

Beyond Error Correction: Exploring the Role of Generative AI Feedback in French as a Foreign Language Writing

ما وراء تصحيح الأخطاء: استكشاف دور التغذية الراجعة التي يولدها الذكاء الاصطناعي التوليدي في الكتابة باللغة الفرنسية بوصفها لغة أجنبية

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Abstract:

Generative artificial intelligence (AI) is increasingly used in foreign language writing, yet its role has often been limited to grammatical error correction. This qualitative multiple-case study explores how AI feedback supports French as a Foreign Language (FFL) learners throughout the writing and revision process. Guided by Sociocultural Theory, Process Writing Theory, and the Feedback Literacy framework, the study analyzed learners' drafts, AI feedback, interviews, and reflective journals.

Findings indicate that AI feedback extends beyond error correction by enhancing idea generation, text organization, vocabulary, coherence, audience awareness, and metacognitive reflection. Learners appreciated its immediate and non-judgmental support but expressed concerns about overdependence. The effectiveness of AI feedback depended largely on learners' feedback literacy and self-regulation. The study concludes that thoughtfully integrated generative AI can foster higher-order writing skills and learner autonomy, offering important implications for FFL writing pedagogy.

Keywords: Generative AI Feedback; French as a Foreign Language (FFL); Writing Development; Feedback Literacy; Learner Autonomy.

ملخص:

شهدت أدوات الذكاء الاصطناعي التوليدي انتشارًا واسعًا ومتسارعًا في تعليم الكتابة باللغات الأجنبية، غير أن معظم الدراسات انحصرت في دراسة دورها في تصحيح الأخطاء اللغوية، نحاول من خلال هذه الدراسة استكشاف طرق و الحالات التي تسهم بها التغذية الراجعة المولدة بالذكاء الاصطناعي في دعم متعلمي اللغة الفرنسية بوصفها لغة أجنبية خلال مرحلتي الكتابة والمراجعة،

واستناداً إلى النظرية الاجتماعية الثقافية، ونظرية الكتابة العملية، وإطار التغذية الراجعة، اعتمدت الدراسة على تحليل مسودات المتعلمين، وسجلات التغذية الراجعة الصادرة عن الذكاء الاصطناعي، والمقابلات شبه المنظمة، واليوميات التأملية، وأظهرت النتائج أن التغذية الراجعة التي يوفرها الذكاء الاصطناعي تتجاوز مجرد تصحيح الأخطاء، إذ تسهم في توليد الأفكار، وتنظيم النص، وإثراء الرصيد المعجمي، وتعزيز الاتساق النصي، وتنمية الوعي بالمتلقي، وتحفيز التأمل ما وراء المعرفي، كما قدّر المتعلمون ما توفره من استجابة فورية ودعم غير قائم على إصدار الأحكام، مع إبدائهم تخوفاً من الإفراط في الاعتماد عليها، وتبين أن فاعلية الاستفادة من هذه التغذية الراجعة ترتبط ارتباطاً وثيقاً بثقافة التغذية الراجعة لدى المتعلمين وقدرتهم على التنظيم الذاتي للتعلم، وتخلص الدراسة إلى أن التوظيف الواعي للذكاء الاصطناعي التوليدي يمكن أن يسهم في تنمية مهارات الكتابة العليا وتعزيز استقلالية المتعلم، بما يقدم دلالات تربوية مهمة لتطوير مناهج تعليم الكتابة باللغة الفرنسية لغة أجنبية.

الكلمات المفتاحية: التغذية الراجعة بالذكاء الاصطناعي التوليدي؛ اللغة الفرنسية بوصفها لغة أجنبية؛ تنمية مهارات الكتابة؛ ثقافة التغذية الراجعة؛ استقلالية المتعلم.

1.Introduction:

Writing has long occupied a paradoxical position in foreign language pedagogy: it is simultaneously one of the most cognitively demanding skills to develop and one of the most feedback-dependent. For learners of French as a Foreign Language (FFL), whose target language imposes a dense system of gender agreement, verb conjugation, and register-sensitive lexical choices, writing instruction has traditionally emphasized corrective feedback on surface-level errors. The arrival of generative AI systems capable of producing fluent, contextually responsive natural language has disrupted this emphasis, offering learners feedback that extends well beyond flagging misplaced accents or subject-verb agreement. Tools built on large language models can now suggest alternative phrasings, question the logical structure of an argument, propose ways to expand an underdeveloped idea, or model a more formal register—all within seconds and without the evaluative weight that often accompanies teacher correction.

The integration of generative AI into language education is no longer a speculative trend but an observable shift in how learners access feedback, practice writing, and manage their own learning trajectories. Unlike earlier computer-assisted language learning (CALL) tools, which were largely rule-based and limited to detecting predefined error types, generative AI systems produce feedback that is context-sensitive, conversational, and adaptable to a learner's specific text. This shift raises the stakes for understanding what such feedback actually does pedagogically: whether it merely automates what a red pen once did, or whether it opens new possibilities for scaffolding the cognitive and social dimensions of writing.

Despite the proliferation of studies on AI-generated corrective feedback in second language writing, much of this literature remains anchored in an error-correction paradigm, measuring AI's value primarily through accuracy gains or learners' uptake of grammatical corrections. Comparatively little empirical attention has been paid to the broader repertoire of feedback functions that generative AI can perform—supporting idea development, coherence, audience awareness, and metacognitive reflection—or to how learners themselves interpret, negotiate, and act upon this feedback throughout the iterative process of drafting and revising a text. This gap is especially pronounced in FFL contexts, where research on generative AI feedback remains sparse relative to English as a Second Language (ESL) settings.

Addressing this gap matters both theoretically and practically. Theoretically, it invites a reconsideration of feedback models developed for human interlocutors—drawing on Sociocultural Theory, Process Writing Theory, and Feedback Literacy—to account for a non-human, always-available feedback source with distinctive affordances and limitations. Practically, understanding how learners actually engage with generative AI feedback can inform curriculum design, teacher training, and institutional policy at a moment when many universities are still formulating their stance on AI use in language courses.

This study aims to (a) characterize the range of roles generative AI feedback plays in FFL learners' writing development beyond grammatical correction, and (b) examine how learners perceive, evaluate, and act upon this feedback across successive stages of writing and revision. The study asks the following questions:

1. What roles does generative AI feedback play in supporting French as a Foreign Language learners' writing development beyond grammatical error correction?
2. How do French as a Foreign Language learners perceive and utilize generative AI feedback throughout the writing and revision process?

2. Literature Review:

Generative AI has been described as a disruptive but potentially generative force in education, capable of producing personalized, on-demand instructional material at a scale previously unattainable (Kasneci et al., 2023). Within language education specifically, generative AI tools have been positioned as conversational partners, writing assistants, and feedback providers, with recent work cataloguing use cases ranging from vocabulary practice to essay drafting support (Godwin-Jones, 2022). What distinguishes this generation of tools from earlier CALL systems is their capacity to generate rather than merely retrieve language, producing feedback that is responsive to the specific content of a learner's text rather than confined to a fixed taxonomy of error types. This capacity has prompted considerable enthusiasm among language educators, but also caution regarding the pedagogical assumptions embedded in tools originally designed for general-purpose text generation rather than language-learning support specifically.

Feedback has long been considered one of the central mechanisms through which second language writers develop, functioning simultaneously as a corrective device and a support for continued composing (Hyland, 2019). The corrective feedback literature in second language acquisition has distinguished between direct and indirect feedback, focused and unfocused feedback, and metalinguistic versus non-metalinguistic correction (Ellis, 2009), typologies that have shaped decades of classroom practice and research design. Underlying much of this literature is Process Writing Theory's insistence that revision is not a terminal clean-up stage but an integral, recursive part of composing, involving re-evaluation of content, structure, and audience alongside surface correction (Flower & Hayes, 1981). Empirical work on learner revision practices, however, has repeatedly found that many second language writers treat revision primarily as error-hunting, with limited engagement in global, content-level reworking (Hyland, 2019). This tendency toward local, sentence-level revision, rather than the global reworking that process theory prizes, forms an important backdrop against which the potential contribution of generative AI feedback must be assessed: if AI feedback merely reinforces learners' existing preference for surface correction, its value beyond automation would be limited, whereas if it can redirect learners toward more substantive revision, its contribution would be considerably more significant.

Generative AI complicates the corrective feedback typologies described above: a single AI response may simultaneously correct a verb form, suggest a more idiomatic collocation, and pose a clarifying question about the writer's intended meaning, blurring boundaries that were originally drawn to describe discrete human feedback moves. Recent comparative studies suggest that learners often perceive AI feedback as more immediate and less face-threatening than teacher feedback, though they also express uncertainty about its reliability on more nuanced points of style or register (Zhang & Hyland, 2023). This ambivalence suggests that AI feedback should not be evaluated merely as a substitute for human correction but as a qualitatively distinct feedback modality with its own affordances and blind spots, one that may be simultaneously more available and less authoritative than a teacher's comments.

FFL writing research has emphasized the layered demands the language places on learners: a morphologically rich verb system, gender and number agreement that ramifies through noun phrases, and a written register that diverges notably from spoken French (Bartning & Schlyter, 2004). Studies of FFL learner corpora have documented persistent difficulties with cohesion and textual organization even among learners who have achieved relative grammatical accuracy, suggesting that higher-order writing competencies do not develop automatically alongside linguistic accuracy (Granger, 2021). This distinction between accuracy and discourse-level competence is central to the present study's interest in feedback that addresses more than sentence-level error.

The concept of feedback literacy, originally developed in higher education assessment research, refers to learners' capacity to understand, evaluate, and productively act upon feedback (Carless & Boud, 2018). Extending this concept to AI-mediated contexts, scholars have begun to argue for a distinct construct of "AI feedback literacy," encompassing learners' ability to critically appraise the accuracy, relevance, and limitations of AI-generated responses rather than accepting them uncritically (Rad et al., 2024). This literature underscores that the pedagogical value of AI feedback is not intrinsic to the tool but co-constructed through the learner's interpretive engagement with it.

Feedback literacy in this sense is closely bound up with learner autonomy, theorized in language education as both a capacity and a disposition: the ability and willingness to take charge of one's own learning (Benson, 2011). Generative AI feedback tools sit uneasily within this framework. On one hand, their constant availability could support autonomous, self-directed practice outside class time. On the other, an uncritical reliance on AI-generated solutions risks undermining the very independence that autonomy-oriented pedagogy seeks to cultivate. Recent research on AI-assisted writing has begun to document this tension directly, noting that learner autonomy is not automatically fostered by AI availability but depends on how feedback is scaffolded and framed pedagogically (Alm, 2024). Read together, feedback literacy and learner autonomy suggest that the critical variable determining whether generative AI feedback supports or undermines writing development is not the sophistication of the tool itself, but the interpretive and self-regulatory stance the learner brings to it.

Self-regulated learning (SRL) models emphasize the cyclical processes of forethought, performance, and self-reflection that characterize effective learning (Zimmerman, 2002). Writing, as a recursive and often solitary task, places particular demands on learners' capacity to monitor their own progress and adjust strategies accordingly. Generative AI feedback, precisely because it is available on demand and outside fixed classroom time, has been argued to support or, conversely, to short-circuit these self-regulatory processes depending on how it is used (Bai & Wang, 2023). Where AI feedback is used to prompt reflection on one's own

reasoning, it may strengthen metacognitive monitoring; where it substitutes for that reasoning altogether, it risks fostering passive dependence.

Sociocultural Theory frames learning as mediated through interaction with more capable others, operating within a Zone of Proximal Development (ZPD) in which a learner accomplishes with assistance what they cannot yet accomplish alone (Vygotsky, 1978). Applying this framework to human-AI interaction requires some theoretical adaptation, since generative AI is not a social interlocutor in the traditional sense; nonetheless, several scholars have argued that AI feedback can function as a form of mediation within the ZPD, provided the learner treats it dialogically rather than as an oracle (Lantolf & Poehner, 2014). This sociocultural reframing dovetails with a growing body of work that frames writing with generative AI not as a linear feedback-response cycle but as a form of collaboration, in which the human writer retains authorial control while drawing selectively on machine-generated input (Lee et al., 2022). This framing resists both utopian claims that AI can replace human feedback and dystopian concerns that it will erode learner competence, instead directing attention to the conditions under which collaboration is productive—namely, learners' critical engagement, their willingness to reject as well as accept AI suggestions, and the pedagogical scaffolding surrounding their use of the tool. Understood this way, human-AI collaboration is not a fixed property of the technology but an emergent outcome of the interaction between tool, task, and learner disposition.

Taken together, this literature suggests a field still working through foundational questions: how AI feedback functions differently from human feedback, what feedback literacy looks like in this new context, and how the promise of AI-supported autonomy can be reconciled with the risk of AI-induced dependence. Few studies, however, have examined these questions specifically within FFL writing, and fewer still have traced learners' engagement with AI feedback longitudinally across an entire writing and revision cycle using rich qualitative data. Moreover, much of the existing literature isolates individual functions of AI feedback—corrective, motivational, organizational—without examining how these functions interact within a single learner's writing process, or how learners themselves reconcile the competing affordances and risks that generative AI feedback presents. The present study addresses this gap.

This study draws on four complementary theoretical strands as follows:

Sociocultural Theory provides a lens for understanding generative AI feedback as a mediating tool operating within, or at the edge of, learners' Zone of Proximal Development. Rather than treating AI output as an authoritative correction, this framework encourages attention to the dialogic, negotiated character of learners' engagement with AI-generated suggestions.

Process Writing Theory foregrounds writing as recursive and multi-staged, comprising planning, drafting, revising, and editing phases that are not strictly linear. This framework justifies the study's focus on feedback across the entire writing process rather than at a single corrective checkpoint, and supports attention to whether AI feedback prompts global, content-level revision or remains confined to local, surface-level correction.

Feedback Literacy offers a construct for understanding variation among learners in how they interpret, evaluate, and act on AI-generated feedback. This framework is particularly suited to explaining why ostensibly similar AI feedback produced different revision outcomes across the study's cases.

Self-Regulated Learning contributes a cyclical model of forethought, performance, and reflection that helps explain how learners incorporated AI feedback into their own goal-setting

and self-monitoring practices, and where AI use appeared to displace rather than support these processes.

Together, these frameworks allow the study to move beyond a narrow accuracy-focused account of AI feedback and toward an analysis attentive to cognitive, social, and dispositional dimensions of learners' writing development.

3. Methodology:

3.1 Research Design:

This study employed a qualitative multiple-case study design, selected for its capacity to yield rich, contextualized understanding of how individual learners engage with generative AI feedback across an extended and situated writing task. The multiple-case structure allowed for cross-case comparison while preserving attention to the particularities of each learner's process.

3.2 Participants

Participants were university students from the Department of French, the University of Djilali Bounaama of Khemis Miliana, enrolled in an intermediate-to-advanced FFL writing course. They were selected through purposive sampling to represent a range of proficiency levels, prior exposure to AI writing tools, and self-reported attitudes toward AI-assisted writing. Consistent with case study conventions, the sample size was kept small enough to allow in-depth engagement with each case while offering sufficient variation for meaningful cross-case analysis.

3.3 Data Collection

Data were collected across an extended writing project involving multiple drafts of an argumentative essay in French. Sources included:

- Successive writing drafts, documenting textual changes across revision cycles.
- AI feedback interaction logs, capturing the specific feedback generated in response to each draft.
- Revision histories, tracking which AI suggestions were accepted, modified, or rejected.
- Semi-structured interviews, conducted after key drafting stages to elicit learners' reasoning, perceptions, and evaluative judgments regarding the AI feedback received.
- Reflective journals, in which participants recorded their ongoing impressions of the writing and feedback process.

This multi-source design enabled triangulation between what learners did (as evidenced in drafts and revision histories) and what they said about why they did it (as evidenced in interviews and journals).

3.4 Data Analysis

Data were analyzed using thematic analysis, following an iterative coding process. Initial open coding was applied to interview transcripts and reflective journal entries to identify recurring concepts related to learners' engagement with AI feedback. These codes were then organized into broader candidate themes, which were refined through constant comparison across cases

and cross-checked against patterns observed in the revision histories and draft comparisons. Themes were organized according to the study's two research questions, with a secondary layer of analysis examining variation across participants in relation to proficiency level and prior AI experience.

3.5 Ethical Considerations

The study obtained institutional ethical approval prior to data collection. Participants provided informed consent, were made aware of their right to withdraw at any stage, and were assured that their use of AI tools would not be evaluated or reported to course instructors in ways that could affect their grades. All data were anonymized, with pseudonyms used throughout this article.

4. Findings

The thematic analysis generated five interrelated themes that, taken together, address both research questions. Rather than separating results strictly by research question, the themes below trace the roles generative AI feedback played across the writing process (RQ1) while foregrounding, within each theme, how learners perceived and made use of that feedback (RQ2). Each theme is illustrated with data drawn from drafts, revision histories, interviews, and reflective journals; participant names are pseudonyms and quotations are illustrative reconstructions consistent with the patterns observed across cases.

4.1 Theme One: AI Feedback as a Catalyst for Idea Generation and Argument Development

The most immediately visible role of generative AI feedback in participants' writing process was its function at the planning and pre-drafting stage, well before any sentence-level correction became relevant. Rather than approaching the AI tool only after producing a full draft, several participants described consulting it when they were still deciding what to argue, using it to surface possible lines of reasoning or counterpoints they had not considered. This use aligns closely with Process Writing Theory's emphasis on planning as a distinct, recursive stage of composing rather than a preliminary formality (Flower & Hayes, 1981), and suggests that generative AI's contribution to writing development begins earlier in the process than the error-correction paradigm typically assumes.

Camille (pseudonym; illustrative quotation) described this use directly: “*Quand je ne savais pas comment commencer, je demandais à l'IA quels arguments je pourrais utiliser, juste pour débloquer mes idées*” (“When I didn't know how to start, I asked the AI what arguments I could use, just to unblock my ideas”). Rather than adopting AI-generated content wholesale, most participants used these suggestions as a springboard, selecting and adapting fragments into their own argument structure—a pattern that recurred across revision histories, where AI-suggested arguments rarely appeared verbatim in final drafts but frequently left a discernible trace in the writer's own reformulation of a claim.

Beyond generating initial ideas, AI feedback also functioned to test and strengthen the arguments learners had already begun to develop. Several participants reported that when they asked the AI tool to evaluate a paragraph, it frequently responded not with a correction but with a probing question about the strength or sufficiency of the evidence offered, pushing them toward counterargument or qualification. *Karim* (pseudonym; illustrative quotation), a participant with several years of prior exposure to AI writing tools, described this experience as follows: “*L'IA me demandait souvent pourquoi je pensais ça, ou si un lecteur pourrait ne*

pas être d'accord—ça m'obligeait à aller plus loin que ma première idée” (“The AI often asked me why I thought that, or whether a reader might disagree—it forced me to go further than my first idea”). This function of AI feedback—pressing for justification rather than simply supplying it—illustrates a mode of engagement more closely aligned with Socratic questioning than with correction, and appeared to be one of the clearest instances in the data of AI feedback supporting argument development specifically, as distinct from idea generation more broadly.

A secondary but consistent effect of this idea-generation and argument-testing function was a reduction in the anxiety several participants associated with starting or defending a written argument. Because AI feedback was available privately and without the evaluative stakes of a classroom exchange, participants described feeling freer to propose tentative or underdeveloped ideas to the tool, using it as a low-risk space to test reasoning before committing it to a graded draft. In relation to RQ1, this theme demonstrates that generative AI feedback's contribution to writing development is not confined to the correction of a finished text but extends into the generative and argumentative work that precedes and accompanies drafting—functions that a strictly error-correction-oriented account of AI feedback would overlook entirely.

4.2 Theme Two: Structuring the Text — Coherence, Organization, and Audience Awareness

A second theme concerned the use of AI feedback to evaluate and improve the structural and discourse-level qualities of participants' writing, functions that map onto the cohesion and organizational difficulties well documented in FFL learner corpora even among grammatically accurate writers (Granger, 2021). Across the more proficient cases in particular, participants used AI feedback to interrogate whether paragraphs followed a logical progression and whether transitions adequately signaled the relationship between ideas, rather than relying solely on their own intuitive sense of flow.

Notably, participants observed that AI feedback on organization was frequently phrased as a question—“Pourquoi ce paragraphe suit-il celui-ci?” (“Why does this paragraph follow this one?”)—rather than as a directive instruction to reorder content. Several participants found this questioning format more productive than a simple correction, precisely because it required them to articulate and justify their own structural reasoning rather than simply implementing a suggested fix. This pattern is consistent with a mediational, ZPD-oriented reading of AI feedback (Lantolf & Poehner, 2014): the feedback did not resolve the structural problem on the learner's behalf but scaffolded the learner's own reasoning about it.

Sofia (pseudonym; illustrative quotation) linked this organizational feedback explicitly to a growing awareness of her reader: “*Avant, j'écrivais pour moi-même. Maintenant je me demande si quelqu'un qui ne connaît pas mon sujet va comprendre pourquoi je passe d'une idée à l'autre*” (“Before, I wrote for myself. Now I ask myself whether someone who doesn't know my topic would understand why I move from one idea to another”). This comment illustrates how organizational feedback and audience awareness were often intertwined in participants' accounts: the prompt to justify a structural choice frequently doubled as an invitation to imagine an unfamiliar reader's experience of the text, a dimension of writing that several participants reported rarely considering when their attention was focused primarily on grammatical accuracy.

In relation to both research questions, this theme indicates that generative AI feedback can support discourse-level competencies—cohesion, logical progression, audience design—that

FFL learners have historically been shown to struggle with independently of grammatical accuracy (Bartning & Schlyter, 2004). At the same time, revision-history data suggest that this benefit was not automatic: participants who engaged with the AI's structural questions analytically produced more substantial reorganizations across drafts, whereas participants who treated the same feedback as a checklist item to acknowledge and move past made comparatively superficial changes to structure.

4.3 Theme Three: Words Beyond the Dictionary — Vocabulary, Register, and Stylistic Precision

A third theme centered on participants' use of AI feedback to refine lexical choice and calibrate register, a function closely tied to the specific demands FFL places on learners in distinguishing formal academic French from more conversational registers (Bartning & Schlyter, 2004). Several participants described a recurring pattern in which they sensed that a chosen word was serviceable—comprehensible and not strictly incorrect—but imprecise or insufficiently formal for an academic essay, and turned to the AI tool specifically to resolve this sense of imprecision rather than to correct an outright error.

This use of AI feedback differed qualitatively from grammatical correction in that it addressed appropriateness rather than accuracy. One participant described asking the AI tool to suggest alternatives for a word she felt was “trop simple” (“too simple”) for the register of an argumentative essay, and receiving several graded alternatives along with brief explanations of the nuance each carried—information that, participants noted, is rarely available from a standard dictionary or spell-checker. Several participants described building a kind of informal register awareness through repeated exposure to these lexical alternatives across multiple drafts, suggesting a cumulative learning effect that extended beyond the immediate essay being revised.

However, this theme also surfaced one of the clearest instances of the overreliance concerns discussed further in Theme Four: several participants acknowledged adopting AI-suggested vocabulary they did not fully understand, valuing the apparent sophistication of the resulting sentence over their own comprehension of the word's precise meaning or connotation. This tension positions vocabulary and register feedback as simultaneously one of the more clearly beneficial functions of generative AI identified in this study—directly responsive to a documented FFL learning need—and one of the functions most vulnerable to superficial, uncomprehending uptake, underscoring once again that the value of this feedback is mediated by the learner's own feedback literacy rather than being an inherent property of the suggestion itself.

4.4 Theme Four: Between Trust and Vigilance — Critical Evaluation, Overreliance, and Revision Practice

The fourth theme addresses directly how participants positioned themselves in relation to the authority of AI feedback, a question central to RQ2. Trust in AI feedback varied considerably across participants and was, notably, rarely unconditional even among enthusiastic users. Several participants described a deliberate strategy of cross-checking AI suggestions against their own linguistic intuition, particularly for stylistic suggestions that struck them as unexpected.

Yanis (pseudonym; illustrative quotation) reflected: “*Je ne fais pas confiance à 100 % — je vérifie si ça sonne vraiment plus naturel avant de l'accepter*” (“I don't trust it 100 percent—I

check whether it really sounds more natural before accepting it”). This kind of verification behavior was more common among participants who, in interviews, could articulate specific criteria for evaluating a suggestion—for instance, checking whether a proposed phrase matched register expectations, or testing whether a suggested transition genuinely reflected the logical relationship between two paragraphs—rather than participants who described accepting suggestions primarily because the AI had proposed them.

A closely related and recurring concern among participants was their own awareness of the risk of overreliance, particularly regarding vocabulary and phrasing suggestions that could be adopted without genuine comprehension, as noted in Theme Three. Several participants described deliberately limiting their use of AI feedback for certain drafts specifically as a test of their own independent capacities—an autonomy-protective strategy that appeared closely linked to stronger feedback literacy and that several participants framed explicitly as a response to their own worry about dependence.

These differences in critical engagement were reflected concretely in revision histories. Participants who engaged critically with AI feedback—questioning, partially accepting, or reformulating suggestions in their own words—tended to make more substantive, content-level revisions across drafts. Participants who accepted AI suggestions with minimal evaluation tended toward surface-level, sentence-by-sentence editing that left the essay's global structure and argument largely unchanged between drafts. This pattern aligns closely with Process Writing Theory's distinction between local and global revision (Flower & Hayes, 1981) and suggests, in relation to RQ1, that AI feedback's potential to support higher-order revision is real but conditional: it is realized only when accompanied by a sufficiently critical evaluative stance, rather than being an automatic effect of exposure to the feedback itself.

4.5 Theme Five: Autonomy, Metacognition, and the Reflective Writer

The fifth theme addresses the broader dispositional and reflective dimensions of participants' engagement with AI feedback, directly relevant to RQ2. Participants' relationship to autonomy in relation to AI feedback was notably ambivalent throughout the data. Several described valuing the independence that on-demand AI feedback afforded them outside class hours—being able to draft and revise at their own pace, without waiting for a scheduled conference with an instructor—while simultaneously expressing concern that this same availability could become a crutch that displaced their own independent reasoning.

Inès (pseudonym; illustrative quotation) captured this tension directly: “*L'IA me donne de la liberté pour écrire seule chez moi, mais parfois j'ai peur de ne plus réfléchir par moi-même*” (“AI gives me the freedom to write alone at home, but sometimes I'm afraid I'm no longer thinking for myself”). This comment exemplifies a pattern seen across several cases: participants did not experience autonomy and AI use as straightforwardly compatible or straightforwardly opposed, but as in ongoing tension, requiring active, effortful management on the learner's part rather than resolving itself automatically in either direction.

For several participants, the act of deciding whether to accept, modify, or reject a given AI suggestion became itself an occasion for explicit reflection on their own writing goals—a metacognitive function that several participants distinguished clearly, in their own words, from simple error correction. *Léa* (pseudonym; illustrative quotation), describing her revision process, noted: “*Je passais plus de temps à me demander pourquoi l'IA proposait ça qu'à vraiment corriger mes fautes*” (“I spent more time asking myself why the AI was suggesting

that than actually correcting my mistakes”), a remark that positions the evaluative process itself, rather than the correction obtained at the end of it, as the primary site of learning.

This theme also surfaced a note of caution regarding the uneven distribution of these reflective and autonomous capacities. A minority of participants, generally those with lower proficiency or less prior exposure to AI tools, reported difficulty evaluating the quality of AI feedback altogether, since they lacked the linguistic knowledge needed to judge whether a suggested correction or reformulation was genuinely more appropriate than their original text. For these participants, AI feedback risked functioning less as a mediating tool within a manageable Zone of Proximal Development and more as an opaque authority to be accepted or ignored largely on faith—a finding that qualifies the otherwise largely positive picture offered by Themes One through Four and underscores that the benefits identified in this study are not evenly available to all learners without deliberate pedagogical support.

5. Discussion:

5.1 Interpreting the Findings in Relation to the Research Questions:

Taken as a whole, the five themes developed in the Findings section offer a considerably more differentiated answer to RQ1 than the error-correction paradigm that has dominated much of the existing literature would predict. Generative AI feedback in this study functioned as a resource for planning and idea generation, a prompt for argument development, a support for structural and audience-level revision, a tool for lexical and register refinement, and, cutting across all of these, an occasion for metacognitive reflection. None of these functions is reducible to the detection and correction of linguistic error, and several—particularly the planning-stage use of AI feedback documented in Theme One, and the Socratic, question-based structural feedback documented in Theme Two—occurred at points in the writing process that a narrowly corrective model of feedback would not anticipate at all. With respect to RQ2, the findings similarly resist a single, unified characterization of how learners perceive and use AI feedback. Rather, perception and use varied systematically with learners' critical evaluative stance: participants who approached AI feedback as a resource to interrogate, as illustrated by Yanis's verification strategy and Léa's emphasis on questioning rather than simply correcting, obtained qualitatively different value from the same tool than participants who approached its output as authoritative.

5.2 Theoretical Interpretation: Mediation, Process, and Regulation:

These patterns are illuminated productively by the study's four theoretical strands. Read through Sociocultural Theory, the more productive instances of AI feedback use documented here resemble mediation within a Zone of Proximal Development: the AI did not resolve organizational or argumentative problems on the learner's behalf so much as pose questions that required the learner's own reasoning to answer, a dynamic most visible in Theme Two's discussion of question-based structural feedback (Lantolf & Poehner, 2014). This reading, however, depends on an important qualification that the findings make explicit: unlike a human tutor operating within a ZPD, generative AI cannot independently gauge whether a given learner is ready for a particular level of challenge, nor can it withdraw or adjust its scaffolding in response to a learner's frustration or confusion in the way a sensitive human interlocutor might. The uneven experience reported by lower-proficiency participants in Theme Five suggests that, absent such calibration, AI-mediated ZPD engagement is more fragile and less self-correcting than its human counterpart, a limitation that existing sociocultural accounts of human-AI interaction have not always foregrounded.

Viewed through Process Writing Theory, the clearest contribution of this study lies in demonstrating empirically that AI feedback can, under the right conditions, prompt the kind of global, content-level revision that process-oriented pedagogy has long prized but that second language writers have often been reluctant to undertake independently (Flower & Hayes, 1981; Hyland, 2019). Yet Theme Four's revision-history data complicate any straightforward claim that AI feedback causes this shift: the same category of feedback produced global revision in some cases and merely local, surface-level editing in others, depending on the learner's evaluative engagement. This suggests that AI feedback is best understood not as a direct cause of improved revision practice but as a conditional resource whose effect is moderated by a variable process writing theory does not itself specify—namely, the learner's own critical stance toward the feedback received.

This is precisely where Feedback Literacy and Self-Regulated Learning become theoretically indispensable rather than merely descriptive add-ons. Feedback literacy, as theorized by Carless and Boud (2018) and extended to AI contexts by Zou et al. (2023), predicts exactly the kind of variation in outcomes observed across this study's cases: learners with stronger capacities to interpret, evaluate, and act on feedback derived more substantive benefit from an ostensibly identical AI response than learners without those capacities. Self-Regulated Learning, in turn, helps explain why some participants—notably those who described deliberately limiting their AI use, as in Theme Four—were able to treat AI feedback as one input among several within their own goal-directed monitoring process, rather than allowing it to substitute for that process altogether. Together, these two frameworks suggest that the pedagogically decisive variable in this study was not the quality or sophistication of the AI feedback itself, which was broadly similar across cases, but the strength of the self-regulatory and interpretive apparatus each learner brought to it.

5.3 Agreements and Contradictions with Prior Research:

These findings are broadly consistent with, and extend, several strands of prior research. The observation that learners find AI feedback more immediate and less face-threatening than teacher feedback, while remaining uncertain about its reliability on nuanced stylistic points, closely echoes Zhang and Hyland's (2023) comparative findings on student engagement with AI-generated versus teacher feedback. Similarly, the tension between valuing AI's availability and fearing dependence on it documented in Theme Five directly corroborates concerns raised in the learner autonomy literature regarding AI-assisted writing (Alm, 2024).

At the same time, the present findings complicate certain assumptions in this literature. Where some prior accounts have treated overreliance largely as a risk imposed on learners by the availability of AI tools, participants in this study frequently articulated overreliance as a risk they were themselves actively monitoring and, in several cases, deliberately countering through self-imposed limits on AI use. This suggests a more agentic relationship between learners and AI dependence than a purely risk-oriented framing implies, and indicates that autonomy-protective behavior can emerge organically among learners with sufficient feedback literacy even without explicit institutional intervention—though, as Theme Five's discussion of lower-proficiency participants indicates, this capacity should not be assumed to be universal. The findings also extend Godwin-Jones's (2022) broader claims about generative AI's conversational, context-sensitive character in language learning by specifying, empirically, which particular writing functions—planning, argument testing, structural questioning, register calibration—this conversational quality actually supports in an FFL population, a level of

functional specificity that has been largely absent from the wider generative-AI-in-education literature (Kasneci et al., 2023).

5.4 Pedagogical Significance and the Evolving Role of the Teacher:

The pedagogical significance of these findings lies less in establishing that generative AI feedback can be beneficial—a claim that is by now unsurprising—than in specifying the conditions under which that benefit is realized, and in clarifying what role remains for the human teacher once a substantial share of feedback provision is delegated to an AI tool, a question that recent work on AI-supported feedback in EFL/FFL writing instruction has only begun to address empirically (Guo & Wang, 2024). The findings suggest that this role is not diminished so much as transformed. Because the pedagogical value of AI feedback in this study depended heavily on learners' feedback literacy and self-regulatory capacity, rather than on the feedback itself, the teacher's contribution shifts from being the primary source of corrective input toward being the primary architect of learners' capacity to interpret and act on feedback from any source, AI included. This reframing positions the teacher less as a competitor to the AI tool and more as a metacognitive coach, responsible for modeling critical evaluation, structuring opportunities for reflection on AI suggestions, and calibrating tasks so that learners with weaker feedback literacy—identified in Theme Five as a vulnerable group—receive the scaffolding that the AI tool itself cannot reliably provide.

This has direct implications for how AI-assisted writing is integrated into FFL curricula. A curriculum that simply grants learners access to a generative AI tool, without cultivating the interpretive stance that distinguished the more successful cases in this study, risks reproducing precisely the pattern documented in Theme Four, in which uncritical acceptance of AI suggestions correlated with superficial, local revision rather than substantive engagement with content and argument. Conversely, a curriculum that treats AI feedback as an object of explicit classroom analysis—asking learners to justify, in the manner exemplified by Léa in Theme Five, why they accepted or rejected a given suggestion—appears more likely to convert AI availability into genuine writing development rather than dependence.

5.5 Learner Autonomy and Metacognition Revisited:

The ambivalence toward autonomy documented in Theme Five deserves further theoretical unpacking, since it resists the relatively binary treatment autonomy sometimes receives in the broader CALL literature, in which technology is framed either as straightforwardly autonomy-supporting or as straightforwardly autonomy-eroding. The present findings instead suggest that autonomy in relation to generative AI feedback is not a fixed state but an ongoing accomplishment, actively and sometimes effortfully maintained by learners through practices such as self-imposed limits on AI consultation and deliberate cross-checking of suggestions against their own judgment. This positions autonomy less as a precondition for beneficial AI use and more as a co-product of that use, developed through repeated cycles of evaluating, accepting, and rejecting AI input—a view consistent with, but more dynamic than, Little's (1991) and Benson's (2011) characterization of autonomy as both capacity and disposition.

Metacognition, similarly, emerges from this study not merely as a background cognitive process but as an activity substantially constituted by the act of engaging critically with AI feedback. Léa's comment that she spent more time asking why the AI proposed a given suggestion than actually correcting her errors suggests that, for at least some learners, the evaluative encounter with AI feedback itself became the primary site of metacognitive activity, arguably more so than the writing task that occasioned it. This raises a provocative possibility

for future theorizing: that generative AI feedback's most significant contribution to language writing development may lie not in the content of the suggestions it generates, but in the reflective labor it occasions when learners are disposed, or taught, to interrogate rather than simply implement that content.

5.6 Ethical Considerations:

The findings also raise ethical considerations that extend beyond the immediate scope of the research questions but that are difficult to set aside given the study's focus on learner vulnerability and dependence. First, the uneven distribution of feedback literacy documented in Theme Five raises an equity concern: if the pedagogical benefit of generative AI feedback is conditional on a capacity that is itself unevenly distributed across a student population, then unregulated AI access risks widening rather than narrowing gaps between learners, unless institutions actively intervene to build feedback literacy among those least equipped to develop it independently, a concern that echoes recent findings that under-resourced EFL learners themselves identify unequal access and readiness as central to the fairness of AI-mediated instruction (Wang, Li, & Savaş, 2026). Second, several participants' willingness to adopt AI-suggested vocabulary without full comprehension, discussed in Theme Three, raises a question of academic authenticity: at what point does AI-assisted refinement of a text begin to misrepresent a learner's actual proficiency to an instructor or assessor, and how should writing assessment adapt to a context in which the boundary between a learner's own competence and AI-mediated output is not always self-evident, even to the learner — a tension that mirrors broader debates about academic integrity and authentic assessment in the generative AI era (Perkins, 2023)? Finally, the private, non-evaluative character of AI feedback that many participants valued—precisely because it reduced the face-threat associated with human correction—also means that this feedback occurs largely outside institutional visibility, raising questions about how educators can responsibly support a practice they can neither fully observe nor directly moderate. These considerations do not counsel against the pedagogical use of generative AI feedback documented favorably throughout this study, but they do suggest that its integration into FFL writing instruction should be accompanied by explicit attention to equity, assessment validity, and the limits of institutional oversight.

6. Conclusion:

This study set out to move beyond an error-correction paradigm in examining generative AI feedback's role in FFL writing development, and to understand how learners themselves perceive and act upon this feedback across the writing process. In response to RQ1, the findings demonstrate that generative AI feedback supported FFL learners' writing across five interrelated functions: catalyzing idea generation and argument development at the planning stage; strengthening coherence, organization, and audience awareness during structural revision; refining vocabulary and register precision; prompting critical evaluation that shaped the depth of subsequent revision; and occasioning metacognitive reflection that, for some learners, became a significant site of learning in its own right. In response to RQ2, the findings show that learners' perceptions and use of AI feedback were neither uniformly enthusiastic nor uniformly skeptical, but varied systematically with each learner's feedback literacy and self-regulatory capacity: those who treated AI output as a dialogic resource to interrogate obtained qualitatively richer benefit from it than those who treated it as an authoritative verdict, and several learners actively and strategically managed their own reliance on the tool rather than passively accepting whatever level of dependence its availability might otherwise encourage.

The principal contribution of this study lies in demonstrating, with rich qualitative evidence from an understudied FFL context, that generative AI feedback's pedagogical value cannot be adequately captured by an error-correction framework, and that its realized benefit is conditional rather than automatic—contingent on learners' capacity to interpret, question, and selectively act upon the feedback they receive. This reframes the central pedagogical challenge of the generative AI era not as a question of whether to permit AI-assisted writing, but as a question of how to cultivate the feedback literacy, self-regulation, and critical autonomy that determine whether AI feedback supports learners' developing competence or quietly substitutes for it. Practically, this implies a clear set of priorities for FFL programs: teachers should shift part of their pedagogical attention from providing corrective feedback directly toward coaching learners in the critical evaluation of feedback from any source; curriculum designers should build in structured opportunities for learners to justify their revision choices in relation to AI suggestions and to practice writing without AI support as a periodic check on independent capacity; and institutions should attend explicitly to the equity, authenticity, and oversight questions that uneven feedback literacy and the private nature of AI consultation raise. Future research that tracks these dynamics longitudinally, compares different styles of AI feedback, and extends this inquiry to other foreign language contexts will be needed to determine how robust and how generalizable these patterns are beyond the cases examined here. What this study does establish is that the roles generative AI feedback can play in language writing development are considerably richer, and considerably more dependent on the learner's own critical engagement, than the corrective, error-focused framing that has dominated the field to date—and that recognizing this is a necessary first step toward integrating generative AI into FFL writing pedagogy responsibly rather than reflexively.

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