



EFL Students' Perceptions and Challenges in Using Paperpal as an AI Feedback Tool for Research Paper Writing

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Abstract

This study examines undergraduate EFL students' perceptions and challenges in using Paperpal as an AI feedback tool for research paper writing. Although AI-assisted writing tools are increasingly adopted in higher education, empirical evidence on Paperpal remains limited, particularly because it is specifically designed for academic research writing rather than general-purpose tools such as Grammarly or ChatGPT. Using a qualitatively driven case study design, the study involved 25 English Education undergraduates at a state university in Indonesia. Data were collected over one academic semester through a Likert-scale questionnaire administered to all participants and semi-structured interviews with 10 selected students. Questionnaire data were analyzed using frequency analysis, while interview data were examined through thematic analysis. The findings indicate that students perceived Paperpal as accessible and helpful in improving grammatical accuracy, sentence clarity, academic vocabulary, revision efficiency, and confidence during research paper revision. However, students also experienced difficulty maintaining intended meaning and authorial voice, deciding whether to accept or reject AI-generated feedback in argumentative sections, and avoiding over-reliance on automated suggestions. The study concludes that Paperpal functions effectively as a linguistic scaffolding tool but provides limited support for higher-order academic revision without guided mediation. Therefore, EFL writing courses should explicitly foster feedback literacy and critical AI-use skills to ensure responsible integration of AI feedback in academic writing instruction.

1. Introduction

Research paper writing occupies a central position in higher education as both a pedagogical practice and a means of participating in academic knowledge construction. Producing research-based texts requires linguistic accuracy, critical reasoning, argument development, synthesis of sources, and adherence to disciplinary conventions (Hyland, 2019). For students in English as a Foreign Language (EFL) context, these demands are intensified because academic ideas must be articulated in a language not used for daily communication.

Although process-oriented writing theory conceptualizes writing as a recursive activity involving planning, drafting, revising, and editing (Flower & Hayes, 1981; Seow, 2002), many EFL learners continue to experience difficulty during the revision stage. Empirical studies show that students often prioritize surface-level revisions such as grammar correction or vocabulary substitution, while higher-order aspects including coherence, argument strength, and academic tone receive less attention (Mazgutova, 2020). This pattern indicates a persistent challenge in research-oriented writing instruction at the tertiary level.

One major factor contributing to revision difficulties is the limited effectiveness of conventional feedback practices. Teacher feedback, although pedagogically valuable, is often constrained by time limitations, large class sizes, and delayed delivery, which can reduce its impact on students' revision decisions (Alharbi, 2022; Charalampous & Darra, 2024). Peer feedback likewise encourages collaboration, yet frequently lacks depth when students are required to comment on advanced academic elements such as argumentation, disciplinary voice, and research structure (Chow, 2024). As a result, many EFL students struggle to interpret feedback critically and apply it meaningfully to improve their research papers. These challenges highlight the need for additional instructional support that can foster feedback literacy, defined as the capacity to understand, evaluate, and act upon feedback effectively (Carless & Boud, 2018), particularly in academic research writing contexts.

In recent years, artificial intelligence (AI)-powered writing tools have emerged as alternative or supplementary sources of feedback in EFL writing instruction. Research indicates that AI-assisted feedback can enhance grammatical accuracy, lexical choice, and sentence clarity while increasing students' confidence and motivation during revision (Dong & Shi, 2021; Seo, 2024). Studies across educational contexts further report that tools such as Grammarly and ChatGPT provide immediate and individualized feedback that supports learner autonomy (Huang, 2025; Sapan & Uzun, 2024).

In the Indonesian EFL context, many recent studies similarly report positive outcomes when AI tools are combined with human feedback, particularly for improving language accuracy and revision frequency (Miranty et al., 2025; Pratama et al., 2025). However, much of this research has focused on general writing tasks and final written products, leaving students' perceptions of AI feedback and the

challenges encountered during research paper revision comparatively underexamined.

Among emerging AI writing tools, Paperpal is specifically designed for academic and research writing. Unlike Grammarly or ChatGPT, which primarily target general language correction or text generation, Paperpal provides research-oriented feedback such as academic tone adjustment, sentence refinement for scholarly writing, and manuscript readiness checks. These features suggest strong potential for supporting research paper revision. Yet empirical evidence on how undergraduate EFL students experience Paperpal in authentic research writing contexts remains limited.

Moreover, research paper writing demands higher-order academic competencies such as synthesizing literature, maintaining disciplinary stance, and constructing evidence-based arguments (Hyland, 2019; Wingate & Hakim, 2022). Whether AI-generated feedback can effectively support these complex processes or introduces new challenges remains an open pedagogical question.

To conceptualize how AI feedback may support or constrain student revision, this study is informed by the Feedback Literacy Framework and Sociocultural Theory. Feedback literacy emphasizes students' ability to interpret, evaluate, and act upon feedback as active agents in the learning process (Carless & Boud, 2018). Sociocultural theory further views digital tools as mediational artifacts that scaffold cognitive activity during writing revision (Vygotsky, 1978). Together, these frameworks provide a lens to understand why AI feedback such as Paperpal can facilitate linguistic improvement, while also explaining potential challenges related to authorial control, meaning negotiation, and over-reliance on automated suggestions.

Against this background, the present study examines EFL undergraduate students' perceptions and challenges in using Paperpal as an AI feedback tool for research paper writing. Specifically, this study addresses the following research questions:

- (1) How do EFL students perceive the use of Paperpal as an AI feedback tool in research paper writing?
- (2) What challenges do they encounter when using Paperpal during the revision process?

By foregrounding students' experiences, this study contributes conceptually to discussions on feedback literacy and responsible AI use in academic writing. Contextually, it provides empirical evidence from Indonesian EFL higher education, a setting that remains underrepresented in AI writing research. The remainder of this article is structured as follows: the next section explains the research methodology, followed by presentation of findings, discussion of results in relation to existing literature, and concluding implications for EFL academic writing instruction and future research.

2. Method

This study employed a qualitative case study design with descriptive survey support to explore EFL students' perceptions and challenges in using Paperpal as an AI feedback tool for research paper writing. A case study approach was selected because it enables in-depth examination of a contemporary educational phenomenon within a bounded instructional context (Yin, 2018; Creswell & Poth, 2018). The primary qualitative evidence was obtained through semi-structured interviews that captured students' experiences, interpretations, and decision-making processes when engaging with AI-generated feedback during research paper revision.

A Likert-scale questionnaire was used solely to provide descriptive patterns of students' general perceptions and reported challenges, serving as contextual support for the qualitative findings rather than as a separate analytical strand. The study was theoretically informed by the Feedback Literacy Framework, which emphasizes students' capacity to interpret, evaluate, and act upon feedback (Carless & Boud, 2018), and Sociocultural Theory, which conceptualizes digital tools as mediational artifacts shaping learners' cognitive activity and agency during writing revision (Vygotsky, 1978).

The study was conducted in a Scientific Writing course in the English Education Department at a state university in North Sumatra, Indonesia. The course ran for one semester and required students to develop a research paper through staged drafting and revision. Writing tasks included topic selection, outlining, partial drafts, full manuscript development, and final submission, scheduled across the semester. Paperpal was integrated into the course during weeks 6–8 as a revision support tool to assist students in improving academic language and manuscript quality.

Students engaged with Paperpal iteratively to revise the entire research paper, using features such as grammar and sentence-level correction, academic tone refinement, clarity and conciseness suggestions, vocabulary enhancement, and journal-readiness checks. Although Paperpal provided automated feedback, students retained full responsibility for accepting, modifying, or rejecting suggestions. This instructional arrangement ensured that AI feedback functioned as a scaffold for linguistic and stylistic refinement rather than as a replacement for students' authorial judgment.

Participants were 25 seventh-semester undergraduate students enrolled in the Scientific Writing course. As the study investigated a bounded classroom setting, the participant group represented the total population of the class, while the class itself was selected purposively due to its relevance to the research objectives (Merriam, 2009). Inclusion criteria required that students were enrolled in the course, actively used Paperpal during the revision process, and voluntarily consented to participate. All students completed the descriptive questionnaire.

From this group, 10 students were selected for semi-structured interviews using maximum variation sampling to capture diverse experiences with AI feedback. Selection was based on differences in self-reported writing confidence, perceived usefulness and challenges indicated in questionnaire responses, and writing proficiency indicator, such as course performance or instructor assessment. This strategy ensured representation of students who experienced both strong benefits and notable difficulties when using Paperpal. Ethical considerations were strictly observed, including informed consent, anonymity, confidentiality, and the right to withdraw without academic consequences.

Data were collected over one month during the semester-long course. A Likert-scale questionnaire consisting of 8 items was administered to all participants after sustained engagement with Paperpal. The questionnaire examined students' perceptions of Paperpal's benefits and reported challenges, including clarity of feedback, linguistic accuracy, revision efficiency, academic vocabulary development, confidence, meaning preservation, authorial control, and over-reliance on AI feedback.

A sample perception item was "Paperpal helps improve grammatical accuracy in my research writing," while a sample challenge item was "Paperpal sometimes changes my intended meaning." Semi-structured interviews were conducted with 10 selected participants after the questionnaire stage. Interviews lasted approximately 35 minutes and were held face-to-face in English to allow participants to express experiences comfortably. All interviews were audio-recorded with consent, transcribed verbatim, and, when necessary, translated into English through a translation verification procedure to preserve semantic accuracy.

Questionnaire data were analyzed descriptively using frequencies and percentages to illustrate general patterns of students' perceptions and challenges. Interview transcripts were analyzed through thematic analysis following Braun and Clarke's (2006) six-phase procedure: familiarization, initial coding, theme development, refinement, definition, and reporting. Analysis was iterative and theoretically informed by feedback literacy and sociocultural mediation. Data saturation was reached by the third interview, as subsequent interviews produced no substantially new themes.

Trustworthiness was strengthened through member checking, where participants reviewed summarized interpretations, and through an audit trail of analytic decisions and reflexive memos. Neutral questioning and voluntary participation were ensured, and research participation was separated from academic assessment. This analytical process provided a credible and nuanced understanding of how EFL students experienced and negotiated AI-generated feedback in research paper revision contexts.

3. Result

This section presents the results of the study examining undergraduate EFL students' perceptions and challenges of using Paperpal as an AI feedback tool for research paper writing. The findings were derived from two data sources: questionnaire responses from 25 students and semi-structured interviews with 10 selected participants. The use of these complementary instruments enabled methodological triangulation and provided both a quantitative overview and qualitative depth regarding students' views of AI-generated feedback.

The results are organized in line with the research questions. The first part reports students' perceptions of Paperpal based on questionnaire and interview data, highlighting overall trends across key perception indicators. The second part presents questionnaire and qualitative findings from interviews that elaborate students' views and experiences when using Paperpal during the revision process. This section focuses solely on the presentation of empirical findings, while interpretation and theoretical discussion are addressed in the subsequent section.

Students' Perceptions of Paperpal as an AI Feedback Tool

To present an overview of students' perceptions of Paperpal, Table 1. EFL students' perceptions of paperpal in research writing obtained from 25 undergraduate EFL students. The table reports the frequency distribution of responses across four Likert-scale categories: Strongly Disagree (SD), Disagree (D), Agree (A), and Strongly Agree (SA). The questionnaire items address key perception-related aspects, including accessibility, clarity of feedback, linguistic support, revision efficiency, confidence, and overall usefulness of Paperpal in research paper writing. These quantitative results provide a descriptive snapshot of how students perceived the role of AI-generated feedback in supporting their academic writing.

Table 1. EFL Students' Perceptions of Paperpal in Research Paper Writing

No	Statement	SD	D	A	SA
1	Paperpal is an easily accessible AI feedback tool for supporting my research paper writing.	0 (8%)	2 (44%)	11 (48%)	12
2	The feedback provided by Paperpal is clear and easy to understand during the revision process.	1 (4%)	0 (52%)	13 (44%)	11
3	Paperpal helps me improve the quality of my research writing.	0 (8%)	2 (52%)	13 (40%)	10
4	Using Paperpal makes the revision process more efficient and organized.	0 (8%)	2 (56%)	14 (36%)	9

5	Paperpal helps me improve my grammar and sentence-level accuracy in research writing.	1 (4%)	0	11 (44%)	13 (52%)
6	Using Paperpal supports the development of my academic vocabulary and expressions.	1 (4%)	1 (4%)	15 (60%)	8 (32%)
7	Paperpal increases my confidence when revising my research paper.	0 (8%)	2 (44%)	11 (48%)	12
8	Overall, Paperpal is a useful AI feedback tool for improving my research paper writing.	0 (8%)	2 (56%)	14 (36%)	9

The questionnaire results indicate that undergraduate EFL students held predominantly positive perceptions regarding the accessibility and clarity of Paperpal as an AI feedback tool for research paper writing. As shown in Table 1, 92% of respondents agreed or strongly agreed that Paperpal was easily accessible, suggesting that technical or logistical barriers were minimal during the revision process.

This accessibility appeared to facilitate sustained use of the tool across multiple drafting stages. Similarly, students reported high levels of agreement regarding the clarity of feedback, with 96% indicating that the feedback provided by Paperpal was clear and easy to understand. This suggests that AI-generated explanations were generally comprehensible for undergraduate EFL learners who are still developing academic literacy. One interview participant highlighted this experience, stating:

"Paperpal is very easy to access and operate, and the feedback it provides is clear and understandable. This prevents confusion during revision, particularly when checking sentence structure and wording, and allows me to make corrections more efficiently while maintaining focus on improving the overall quality of my research paper." (P3)

This perception of clarity is particularly important in research writing contexts, where ambiguous feedback may hinder revision. Overall, the findings indicate that accessibility and clarity constituted foundational elements shaping students' positive perceptions of Paperpal as an AI feedback tool.

Students also perceived Paperpal as contributing positively to the overall quality of their research writing. As indicated in Table 1, 92% of respondents agreed or strongly agreed that using Paperpal helped improve the quality of their research papers, while only a small proportion (8%) expressed disagreement. This distribution suggests that students recognized noticeable improvements in their written work after engaging with AI-generated feedback. Improvements were commonly associated with clearer sentence construction, more appropriate

academic tone, and reduced language-related errors. In the middle of revision activities, one student reflected on this perceived improvement by stating:

"After using Paperpal, I feel that my writing quality has improved because my sentences become clearer, more concise, and more academic in tone. As a result, my research paper appears more serious and professional, which motivates me to continue refining my academic writing skills." (P6)

Such responses indicate that students viewed Paperpal not merely as a tool for correcting errors, but as a resource that enhanced the overall academic presentation of their work. These perceptions highlight students' confidence in the tool's capacity to support meaningful refinement of research writing quality.

The findings further reveal strong positive perceptions regarding revision efficiency and linguistic accuracy. According to Table 1, 92% of students agreed or strongly agreed that using Paperpal made the revision process more efficient and organized. This suggests that students perceived AI feedback as helping them identify problematic areas quickly, reducing the need for repeated manual checking. In addition, perceptions related to grammatical improvement were particularly strong, with 96% of respondents reporting that Paperpal helped improve grammar and sentence-level accuracy. During interviews, students explained that this efficiency allowed them to focus more on refining content rather than searching for surface-level errors. As one participant noted:

"Paperpal helps me revise my paper more quickly because it directly highlights grammatical problems and sentence-level issues. I no longer need to reread the entire text repeatedly just to find small mistakes, which saves time and makes the revision process more efficient." (P5)

These findings indicate that students perceived Paperpal as an effective linguistic support tool that streamlined the revision process while enhancing accuracy in research writing.

Beyond grammatical accuracy, students perceived Paperpal as supportive in developing academic vocabulary and enhancing confidence during revision. Table 1 shows that 92% of respondents agreed or strongly agreed that Paperpal supported the development of academic vocabulary and expressions. This suggests that students viewed the feedback as instructional, helping them learn more appropriate academic word choices rather than merely replacing words automatically. In addition, confidence-related perceptions were similarly positive, with 92% of students reporting increased confidence when revising their research papers using Paperpal. One interview participant articulated this experience during revision activities, stating:

"Using Paperpal increases my confidence in academic writing because I can learn new research-oriented vocabulary and expressions from its suggestions. This makes me feel more certain that my writing meets academic standards and is acceptable for research paper submission." (P7)

These findings indicate that students associated AI feedback not only with linguistic improvement but also with affective support, which may encourage more sustained engagement in revision tasks.

Overall, the questionnaire results demonstrate that students perceived Paperpal as a useful AI feedback tool for research paper writing. As presented in Table 1, 92% of respondents agreed or strongly agreed that Paperpal was useful for improving their research writing, indicating a strong consensus among participants. This overall evaluation reflects students' cumulative perceptions across multiple aspects, including accessibility, clarity, linguistic support, efficiency, and confidence. During interviews, students frequently described Paperpal as a helpful supplementary resource rather than a replacement for their own judgment. One participant summarized this view by noting:

"Overall, I consider Paperpal very useful for research writing because it effectively supports my revision process. It helps improve my paper before submission by identifying language issues and suggesting more academic alternatives, which enhances the overall quality of my final manuscript." (P9)

These findings suggest that students generally perceived Paperpal as a valuable tool that complemented their research writing practices and supported the revision process in meaningful ways.

Overall, the findings from the questionnaire and interview data consistently indicate that undergraduate EFL students held positive perceptions of Paperpal as an AI feedback tool for research paper writing. Across all measured aspects, including accessibility, clarity of feedback, linguistic support, revision efficiency, vocabulary development, confidence, and overall usefulness, the majority of students expressed agreement or strong agreement. The integration of quantitative trends and qualitative insights shows that students generally perceived Paperpal as a supportive resource that facilitated the revision process and enhanced the quality of their academic writing.

Importantly, the interview data corroborated the questionnaire results by illustrating how students experienced AI-generated feedback in practical revision contexts. Taken together, these findings provide a coherent empirical overview of students' favorable perceptions of Paperpal, establishing a clear foundation for the subsequent discussion of its pedagogical implications and limitations in EFL research writing contexts.

Students' Challenges in Using Paperpal as an AI Feedback Tool

This section presents the findings related to Research Question 2, which explores students' challenges in using Paperpal as an AI feedback tool were examined through both questionnaire responses and follow-up interviews. While the previous section presented students' positive perceptions of Paperpal, this section focuses on the difficulties they encountered during the research paper revision process. The questionnaire included eight challenge-related items addressing issues such as meaning preservation, authorial voice, decision-making in accepting or rejecting feedback, support for higher-order writing, and reliance on AI suggestions. Responses were recorded using a four-point Likert scale to capture the extent to which students experienced these challenges.

In addition to the questionnaire data, interview excerpts were used to illustrate how students navigated specific difficulties when applying Paperpal's feedback in their writing. Presenting quantitative distributions alongside qualitative accounts allows this section to report patterns of reported challenges while maintaining a descriptive focus. The results are organized into questionnaire findings presented in Table 2, followed by interview descriptions of the main challenges identified by participants.

Table 2. Students' Challenges in Using Paperpal for Research Paper Writing

No	Statement	SD	D	A	SA
1	Paperpal sometimes changes my intended meaning when revising complex sentences in my research paper.	1 (4%)	5 (20%)	12 (48%)	7 (28%)
2	Paperpal's suggestions sometimes reduce my sense of authorial voice or personal writing style.	2 (8%)	4 (16%)	13 (52%)	6 (24%)
3	I find it difficult to decide whether to accept or reject Paperpal's feedback in argumentative or analytical sections.	1 (4%)	6 (24%)	11 (44%)	7 (28%)
4	Paperpal provides limited support for improving higher-order writing aspects such as coherence and argument development.	1 (4%)	5 (20%)	12 (48%)	7 (28%)
5	I sometimes accept Paperpal's suggestions without carefully evaluating their appropriateness.	2 (8%)	4 (16%)	10 (40%)	9 (36%)

6	I tend to rely more on Paperpal when I feel less confident about my academic writing.	3 (12%)	5 (20%)	11 (44%)	6 (24%)
7	Using Paperpal occasionally makes me focus more on sentence-level corrections than on overall content quality.	1 (4%)	4 (16%)	13 (52%)	7 (28%)
8	I feel that Paperpal cannot fully replace teacher feedback for improving research paper writing.	0 (0%)	3 (12%)	12 (48%)	10 (40%)

As presented in Table 2, 76% of students agreed or strongly agreed that Paperpal sometimes changed their intended meaning when revising complex sentences, while 24% reported no such difficulty. This distribution indicates that concerns about semantic accuracy were commonly experienced during AI-assisted revision. One participant reflected on this experience, stating:

"Paperpal is very easy to access and operate, and the feedback it provides is clear and understandable. However, when revising complex sentences, the suggested version sometimes sounds more academic but slightly changes the meaning I want to express, so I need to compare both versions carefully before deciding." (P3).

Another student expressed a similar view, noting that applying multiple AI suggestions within a paragraph could subtly shift the original argument, requiring rereading to ensure accuracy. These accounts show how students actively monitored meaning while using Paperpal, particularly when balancing improvements in academic tone with preservation of their intended ideas. The pattern suggests that meaning preservation became an additional step in the revision process, especially when working with complex or argumentative sentences in research writing.

Maintaining authorial voice also emerged as a reported challenge. Table 2 shows that 76% of participants agreed or strongly agreed that Paperpal's suggestions sometimes reduced their sense of personal writing style, while 24% did not experience this issue. One participant described this experience by saying:

"After applying Paperpal's suggestion, my sentence becomes grammatically correct and more academic, but sometimes it does not feel like my own writing anymore. I feel that the style becomes standardized, so I rewrite the sentence again to keep my personal voice." (P7).

Another student similarly noted that after several rounds of AI-assisted revision, many sentences felt strongly shaped by Paperpal, leading to a reduced sense of ownership over the text. These responses illustrate how students negotiated between achieving academic correctness and maintaining individual

writing identity. Some participants described rewriting AI-generated suggestions to reassert control over their work, while others accepted the changes but recognized a shift in writing style. Overall, the findings show that while Paperpal supported linguistic refinement, many students experienced a need to consciously preserve authorial voice during research paper revision.

Decision-making in applying AI-generated feedback was another challenge frequently reported. As indicated in Table 2, 72% of participants agreed or strongly agreed that they found it difficult to decide whether to accept or reject Paperpal's suggestions in argumentative or analytical sections. In addition, 76% acknowledged that they sometimes accepted suggestions without careful evaluation. One participant explained this early experience, stating:

"At the beginning, I followed almost all Paperpal's suggestions because I assumed they were correct. I did not think much about whether the feedback matched my argument, especially when revising grammar and sentence structure." (P1).

Another student described becoming more selective over time, noting that some accepted suggestions did not fit their intended argument, particularly in discussion sections. These experiences reflect how students navigated trust in AI feedback while maintaining responsibility for argumentative accuracy. The findings show that accepting or rejecting feedback required additional cognitive effort, especially when revisions involved more than surface-level corrections. This pattern indicates that Paperpal-assisted revision involved continuous judgment and negotiation rather than automatic acceptance of AI-generated suggestions.

Tendencies toward reliance on AI feedback were also evident. Table 2 indicates that 68% of participants agreed or strongly agreed that they relied more on Paperpal when feeling less confident in their academic writing, while 32% reported otherwise. Furthermore, 76% admitted that they sometimes accepted AI suggestions without carefully evaluating their appropriateness. One participant expressed this connection between confidence and reliance, stating:

"Because I am not confident in my academic writing, I tend to depend more on Paperpal to check my sentences and vocabulary, even though I know I should evaluate the suggestions first." (P6).

Another student noted that AI feedback made revision faster but sometimes reduced reflective engagement with their own text, particularly when working under time pressure. These accounts demonstrate how confidence influenced students' interaction with Paperpal. While the tool provided reassurance during revision, it also introduced a tendency to trust automated feedback, especially among less confident writers. The findings indicate that reliance on AI feedback functioned as both a support mechanism and a potential challenge during research paper writing.

Limited support for higher-order writing and continued dependence on teacher feedback was also reported. Table 2 shows that 76% of participants agreed or strongly agreed that Paperpal provided limited assistance for improving coherence and argument development. Additionally, 88% agreed that Paperpal could not replace teacher feedback for research paper writing. One participant described this limitation by stating:

"Paperpal helps me improve grammar and wording, but it does not really tell me whether my argument is strong or whether my discussion answers my research questions. For that, I still need feedback from my lecturer." (P2).

Another student similarly explained that Paperpal could refine sentence-level language but could not evaluate research logic or structure. Some participants also noted that focusing on sentence corrections occasionally reduced attention to content development. These responses demonstrate that while Paperpal was helpful for linguistic and stylistic revision, students consistently viewed human feedback as essential for improving argument quality, coherence, and overall research paper organization. The findings thus show that AI feedback was positioned as a complementary rather than substitutive resource in research-based academic writing.

4. Discussion

Students' Perceptions of Paperpal as an AI Feedback Tool

Students' positive perceptions of Paperpal were closely associated with its accessibility and clarity of feedback, which functioned as enabling conditions for sustained engagement in research paper revision. High agreement levels regarding ease of access and comprehensible feedback suggest that Paperpal reduces procedural and cognitive barriers commonly experienced by EFL writers during revision. This finding aligns with previous studies reporting that immediacy and clarity in automated feedback systems facilitate sustained engagement with revision tasks (Dong & Shi, 2021; Seo, 2024).

From a feedback literacy perspective, clarity is essential for enabling students to interpret and act upon feedback meaningfully (Carless & Boud, 2018). When feedback explanations are understandable, learners are more likely to perceive AI tools as supportive rather than intimidating. Similar patterns have been observed in studies on Grammarly and other AI-assisted writing tools, where transparent feedback enhanced students' trust and willingness to revise (Miranty et al., 2025; Alcaraz et al., 2025). Thus, Paperpal's perceived accessibility and clarity should be understood not only as technical advantages but also as pedagogical conditions that shape how students engage with AI feedback in academic writing.

Beyond accessibility, students' perceptions that Paperpal improves writing quality, grammatical accuracy, and revision efficiency echo a consistent trend in AI-assisted writing research. The dominance of agreement on items related to

linguistic support and efficiency suggests that students primarily value AI feedback for its ability to handle surface-level language concerns quickly and accurately. This supports earlier findings that automated writing evaluation systems are most effective in addressing rule-governed aspects of writing such as grammar, sentence structure, and lexical choice (Aldosemani et al., 2023; Li et al., 2014).

In line with Flower and Hayes' (1981) cognitive process model, reducing the burden of error detection allows writers to allocate more cognitive resources to higher-level composing activities. However, while students perceived improvements in overall writing quality, prior research cautions that such perceptions often reflect enhanced textual form rather than deeper conceptual development (Mazgutova, 2020). Therefore, the perceived effectiveness of Paperpal should be understood primarily as linguistic and procedural support, rather than comprehensive academic writing development.

The affective dimension of students' perceptions, particularly increased confidence during revision, further underscores the perceived value of Paperpal as a supportive learning tool. Increased confidence has been identified as a key factor in promoting persistence and autonomy in writing tasks, especially among EFL learners (Huang, 2025). Students' reports of feeling more confident align with studies suggesting that non-judgmental, immediate AI feedback can reduce anxiety associated with academic writing and revision (Sapan & Uzun, 2024). However, existing literature also emphasizes that confidence derived from AI support must be accompanied by critical awareness to prevent over-reliance (Carless & Boud, 2018; Aldosemani et al., 2023).

While students in this study perceived Paperpal as useful, they also acknowledged it as a supplementary rather than substitutive resource, a view consistent with responsible AI integration frameworks. Overall, the discussion suggests that students' positive perceptions of Paperpal stem from its capacity to enhance linguistic accuracy, efficiency, and emotional reassurance, while its pedagogical value ultimately depends on guided and critical use within academic writing instruction.

Students' Challenges in Using Paperpal as an AI Feedback Tool

The first major challenge identified in this study difficulty maintaining intended meaning and authorial control highlights a fundamental limitation of AI-generated feedback in research writing contexts. Although Paperpal was perceived as effective in improving grammatical accuracy and academic tone, the findings indicate that these surface-level refinements sometimes introduced shifts in semantic nuance and reductions in personal writing identity. This pattern supports previous research showing that automated writing evaluation systems tend to prioritize linguistic form over rhetorical meaning, offering sentence-level corrections without full sensitivity to contextual intention (Aldosemani et al., 2023; Mazgutova, 2020).

From a second language academic writing perspective, maintaining authorial stance is a central feature of research discourse, as writers must position arguments, interpret evidence, and construct disciplinary identity (Hyland, 2019). The tendency of AI feedback to standardize language may therefore create tension between achieving academic correctness and preserving individual authorial voice, echoing concerns raised by Dong and Shi (2021) that uncritical application of AI feedback can dilute writers' ownership of text. Importantly, the present findings show that students did not remain passive recipients of AI feedback; many developed practical strategies such as comparing original and revised sentences, rewriting AI suggestions in their own words, or rereading paragraphs to verify semantic accuracy. These self-regulatory actions suggest that meaning preservation and voice reconstruction became additional cognitive steps in AI-assisted revision.

A second interconnected challenge involves students' difficulty in deciding whether to accept or reject AI-generated feedback, particularly in argumentative and analytical sections. Paperpal's perceived authority as a language-correcting tool encouraged some students to accept suggestions without careful evaluation, reflecting earlier findings that learners often treat automated feedback as expert input, especially for grammar and sentence-level revision (Aldosemani et al., 2023; Seo, 2024). From a feedback literacy perspective, this behavior indicates limited evaluative judgment, a key component of effective feedback engagement (Carless & Boud, 2018).

Nevertheless, students gradually developed coping strategies, such as delaying acceptance of suggestions, cross-checking AI feedback with course materials, and consulting peers or instructors before revising critical sections. These practices suggest emerging feedback literacy in managing AI input. This challenge is not unique to Paperpal but reflects a broader characteristic of AI writing tools such as Grammarly and ChatGPT, which similarly present automated suggestions as authoritative. Therefore, the decision-making demands introduced by AI feedback represent a shared pedagogical issue across AI-assisted writing environments rather than a limitation specific to Paperpal.

The tendency toward over-reliance on AI feedback further complicates the pedagogical role of Paperpal. The findings reveal that students with lower confidence in academic writing were more likely to depend on AI suggestions, using Paperpal as a compensatory support for perceived linguistic insecurity. This confirms prior research indicating that automated feedback tools can function as confidence-building scaffolds, but may also foster dependency when students lack strong self-regulation skills (Aldosemani et al., 2023; Seo, 2024).

Feedback literacy theory emphasizes that effective feedback use requires learners to gradually shift from dependence on external input toward autonomous evaluative capacity (Carless & Boud, 2018). The present findings reveal a clear tension between efficiency and deep learning: Paperpal accelerated revision by

instantly identifying language errors, yet this efficiency sometimes reduced reflective engagement with argument development and content organization. Similar concerns have been raised in studies on Grammarly and ChatGPT, where efficiency-driven revision can overshadow metacognitive writing processes if not accompanied by explicit instructional guidance (Miranty et al., 2025; Sapan & Uzun, 2024). This tension suggests that AI-supported efficiency must be pedagogically balanced with structured opportunities for slow, reflective revision to sustain deeper academic writing development.

A further challenge concerns Paperpal's limited support for higher-order writing aspects and students' continued dependence on teacher feedback. While Paperpal effectively addressed linguistic accuracy and sentence-level clarity, it did not provide guidance on argument strength, coherence, or research logic. This limitation reflects the current technological boundary of AI writing tools, which are primarily designed for sentence-level correction, academic tone standardization, and grammar refinement rather than discourse-level reasoning or disciplinary argument evaluation (Mazgutova, 2020).

From a sociocultural perspective, tools mediate cognitive activity but cannot replace the need for guided interaction and meaning-making within a learning community (Vygotsky, 1978). Consistent with Wingate and Hakim (2022), effective research writing instruction requires integrating automated feedback with teacher mentoring to cultivate critical thinking, argument construction, and scholarly identity. The findings therefore suggest that Paperpal functions best as a linguistic mediator within a broader instructional cycle: AI feedback → student evaluation → peer or teacher confirmation. Embedding such a mediation sequence in academic writing courses can transform AI use from surface-level correction into supported knowledge construction.

Finally, the challenges identified in this study highlight important pedagogical and ethical implications for responsible AI integration in research writing. Over-reliance on AI feedback raises academic integrity concerns related to text ownership, transparency of AI use, and potential plagiarism when students adopt AI-generated sentences without critical adaptation. Responsible AI use therefore requires that students retain authorship responsibility even when AI tools assist textual refinement. To address these issues, explicit instructional strategies are needed.

These include feedback literacy training that guides students to question and justify AI suggestions, AI-use rubrics that clarify acceptable forms of assistance, revision checklists that prompt verification of meaning, voice, and argument consistency before accepting AI feedback, and classroom discussions on ethical disclosure of AI use in academic writing. Such measures reposition AI from a tool for rapid correction into a resource for developing reflective and accountable writers. Overall, Paperpal's pedagogical value lies not in replacing human judgment, but in functioning as a mediational tool embedded within structured guidance,

ethical awareness, and feedback literacy development in Indonesian EFL research writing contexts.

5. Conclusion

This study investigated undergraduate EFL students' perceptions and challenges in using Paperpal as an AI feedback tool for research paper writing. The findings show that students generally perceived Paperpal as a supportive and accessible tool that enhanced linguistic accuracy, academic tone, revision efficiency, vocabulary development, and confidence during the research paper revision process. Clear and comprehensible AI-generated feedback enabled students to engage more actively in revising sentence-level language and improving textual presentation. These results indicate that Paperpal functions effectively as a linguistic scaffold that reduces procedural and affective barriers commonly experienced by Indonesian EFL students in academic research writing contexts.

At the same time, the study reveals substantive challenges that shape how AI feedback is negotiated in research writing. Students experienced difficulty maintaining intended meaning and authorial voice, deciding whether to accept or reject AI suggestions in argumentative sections, and avoiding over-reliance on automated feedback. In addition, Paperpal provided limited support for higher-order writing concerns such as argument development, coherence, and research logic, reinforcing students' continued dependence on teacher guidance. These challenges demonstrate that AI-assisted revision introduces new cognitive and evaluative demands rather than eliminating the need for critical engagement in academic writing.

Overall, the study underscores that Paperpal should be positioned as a complementary pedagogical resource rather than a substitute for human judgment or disciplinary mentoring. The effectiveness of AI feedback depends largely on students' feedback literacy, ethical awareness, and ability to regulate AI input critically. Therefore, integrating AI tools in EFL research writing instruction requires explicit guidance, structured evaluative practices, and responsible AI-use frameworks. When appropriately mediated, Paperpal has the potential to enhance revision practices, foster learner autonomy, and support the development of reflective and accountable academic writers in Indonesian higher education contexts.

6. References

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