning Environments*, *10*(15). https://doi.org/10.1186/s40561-023-00237-x

UNESCO. (2023). Guidance for generative AI in education and research. In *UNESCO*. https://doi.org/10.54675/ewzm9535

van Niekerk, J., Delport, P. M. J., & Sutherland, I. (2025). Computers and Education : Art - ficial Intelligence Addressing the use of generative AI in academic writing. *Computers and Education: Artificial Intelligence*, *8*, 100342.

https://doi.org/10.1016/j.caeai.2024.100342

Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Mental Processes*. Harvard University Press.

Wang, P., Jing, Y., & Shen, S. (2025). A systematic literature review on the application of generative artificial intelligence (GAI) in teaching within higher education : Instructional contexts , process , and strategies. *The Internet and Higher Education*, *65*, 100996. https://doi.org/10.1016/j.iheduc.2025.100996

Yeung, S. (2025). University students' engagement with generative AI-supported automated writing evaluation (AWE) feedback. *Journal of Second Language Writing*, *68*, 101203. https://doi.org/10.1016/j.jslw.2025.101203

Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). Sage.

Zawacki-Richter, O., Marín, V. I., & Bond, M. (2019). Systematic review of research on artificial intelligence applications in higher education – where are the educators ? *International Journal of Educational Technology in Higher Education*, *16*(39), 1–27. https://doi.org/10.1186/s41239-019-0171-0

Zhang, X., Zhang, P., Shen, Y., Liu, M., Wang, Q., Gašević, D., & Fan, Y. (2024). A systematic literature review of empirical research on applying generative artificial intelligence in education. *Frontiers of Digital Education*, *1*(3), 223–245. https://doi.org/10.1007/s44366-024-0028-5

Zou, M., Kong, D., & Lee, I. (2025). Journal of English for Academic Purposes Doctoral student ' s strategy use in GAI chatbot-assisted L2 writing : An activity theory perspective. *Journal of English for Academic Purposes*, *76*, 101521. https://doi.org/10.1016/j.jeap.2025.101521