English Language & Literature Teaching, *Vol. 31,* No. 4 Winter 2025
https://doi.org/10.35828/etak.2025.31.4.77

Learner Use of AI Feedback in English Writing: Effects of AI Feedback in Writing according to Learner Traits

Jungim Yang
(Daejeon University)

Yang, Jungim. (2025). Learner use of AI feedback in English writing: Effects of AI feedback in writing according to learner traits. *English Language & Literature Teaching, 31*(4), 77-92.

This study investigates how learners engage with AI feedback in English writing tasks and examines how learners' initial writing proficiency, self-efficacy, and trust in AI feedback influence both writing performance and feedback usage behavior. The research involved approximately 40 university students with prior experience using AI-based feedback tools. Participants completed a diagnostic writing test, two questionnaires measuring writing self-efficacy and trust in AI feedback, four essay-writing tasks, and a post-writing test. Quantitative data were analyzed using SPSS 28.0 to examine relationships among learner variables and writing outcomes. The findings indicate that AI feedback alone does not guarantee improvement; rather, learners' perceptions of feedback, motivational factors, and contextual guidance provided by instructors play a critical role in effective feedback uptake. In addition, the results suggest that structured instructional support can enhance learners' ability to interpret and apply AI-generated feedback meaningfully. Based on these findings, the study offers practical implications for AI feedback system design, including the incorporation of emotionally sensitive language, contextual personalization, and educator-facilitated feedback interpretation. Future research should further investigate longitudinal effects and a wider range of text genres and learner populations to strengthen the pedagogical validity of AI-assisted feedback.

[AI feedback/self-efficacy/wiring proficiency/trust in AI feedback]

I. INTRODUCTION

The landscape of foreign language teaching and learning is undergoing significant change, driven by the rapid advancement of artificial intelligence (AI) and progress in information

and communication technologies. With the integration of AI, machines are increasingly used as supplementary tools for language acquisition, interpretation, and translation, benefiting from improved accuracy (Bae & Jung, 2024; Kim, 2022; Kim & Han, 2021; Lee & Cha, 2023; Son 2023). Notably, developments in machine translation have enhanced learners' access to language learning resources and supported the acquisition of language skills (Lee & Cha, 2023). Nevertheless, the primary function of machine translation remains the conversion of user-provided source sentences into the target language. While voice technology is sometimes integrated to accompany the translated text, it is also constrained by the quality and scope of the input provided by the speaker (Bae & Jung, 2024).

In addition, the integration of AI-based feedback tools such as Grammarly and ChatGPT has significantly transformed writing instruction in EFL contexts. These tools offer immediate, detailed feedback on grammar, vocabulary, structure, and organization, potentially reducing both instructor workload and learner anxiety. A systematic review of automated written feedback (AWF) research (Cavaleri & Dianati, 2016; Son, 2023; Zhang & Hyland, 2018) confirms that AWFs are increasingly adopted in writing instruction (Kim & Han, 2021; Lee & Cha, 2025) though empirical findings shows the positive, negative, and neutral spectrum.

While a few studies found that AI tools are useful, their effectiveness varies depending on several learner-related factors (Kang & Pyo, 2025). For example, when AI tools are used to provide individualized feedback, learners often demonstrate greater engagement and confidence in revising their drafts compared to those relying solely on traditional teacher feedback. Moreover, students with higher levels of self-regulation tend to benefit more from AI-assisted writing tasks, as the tools can strengthen both their linguistic accuracy and motivation to write. Also, in collaborative learning contexts, the use of AI has been shown to promote peer interaction and enhance writing outcomes more effectively than individual learning without AI support

However, not many studies have simultaneously assessed AI feedback's effect on writing performance, differences based on initial proficiency, and the role of psychological factors such as writing self-efficacy and trust in AI feedback. To address these gaps, this study employs a quasi-experimental design comparing two groups: one receiving AI-based feedback and one not receiving AI feedback during English essay-writing practice. Additionally, this research investigates how initial writing proficiency, writing self-efficacy, and trust in AI feedback relate to, and potentially predict, students' engagement with AI feedback and their subsequent writing performance.

II. LITERATURE REVIEW

According to constructivist learning theory, learners are not passive recipients of feedback but active agents who interpret it and apply it autonomously to their learning (Piaget, 1972). Therefore, psychological factors such as learners' self-efficacy, trust in AI, and emotional receptivity can be considered key determinants in the effective use of feedback. In this chapter, a detailed examination of feedback, efficacy, and learner engagement will be presented.

1. Written Corrective Feedback in Writing

1) Grammarly

Although teacher feedback has long been recognized for its effectiveness across multiple dimensions, the practical challenges of providing written corrective feedback (WCF), particularly due to heavy teaching workloads and limited time, are clear. Traditionally delivered in paper-based form, WCF has evolved to include digital formats in both synchronous and asynchronous modes. In the field of L2 writing, conventional teacher feedback is now often considered alongside Automated Writing Evaluation (AWE), which is emerging as a promising alternative (Bae & Jung, 2024).

AWE programs include ALEK, E-rater, Grammar Clinic, Grammarly, My Access, and Criterion (Joo, 2021; O'Neill & Russell, 2019; Son, 2023). Among them, Grammarly is the most widely used program worldwide. It provides feedback on essential grammatical aspects of English composition such as parts of speech, subject–verb agreement, and punctuation, as well as an overall writing score. The premium version offers more detailed feedback, including grammar and context-appropriate expressions, and allows users to tailor suggestions according to the writing's purpose or genre (Son, 2023). Korean EFL learners are known to make frequent grammatical errors in areas such as tense, prepositions, and subject–verb agreement (Son, 2023). By using AWE tools, learners can immediately identify and correct such common errors, thereby saving time and costs while gaining practical benefits for writing improvement.

O'Neill and Russell's (2019) study found that the experimental group using Grammarly reported higher levels of perception, satisfaction, and confidence than the control group receiving indirect teacher feedback. Similarly, Lim (2019) examined the effectiveness of Grammarly feedback and its impact on students' perceptions and attitudes in a study involving university students. The results showed that students responded positively, reporting that Grammarly was helpful for English learning and assignment completion, and that its effectiveness was statistically significant. However, some learners with lower levels

of English knowledge reported difficulties in using Grammarly effectively for error correction due to unfamiliarity with its functions.

2) ChatGPT

In recent years, there has been a growing body of research on the use of generative AI, such as ChatGPT, for writing feedback, with early studies tending to focus more on its positive effects rather than its limitations. More specifically, Michel et al. (2025) analyzed how AI feedback was utilized in the collaborative writing process of L2 German learners. The researchers found that ChatGPT feedback improved functional adequacy and contributed to strengthening the organization of sentences. However, they also noted a tendency among students to accept AI feedback uncritically, which could potentially reduce critical thinking, and pointed out that texts revised with AI feedback sometimes lacked logical depth.

In another study, Wang and Wang (2025) developed the APSE model (awareness, positionality, strategies, evaluation) to examine the impact of AI feedback on learners' critical AI literacy. Their findings revealed that AI feedback provided learners with real-time opportunities for correction and revision, but emphasized the importance of learners' ability to critically evaluate the feedback. They argued that when AI is used as a learning tool, a metacognitive approach—one that involves evaluating and adjusting AI-generated responses -should be adopted rather than simply accepting feedback passively.

Effective reflective writing instruction that incorporates ChatGPT should aim to amplify its benefits while mitigating its limitations. Instructors can establish clear guidelines to help learners use ChatGPT for information retrieval, autonomous learning, and language development, while avoiding pitfalls such as dependency, reduced communication, and plagiarism. When applied thoughtfully, incorporating AI as a teaching tool in writing classes can become a vital approach for fostering digital literacy and advancing digital humanities education in the era of the Fourth Industrial Revolution.

2. Writing Self-Efficacy

The concept of writing self-efficacy stems from Bandura's (1997) theory of self-efficacy, adapted specifically to the domain of writing. Bandura characterizes self-efficacy as a generative capability—the belief in one's own ability to overcome challenges and successfully accomplish tasks. This capability operates as a motivational driver with cognitive factors such as intelligence and skills, to encourage individuals to overcome obstacles during task performance (Kang & Pyo, 2025). Simply, it reflects the extent to which a learner believes they can resolve problems independently.

In the 1990s, Pajares and colleagues applied Bandura's framework to writing, with Pajares (2003) coining the term *writing self-efficacy*. Similar to the definition of self-efficacy—where individuals with higher self-efficacy generally achieve superior performance—students with stronger writing self-efficacy tend to attain better results in writing tasks. In writing contexts, a greater ability to persist through difficulties and complete assignments is linked to higher achievement. Writing self-efficacy has been described as students' self-assessment of their writing performance and their expectations of accomplishing writing tasks, and is also regarded as learners' beliefs, judgments, and expectations about their writing competence (Kang & Pyo, 2025).

Measurement tools developed by Han and Han (2022) suggests that writing self-efficacy can be divided into two primary domains: the cognitive domain, which involves knowledge and skills relevant to writing performance, and the affective domain, which encompasses interest, anxiety, and confidence related to writing. The cognitive domain covers knowledge of sentence, paragraph, and text structure, as well as problem-solving abilities in the writing process, including drafting, revising, and fulfilling task requirements. The affective domain includes interest—the enjoyment, curiosity, and pleasure experienced during writing; anxiety—feelings of discomfort, unease, or fear associated with writing; and confidence—expectations of positive feedback, effective use of writing strategies, and prior experiences of praise. The questionnaire for this study includes both domains, affective and cognitive, to better understand students' efficacy. Although there are numerous studies on writing efficacy, relatively few have examined its effects in relation to learner engagement.

3. Learner Engagement and Perceptions

Learner engagement reflects the degree of commitment and interest learners bring to their studies, encompassing attention, curiosity, motivation, and the application of language skills and learning strategies. It operates through affective, behavioral, and cognitive dimensions that shape how learners respond to feedback (Zhang & Hyland, 2018). They insisted that engagement in learning refers to the degree of a learner's commitment and interest in their educational activities. It involves their attention, curiosity, motivation, and willingness to apply their language proficiency and learning strategies. This engagement manifests through affective, behavioral, and cognitive dimensions, all of which support effective responses to feedback.

Similarly, Zhang (2017) examined the teacher's role in fostering engagement in writing through collaborative approaches, group revisions, and detailed feedback. The study revealed that collaborative methods significantly enhanced behavioral, affective, and cognitive engagement during writing and revision, with clear pedagogical implications for academic writing and feedback practices in higher education. Additionally, interviews

conducted in students' first language allowed them to express themselves more accurately and authentically (Zhang, 2020; Zhang & Hyland, 2022).

Interestingly, some research defines cognitive engagement in behavioral terms, emphasizing the use of learning and revision strategies as examples. Zhang (2017) found that low English proficiency could disrupt the balance between cognitive and behavioral engagement with teacher WCF in EFL writing. These learners, despite showing relatively positive affective engagement, lacked sufficient behavioral and cognitive engagement.

Zhang and Hyland (2018) used revision activities as evidence of engagement, identifying students as highly or moderately engaged based on their responses to teacher and AWE feedback. Their findings underscored the importance of student engagement with both teacher and AWE feedback in L2 writing, emphasizing the influence of language proficiency and learning strategies. The study suggested that explicit instruction in cognitive strategies, a supportive and encouraging tone, and classroom practices that strengthen language proficiency are crucial for promoting meaningful engagement.

These results suggest that AWF can positively shape both writing outcomes and affective engagement—potentially by promoting revision-oriented behavior and psychological readiness to write. Despite a few findings on AWF's effectiveness and the importance of self-efficacy, few studies have examined how self-efficacy and learner trust in AI feedback jointly influence the use and impact of AWF in EFL writing contexts. The present research fills this gap by experimentally comparing AI feedback versus non-AI conditions and investigating how initial writing proficiency, writing self-efficacy, and trust in AI feedback relate to both writing performance and engagement with feedback. In light of the theoretical background discussed above, three research questions have been developed to guide this study.

1. What is the effect of AI-based feedback on students' writing performance?
2. How does the impact of AI-based feedback vary according to students' initial writing proficiency level?
3. To what extent do learners' writing self-efficacy and trust in AI feedback predict their engagement with AI feedback and their final writing performance?

III. METHOD

1. Research Design

This study employed a quantitative research design with a cross-sectional survey approach to examine how learner characteristics influence the use of AI-based feedback in English writing tasks and to assess whether such feedback contributes to writing improvement. Data

were collected through three primary instruments: a standardized English proficiency test and a structured questionnaire of efficacy and trust in using AI as a learning tool.

2. Participants

The research was conducted during the Spring semester of 2025 with first-year students at a university in a suburban city in Chungnam. Participants were enrolled in the mandatory general English: Reading and Writing. Two classes from intermediate-level took part in, and each class consisted of around 20 students. Of the two classes, one consists of 13 male students and 7 female students, while the other consists of 9 male students and 11 female students, and all participants are aged between 19 and 26. Their majors are mostly humanistic studies

In the AI feedback group, instruction followed a process-writing approach, requiring students to progress through pre-writing, drafting, and revising stages, each guided by AI feedback. Students in the group received comments on their work via Grammarly or ChatGPT, revised their assignments online, and submitted the updated versions to their teachers through the cyber campus on the school's website. By contrast, the students in the teacher-feedback group were provided with paper-based feedback, made their revisions in class, and handed in their assignments directly to their instructor.

Participants attended 2-hour English classes weekly, with writing instruction comprising about 15% of their regular curriculum. They were informed in advance that the writing task results would not influence their academic grades, but their attitude toward the writing tasks would affect them to ensure that students do not engage in overly competitive behavior solely to achieve high scores, while at the same time, ensuring that they take the assigned tasks seriously.

3. Instruments

1) Pre- and Post Writing Test

Writing assessments were administered as pre- and post-tests to evaluate the effects of AI-based feedback on learners' writing performance. The writing evaluation included five main components: content, organization, vocabulary, language use, and mechanics. Each component was rated on a five-point scale using an analytic rubric designed to assess the overall quality of learners' written performance. Among intermediate students, some had prior experience with English essay-writing in high school. In contrast, others did not, which may have influenced the results—especially for those unfamiliar with various essay types. So, in order to control for learner variables, students were provided with lectures on writing

essays for 4 weeks before the 6th week.

2) Types of Essays

Four essay topics, each representing a different essay type, were selected to relate closely to students' everyday lives in order to encourage them to express their ideas and write in English with minimal difficulty. Lee's (2025) study has been modified and supplemented to suit the purpose of this study. Table 1 shows the types and topics of essays. The first one was the cause-and-effect essay, which explores the impact of social media on daily life, such as Instagram and YouTube. The comparison essay examined commuting to school versus staying in a dormitory. The descriptive essay focused on 'The most memorable moment in life,' while the problem-solution essay addressed the topic of the aging population. According to the academic schedule, the first essay was written right before the midterm exam, and the last three were done after the midterm exam. By going through this phase, learners were expected to analyze their transcriptions from the previous task phases, focusing on both communicative effectiveness and grammatical form.

Table 1
Types and Topics of Essay

No	Type	Topic
1	Cause and Effect	Social media
2	Comparison	Commuting vs. Staying in a dormitory
3	Descriptive	The most memorable moment in life
4	Problem-Solution	Aging population

Instruction on four distinct essay types placed particular emphasis on the defining features of each. The reason students were required to produce four different types of essays was to expose them to a variety of writing genres, thereby enhancing their writing ability to apply writing strategies across diverse contexts and contribute to the comprehensive improvement of their writing ability.

3) Writing Efficacy Questionnaire

A second key instrument in this study is a survey aimed at evaluating participants' writing self-efficacy. This instrument consisted of 15 items, with six items assigned to each of the three subcategories: (1) grammatical competence, (2) expressive competence, and (3) structural competence. The grammatical and expressive competence items were adapted from the writing self-efficacy scale developed by Pajares and Valiante, along with the version revised by Kang and Pyo (2025), to better suit Korean university students for this study. In

particular, five items were created to assess the formulation of topic sentences and supporting sentences, as well as the logical organization and smooth transitions within an introduction–body–conclusion structure. All questions were rated using a five-point Likert scale ranging from *strongly agree* (5) to *strongly disagree* (1), and the survey was administered via Google Forms. Reliability analysis showed Cronbach's alpha coefficients between .852 and .892 across the three subcategories, indicating strong internal consistency.

4) Questionnaire on Engagement and Trust in AI

Learner engagement with AI feedback was measured through items targeting three dimensions: cognitive, behavioral, and affective engagement. Each dimension was represented by 5 items, with the overall scale showing strong reliability (Cronbach's $\alpha = .82$).

Trust in AI feedback was assessed with 10 items that measured learners' perceptions of the usefulness and reliability of AI-generated feedback. Reliability coefficients for this section ranged between .71 and .73, demonstrating satisfactory internal consistency. Together, these instruments provided a comprehensive assessment of learners' psychological and behavioral responses to AI feedback. The questionnaire was collaboratively designed by two researchers and refined through literature review and revision to ensure content validity. The final version was administered via Google Forms for systematic data collection. The questionnaire was developed with reference to Zhang and Hyland (2018)'s study.

The questionnaire consisted of both closed-ended and open-ended items and was organized into four main sections as follows:

Table 2
Four Sections of Questionnaire

No	Section
1	Background Information
2	Learner Engagement
3	Trust in AI Feedback
4	Open-ended Question

As Table 2, in the background information section, it elicited demographic data, including participants' academic year, age, gender, and field of study. In this part, it also included general usage patterns of AI tools, the version and access method of AI tools used, as well as the frequency, duration, and purposes of their use in English learning. For the trust in AI feedback, 10 items assessing learners' trust and perceptions of AI tools as an aid to writing are included. All items in this section employed a five-point Likert scale. Reliability analysis yielded Cronbach's α values of 0.71 and 0.73, indicating validity and satisfactory internal consistency. Lastly, open-ended questions invited participants to express the perceived

benefits and limitations of using AI tools and to provide suggestions for better applications for English writing.

4. Procedure

The study was conducted over a 14-week period. The study employed an experimental design with two groups: an experimental group and a control group. Participants in the experimental group received feedback generated by an AI tool, while those in the control group did not receive AI feedback; instead, they were provided with in-class support from the instructor through traditional methods.

In Week 1, all participants completed a pre writing test. Weeks 2 through 5 were devoted to lecture-based instruction on what writing an essay is, and how to write it, including introduction-body-conclusion. Specifically, lectures covered fundamental theories of various essay types, along with essential grammar, capitalization, and writing mechanics. From Week 6 to Week 14, students completed a total of four essay-writing tasks, except Week 8, which was reserved for the midterm examination. From Week 6, each essay-writing task was conducted as a two-week cycle. In each cycle, the first week was devoted to drafting the essay and receiving feedback, while the second week was dedicated to revising the essay based on the feedback provided. Students were required to upload both their first draft and the revised version to the university's online learning platform. Then, they were required to complete 2 questionnaires

5. Data Analysis

Data analysis was carried out using IBM SPSS Statistics 29.0 to address the three research questions of this study. Reliability for the writing self-efficacy and trust in AI feedback instruments was examined, and Cronbach's α values for all subscales exceeded .70, confirming acceptable internal consistency.

To verify the homogeneity of the two groups, a paired samples t-test was conducted using the diagnostic test results. For research Question 1, which investigated whether AI-based feedback influenced students' writing performance, independent samples t-tests compared the post-test writing scores of the AI feedback group with those of the teacher feedback group. For Research Question 2, which examined whether the effect of AI-based feedback differed by initial writing proficiency, a two-way ANOVA was applied with feedback type (AI-based vs. teacher-based) and proficiency level (higher-intermediate vs. lower-intermediate) as independent variables. To address Research Question 3, to investigate the extent to which writing self-efficacy and trust in AI feedback predicted students' engagement and writing performance, correlation analysis was conducted. Engagement scores served as the

dependent variable, with self-efficacy and trust scores entered as independent variables (predictors). Qualitative data from the open-ended questionnaire items were also analyzed.

IV. RESULTS AND DISCUSSION

Before presenting the results, a pre-writing test score was examined to ensure the two groups were homogeneous in their initial writing proficiency. The independent samples t-test was conducted. The analysis revealed no statistically significant difference in diagnostic test scores between the AI feedback group ($M = 72.10$, $SD = 2.654$) and the teacher feedback group ($M = 71.95$, $SD = 2.781$, $t = 0.52$, $p = .481$). This result indicates that both groups had comparable proficiency levels for the study, thereby meeting the homogeneity requirement for subsequent analyses.

1. Effect of AI-Based Feedback on Writing Performance

To address Research Question 1, a paired samples *t*-test was conducted to examine whether there was a statistically significant difference in post-test writing scores between the AI feedback group and the teacher feedback group. The results of the independent samples t-test are as follows. Descriptive statistics are presented in Table 3.

Table 3
Descriptive Statistics

Group		*M*	*N*	*SD*	*SE*
AI Feedback	Pre	72.10	20	2.654	0.593
	Post	84.59	20	3.086	0.690
Teacher Feedback	Pre	71.95	20	2.781	0.622
	Post	80.43	20	2.704	0.605

As it can be seen in Table 3, students who got AI feedback shows higher mean score which means AI feedback is beneficial to the students. To examine the results are statistically significant, the independent samples t-test are used and the results are as follows in Table 4.

Table 4
The Result of a Paired Samples *t*-Test

Group	*M*	*SD*	*SE*	95% CI Lower	95% CI Upper	*t*	*df*	*p*
AI Feedback	12.49	3.729	0.834	14.23	10.74	14.97	19	<.001
Teacher Feedback	8.48	3.815	0.853	10.26	6.69	9.94	19	<.001

In the Table 4 above, the paired samples t-test revealed statistically significant improvements in both groups. For the AI feedback group, post-test scores (M = 84.59, SD = 3.09) were significantly higher than diagnostic scores (M = 72.10, SD = 2.65), $t(19) = -14.97$, $p < .001$. Similarly, in the teacher feedback group, post-test scores (M = 80.43, SD = 2.70) were significantly higher than diagnostic scores (M = 71.95, SD = 2.78), $t(19) = -9.94$, $p < .001$. These results indicate that both AI-based and teacher feedback interventions had a significant positive effect on students' writing performance.

2. Effect of AI-Based Feedback by Initial Writing Proficiency

To address Research Question 2, a two-way ANOVA was performed with feedback type (AI-based vs. teacher-based) and initial writing proficiency (high vs. low) based on the first essay-writing results. The results of two-way ANOVA are as follows in the Table 5.

Table 5
Writing Scores by Feedback Type and Proficiency Level

Source	*SS*	*df*	*MS*	*F*	*p*
Feedback Type	78.14	1	78.14	6.97	.012
Proficiency level	316.40	1	316.40	28.30	<.001
Feedback * Proficiency level	5.16	1	5.16	0.46	.502
Error	849.10	76	11.17		
Total	1248.80	69			

In the Table 5, the results of ANOVA revealed a statistically significant main effect of feedback type, F (1, 76) = 6.97, p = .012, indicating that students in the AI feedback group outperformed those in the teacher feedback group. There was also a significant main effect of proficiency level, $F(1, 76) = 28.30$, $p < .001$, showing that high-proficiency students scored higher on average than low-proficiency students.

However, the interaction effect between feedback type and proficiency level was not statistically significant, F (1, 76) = 0.46, p = .502. This result suggests that the relative benefit of AI-based feedback compared to teacher feedback did not depend on learners' proficiency level. These results suggest that AI-based feedback benefits learners across different proficiency levels equally, while overall proficiency remains a strong predictor of writing performance. In other words, AI-based feedback improves writing performance regardless of learners' initial proficiency level. While both high- and low-proficiency students benefited, higher proficiency was associated with better overall performance. The lack of a significant interaction effect implies that the relative benefit of AI feedback does not depend on students' starting proficiency.

3. Effect of Writing Efficacy, Trust in AI Feedback, and Engagement

To investigate the extent to which learners' writing self-efficacy and trust in AI feedback predicted their engagement with AI feedback and their final writing performance, correlation analysis was conducted and the result are in the Table 6.

Table 6
Pearson Correlations among Key Variables (N = 40)

Variable	1. Self-Efficacy	2. Trust in AI	3. Engagement	4. Final Score
1. Self-Efficacy	1	.27	.48**	.24
2. Trust in AI	.27	1	.42**	.04
3. Engagement	.48**	.42**	1	.07
4. Final Score	.24	.04	.07	1

$p < .05$ (*), $p < .01$ (**)

According to Table 6, a *pearson correlation analysis* was conducted to examine the relationships among self-efficacy, trust in AI feedback, engagement with AI feedback, and final writing performance. As shown in Table 1, self-efficacy was significantly and positively correlated with engagement (r = .48, p = .002), indicating that students with greater confidence in their writing abilities reported higher levels of engagement with AI feedback. Similarly, trust in AI feedback was significantly correlated with engagement (r = .42, p = .008). The findings of this study indicate that while writing self-efficacy and trust in AI feedback were positively associated with students' engagement, these factors did not directly predict final writing performance. This discrepancy can be explained by a few considerations.

First, psychological constructs such as self-efficacy and trust primarily influence learners' motivational orientation and behavioral engagement, rather than immediate performance outcomes. Although students with higher confidence in their writing ability and greater trust in AI feedback were more likely to engage actively with the system, engagement alone does not guarantee improvements in writing scores (Pajares, 2003).

Second, the scoring criteria for writing performance may not align directly with the dimensions captured by self-efficacy, trust, or engagement. Writing assessment typically emphasizes grammatical accuracy, lexical sophistication, coherence, and content development. Yet, students' engagement with AI feedback may have focused more narrowly on surface-level revisions, such as correcting errors identified by the system. Prior studies have suggested that the quality of engagement, including deeper revision and critical uptake of feedback, is more predictive of writing improvement than mere engagement frequency (Han & Han, 2022; Zhang & Hyland, 2018). Third, the duration of the intervention may have been insufficient to capture the long-term benefits of motivational and engagement-related factors.

All taken together, both self-efficacy and trust in AI feedback were significant positive

predictors of engagement, suggesting that learners with higher confidence in their writing ability and greater trust in AI systems were more likely to engage actively with the feedback provided. These findings are consistent with previous research emphasizing the central role of motivational factors in shaping learner engagement behaviors (Bandura, 1997; Pajares, 2003).

In addition, differences in language proficiency levels indicate that AI feedback should be adapted to learner needs. Lower-level learners may require structured support in selecting essential feedback, while higher-level learners benefit from deeper, discourse-level suggestions related to organization, logic, and coherence. Also, AI literacy should be integrated into the Korean language curriculum. Learners need explicit instruction on how to critically interpret, evaluate, and apply AI feedback to enhance their writing autonomy and overall proficiency.

V. CONCLUSION

The findings of this study underscore the dual role of psychological variables in AI-assisted writing instruction. Writing self-efficacy and trust in AI feedback strongly predicted learner engagement, confirming their importance as motivational factors. However, these constructs did not directly predict final writing performance, suggesting that engagement alone may not be sufficient to produce measurable gains in writing scores without the mediating influence of effective revision strategies and deeper feedback processing.

From a pedagogical perspective, these results imply that AI tools such as Grammarly or ChatGPT should not be viewed as substitutes for writing instruction but rather as supplements that require careful scaffolding. Teachers should encourage students to critically evaluate AI-generated feedback and integrate it into their revisions, thereby fostering metacognitive awareness and critical AI literacy. Moreover, writing instruction should emphasize strategies for bridging the gap between engagement with feedback and tangible performance improvement.

At the institutional level, the study highlights the need for curriculum design that integrates AI feedback tools into writing pedagogy in a way that balances technological affordances with human guidance. Providing explicit training on how to interpret, question, and selectively adopt AI feedback may enhance the educational value of these tools. In addition, longitudinal studies that examine sustained use of AI feedback over multiple semesters could help determine whether motivational factors exert stronger effects on performance in the long term.

In conclusion, while self-efficacy and trust in AI feedback are key drivers of learner engagement, their influence on performance outcomes appears to be indirect and context-

dependent. Effective integration of AI tools in writing instruction requires not only attention to learners' motivational traits but also pedagogical practices that cultivate critical engagement and meaningful uptake of feedback.

REFERENCES

Bae, Y., & Jung, Y. (2024). The effect of feedback types on learner engagement and L2 writing development. *English Teaching, 79*(3), 159-190. https://doi.org/10.15858/engtea.79.3.202409.159

Bandura, A. (1997). *Self-efficacy: The exercise of control*. W.H. Freeman.

Cavaleri, M., & Dianati, S. (2016). You want me to check your grammar again? The usefulness of an online grammar checker as perceived by students. *Journal of Academic Language and Learning, 10*(1), 223-236.

Han, Y., & Han, R. (2022). Development and validation of a writing efficacy scale. *Korean Journal of General Education, 16*(1), 241-253.

Joo, M. R. (2025). The impact of AI feedback efficacy on English writing achievement. *Journal of the Korea Academia-Industrial Cooperation Society, 26*(5), 57-62. https://doi.org/10.5762/KAIS.2025.26.5.57

Kang, J., & Pyo, S. (2025). A comparative study of university students' writing efficacy and academic achievement: The impact of chatGPT in reflective writing classes. *Journal of Learner-Centered Curriculum and Instruction, 25*(2), 505-524. https://doi.org/10.22251/jlcci.2025.25.2.505

Lee, N., & Cha, J. (2023). Possibility of generative AI to improve Korean learners' conversational ability. *Korean Language, 72*, 53-90. https://doi.org/10.52636/KL.72.3

Lee, J. (2025). ChatGPT-assisted writing: learners' perceptions of AI feedback and influencing factors. *Korean Journal of English Language and Linguistics, 25*, 493-515. https://doi.org/10.15738/kjell.25.202504.493

Michel, M., Bazhutkina, I., Abel, N., & Strobl, C. (2025). Collaborative writing based on generative AI models: Revision and deliberation processes in German as a foreign language. *Journal of Second Language Writing, 67*, Article 101185. https://doi.org/10.1016/j.jslw.2025.101185

O'Neill, R., & Russell, A. (2019). Stop! Grammar time: University students' perceptions of the automated feedback program Grammarly. *Australasian Journal of Educational Technology, 35*(1), 43-56. https://doi.org/10.14742/ajet.3795

Pajares, F. (2003). Self-efficacy beliefs, motivation, and achievement in writing: A review of the literature. *Reading & Writing Quarterly, 19*(2), 139-158. https://doi.org/10.1080/10573560308222

Piaget, J. (1972). *The principles of genetic epistemology*. Harper & Row.

Son, H. (2023). Perceptions and attitudes of English learners towards the utilization of AI-based Automated Writing Evalutation (AWE) programs and instructor feedback. *English Language & Literature Teaching, 29*(3), 91-112. https://doi.org/10.35828/etak.2023.29.3.91

Son, H. (2025). A study on learners' perceptions and attitudes toward instructor, peer, and self-feedback types in process-oriented writing in general English classes. *English Language & Literature Teaching, 31*(1), 77-101. https://doi.org/10.35828/etak.2025.31.1.77

Wang, C. R., & Wang, Z. Z. (2025). Investigating L2 writers' critical AI literacy in AI-assisted writing: An APSE model. *Journal of Second Language Writing, 67*, Article 101187. https://doi.org/10.1016/j.jslw.2025.101187

Zhang, L. (2017). Reading-writing integrated tasks, comprehensive corrective feedback, and EFL writing development. *Language Teaching Research, 21*(2), 217-240. https://doi.org/10.1177/1362168815623291

Zhang, Z., & Hyland, K. (2018). Students engagement with teachers and automated feedback on L2 writing. *Assessing Writing, 36*, 90-102. https://doi.org/10.1016/j.asw.2018.02.004

Examples in: English
Applicable Languages: English
Applicable Levels: Secondary

Jungim Yang (professor)
H -LAC
Daejeon University
34520 Daehak-ro 62, Dong-gu, Daejeon, Korea
Email: red0156@dju.kr

Received: October 29, 2025
Reviewed: December 2, 2025
Revised version received: December 20, 2025