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AI-Generated English Feedback versus Human Feedback: Comparative Effects on Writing Accuracy and Creativity

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Abstract

The paper is mixed-methods research that seeks to compare the various effects of AI-generated feedback and traditional feedback provided by human teachers on writing accuracy, creativity, and self-correction behavior in students. The main aim was to identify whether AI-based grammar correction software can be effective in improving the writing abilities of learners in comparison with traditional teacher feedback, in addition to facilitating expressiveness and self-correction of errors. The researchers used intermediate-level English learners (the sample group included 60 students) who were randomly assigned to two groups: AI-generated feedback and human feedback provided throughout a six-week intervention period. Information was gathered by use of pre- and post-writing assignments, pre- and post-perception surveys among learners, and semi-structured interviews. Grammatical accuracy was checked in the writing samples. Quantitative data were reviewed to reveal significant differences between groups, and qualitative data were coded in the form of themes to examine the experiences and self-correction behavior of learners. Findings show that AI feedback had more beneficial effects on grammatical accuracy, whereas human feedback had more beneficial effects on reflective error correction and creative expression. The article points out

the complementary role of AI tools and teacher instruction in the acquisition of holistic English writing proficiency.

Keywords: AI-generated feedback, human-generated feedback, Writing Accuracy, Creativity in Writing, Self-correction Behavior

I. INTRODUCTION

The fast development of artificial intelligence (AI) has revolutionized multiple education-related areas, especially in language learning. The English language writing instruction is no exception, as grammar correction software and automated feedback systems are becoming more and more based on AI to assist learners in becoming more linguistically accurate (Li and Hegelheimer, 2013). These tools will give immediate, objective, and consistent feedback, which in many cases is difficult to achieve by teachers working with large classes on an individual basis. At the same time, it is the traditional teacher feedback that is central to the English writing pedagogy, where the personalized guidance, contextual understanding, and encouragement lead to the enhancement of creativity and critical thinking (Hyland, 2003). Although the purpose of both AI-generated and human feedback is to improve writing competence, the impact of both on various aspects of writing, including grammatical correctness, creativity, and self-correction behavior, is not clearly comprehended. Although it is increasingly becoming adopted, no extensive research has been conducted comparing the effect of AI-generated feedback with the human teacher feedback in terms of the difference in the effect of both on the writing skills of learners. The majority of studies have been done on technological or pedagogical effectiveness at the expense of the comprehensive analysis of accuracy, creativity, and learner autonomy (Bitchener and Ferris, 2012). This is especially important because proficiency in English writing does not just consist of the ability to be correct but also creative thinking, expression, and self-regulation of learning (Flower and Hayes, 1981). As a result, instructors are experiencing difficulties in adopting AI devices for the purpose of not diminishing the creative and reflective nature of writing growth. The given research is important as it explores the role of AI feedback in comparison to human feedback to develop holistic writing skills. Through research that shows the impact on grammatical accuracy, creative expression, and self-correction behaviors, the research offers evidence-based information to curriculum developers, instructors, and policy makers on how to effectively maximize English writing teaching and learning. Moreover, the perception and experience of AI feedback among the learners would help in putting technology into use in such a way that it improves the learning experience whilst not sacrificing the humanistic aspects of teaching. In the end, the research is relevant to the current discussion on technology-assisted language learning in generating a subtle comparison between AI and human interventions in English writing courses.

II. LITERATURE REVIEW

The literature review presents a subtle environment in comparing AI-generated feedback with human feedback on writing accuracy and creativity. The emergence of large language models and writing aids has prompted empirical research, but the results are inconclusive and context-specific, depending on the level of learners and the type of task. According to research on automated written corrective feedback (AWCF), AI systems are also effective in providing timely, persistent corrective feedback that enhances the basic accuracy, such as grammar and spelling. Nazli, Jumani, and Masum (2025) observed that AI-based corrective feedback improved the performance of students during writing with regard to offering personalized feedback that scaffolds self-regulated learning and interaction with formative revisions.

Nevertheless, such systems are challenged to provide such a subtle contextual response as in human reactions, particularly those that are high-level, such as coherence and argumentation (Nazli et al., 2025). The studies on feedback noticing indicate that teacher feedback enhances more profound error awareness compared with AI feedback. A quasi-experimental comparison of AI programs such as Grammarly and E-rater with the use of human input showed that students with human feedback were more attentive to errors in their work, which suggests that human involvement helps individuals to engage more deeply with issues of accuracy (Language Testing in Asia, 2024). The result of this observation highlights the value of high-quality feedback and not quantity. Zhang (2024) investigated the application of ChatGPT in L2 writing scenarios and discovered that automated systems minimize the load assigned to teachers and help learners to be independent, motivated, and complex in their revisions. AI feedback has the potential to improve the level of writing and metacognition, especially for learners who actively utilize the feedback in recursive revision processes. However, performance is based on the disposition of the learners and technological competency, implying that AI does not consistently affect performance (Zhang, 2024).

Analysis of human and AI feedback shows dissimilar strengths. Human appraisal usually offers richer and more personal connections of suggestions, whereas AI feedback is standard and immediate. The AI feedback is moderately correlated with the human one in linguistic precision, although human forms can provide more practical advice on how to develop and structure content (Nassar, 2025). On the other hand, the literature of the Frontiers in Education shows that AI and human feedback are able to achieve similar general writing advancement, which suggests that AI may be capable of realizing comparable improvement in certain aspects (Frontiersin.org, 2025). About creativity, AI-generated text may have a high level of linguistic quality and novelty, which represents the opportunity to think divergently (Akinwande, Adeliyi, and Yussuph, 2024). Although human creativity incorporates subtle rhetorical tactics, AI could be used to supplement human response in developing creative ideas in drafts. There are also motivational and affective advantages of AI feedback: according to learners, the immediacy and consistency contribute to better proficiency, motivation, and emotional involvement, which, in its turn, contributes to the fact that the accuracy and creativity are supported (Language Testing in Asia, 2025). AI feedback improves efficiency, neutrality, and structural guidance over human feedback, which promotes social interaction and dialogue in peer assessment and collaboration, which are critical components in building and investing in revision (Language Testing in Asia, 2025). Nonetheless, AI lacks situational and rhetorical awareness and, in most cases, does not interpret the nuance of a story, creativity, and rhetorical tools that human judges see (Posthumanism.co.uk, 2025). The literature is now pointing to the need to have hybrid feedback, with human expertise as a guiding influence on higher-order writing traits and AI as a source of immediate, repeatable corrections. Combined strategies promote more intensive participation in terms of accuracy and complexity as well as the highest efficiency (Junaid, 2025). This study describes an antagonistic yet optimistic relationship between artificial intelligence-generated and human feedback. AI is also more consistent, immediate, and motivational, whereas human feedback is still needed to provide a contextual touch and creativity. Future studies are needed to discuss longitudinal implications, mixed feedback, and the processes in which AI and human feedback have combined implications on writing development.

III. RESEARCH OBJECTIVE

The objective was to compare the effects of AI-generated and human feedback on the accuracy of English writing, creativity, and self-correction behaviors when writing in the L2 setting.

IV. RESEARCH METHOD

In this work, the mixed-methods design was used in order to investigate the relative outcomes of AI-generated and human feedback on the accuracy of writing in English, creativity, and self-correction behaviors. There were 60 English learners of intermediate level who were randomly assigned to two groups: one group was provided with AI-generated feedback using an automated writing tool, and the other group was provided with traditional teacher feedback. The intervention took place over a six-week period, where people were asked to do pre-writing and post-writing activities aimed at invoking accuracy and creativity in the use of language. Two data points were measured quantitatively, as writing samples were analyzed in terms of grammatical accuracy, and creativity was measured in the form of originality and idea development scales. The surveys and semi-structured interviews were used to collect learner perceptions and experiences that offered qualitative information about the feedback engagement and self-correction practices. Statistical tests were used to identify significant differences between groups, and quantitative results were analyzed, while the qualitative responses were coded into themes to examine the patterns in the attitude, strategies, and reflection practices of learners.

V. FINDINGS OF THIS STUDY

The quantitative data have been analyzed to compare the differences in the effect of AI-generated feedback and human teacher feedback on accuracy of writing, creativity, and self-correction behavior of learners. A total of 60 intermediate-level English learners were used in the study with a random split into two groups: 30 in the AI feedback group and 30 in the human feedback group. Writing tasks that were given before and after the intervention offered quantifiable information regarding grammatical correctness and creative expression, whereas the surveys quantified the frequency of self-correction and the perception of the effectiveness of the feedback in the learners. The initial descriptive analysis was done to summarize the pre- and post-intervention scores of both groups. Table 1 gives the mean and standard deviations of writing accuracy and writing creativity.

Table 1: Descriptive Statistics for Writing Accuracy and Creativity

Group	Writing Accuracy (Pre)	Writing Accuracy (Post)	Creativity (Pre)	Creativity (Post)
AI Feedback (n=30)	M=62.4, SD=7.8	M=81.3, SD=6.5	M=65.7, SD=8.2	M=70.2, SD=7.5
Human Feedback (n=30)	M=61.8, SD=8.1	M=74.5, SD=7.0	M=66.1, SD=7.9	M=78.6, SD=6.8

The descriptive statistics indicate that the two groups improved in writing accuracy as well as writing creativity at the end of the six-week intervention. The increase in grammatical accuracy in the AI feedback group (M difference = 18.9) was bigger than that in the human feedback group (M difference = 12.7). However, the human feedback group gained more creativity (M difference = 12.5) than the AI group (M difference = 4.5).

The Shapiro-Wilk test was used to check whether the results were normally distributed (pre- and post-tests). The p-values were all greater than 0.05, which means that the assumption of normal distribution was satisfied in both writing accuracy and creativity scores and therefore allowed parametric testing. Comparison of the post-test scores was done using independent samples t-tests to compare the two groups.

Table 2: Independent Samples t-Test Results for Writing Accuracy and Creativity

Outcome Variable	t	df	p-value	Mean Difference	95% CI for Difference
Writing Accuracy	4.92	58	<.001	6.8	3.8 – 9.8
Creativity	-5.11	58	<.001	-8.4	-11.5 – -5.3

Findings show that there is a statistically significant difference between groups. The AI feedback group performed better in the writing accuracy ($p < .001$) compared to the human feedback group; however, the human feedback group was significantly higher in creativity ($p < .001$) than the AI. The results of the calculation of the effect sizes, based on Cohen's d, are substantial both in terms of accuracy ($d = 1.26$) and creativity ($d = 1.32$), which implies substantial educational implications. A set of paired-samples t-tests was carried out within the group of results to evaluate the differences between pre- and post-test results. AI Feedback Group: The writing accuracy improved significantly between pre- and post-test (M=62.4, SD=7.8 to M=81.3, SD=6.5), t(29)=12.87, p=.001, and shows that grammatical competence gains are high. There was also a small yet significant improvement in creativity, t(29) =3.42, p=.002. Human Feedback Group: The accuracy of writing increased from M=61.8 to M=74.5, t(29)=9.25, p=.001. The effect of M=66.1 to M=78.6 on creativity was significant as t(29)=10.14, p<.001, supporting the influence of the strong force of human feedback on creative expression.

The quantitative study indicates the difference between the impact of AI and human feedback. The most common use of AI-generated feedback is the improvement of grammatical accuracy with the immediate provision of corrective feedback, which has a substantial positive effect on sentence-level accuracy. Although human feedback can also help to add accuracy, it shows a greater impact on creative expression and reflective error correction. These findings indicate that AI tools and teacher feedback are used to complement one another in writing development and should be integrated to have balanced hybrid instructional models of precision and creativity. The semi-structured interviews and open-ended survey answers (n = 60 participants) were used to investigate the experience of learners regarding the use of AI-generated feedback and human feedback. Data were thematically examined through six phases that were used by Braun and Clarke (2006) to analyze them, and they include familiarization, coding, theme development, review, definition, and interpretation of the data. Three broad themes were found: the perceptions of usefulness of feedback, influence on self-correction and autonomy, and influence on creativity and expression.

Theme 1: The perceptions of the usefulness of feedback

Respondents who got the feedback of AI mentioned that the timeliness and vividness of the corrections provided to them were very helpful. The most common observation made by many learners is that automated feedback provided them with an opportunity to detect and correct grammatical errors effectively, which boosted their confidence in writing mechanics. One

of the participants said, "AI immediately shows the errors that I could make, and this assists me in editing sentences before submitting them." Conversely, the students in the human feedback condition appreciated a personalized explanation and contextual example, as they thought that the teacher feedback gave them an in-depth understanding that extended past grammar and encompassed style, tone, and coherence.

Theme 2: Effect on Self-Correction and Autonomy

AI feedback facilitated self-directed correction, in that the learners were prompted to work with the guidelines of correcting themselves. Some respondents stated that automated error corrections had led to increasing awareness of errors in recurrence, which encouraged the habit of monitoring errors. Reflective self-correction was only encouraged by human feedback through communication with the teacher. Students emphasized that the discussion of feedback made it possible to learn more about the rules of writing and inspired them to make intentional corrections.

Theme 3: Impact on Creativity and Expression

The human feedback was always attributed to creative expression. The participants indicated that idea development, structure, and vocabulary comments by the teachers promoted imagination. AI feedback, though grammatically correct, was not as effective in encouraging originality. Other learners said that in some cases, automated suggestions did not allow much sentence variation and did not allow experimentation with style. The thematic analysis shows that AI-generated feedback is more accurate in terms of grammar and the ability to correct errors independently and that human feedback is more helpful in terms of reflective learning and creativity. These results are complementary to quantitative findings in that they indicate there should be a hybrid feedback model that exploits the advantages of AI and teacher feedback in the development of holistic English writing.

VI. DISCUSSION OF THE FINDINGS

The results of this research are much more consistent with the existing literature, highlighting the various strengths of AI-generated feedback and human teacher feedback in the process of developing English writing. In line with previous studies of automated written corrective feedback (Li and Hegelheimer, 2013; Nazli et al., 2025), the quantitative outcomes prove that AI-based feedback can produce substantial improvement in grammatical accuracy. This significant growth within the AI feedback condition can also be explained by the fact that automated corrections are immediate, consistent, and explicit, which means that learners are able to detect and efficiently correct the surface-level errors. This helps to confirm previous literature implying that immediate and frequent feedback allows form-based learning and promotes accuracy-based revision processes. Nevertheless, the results also substantiate the literature concerns over the shortcomings of the AI feedback in higher-order writing skills. Although AI feedback provided small returns on creativity, the human feedback group had considerably more enhancement in expression of creativity. This is reminiscent of Hyland's (2003) claim that teacher feedback is very important in shaping idea formation, rhetoric, and audience consciousness. Human feedback, based on contextual knowledge and pedagogical purpose, seems more appropriate to foster originality, coherence, and flexibility in style, which automated tools cannot usually embrace because of their regulated and generalized form.

The qualitative results also add more details to this discussion by demonstrating the

dissimilarities in how learners interact with different types of feedback. Students receiving AI feedback also acquired better self-correction and autonomy, which, again, supports the Zhang (2024) results that AI-based software is capable of fostering the development of metacognitive learning and independent revision practices. Frequent exposure to the automated corrections allowed the learners to become aware of the common grammar structures and become sentence aware of errors. However, more intense reflective learning was observed among the learners who obtained human feedback, which had dialogic explanations and negotiation of meaning, which were mentioned in feedback noticing studies (Language Testing in Asia, 2024). The quantitative results are supported by creativity-related themes of the qualitative data. Students viewed teacher responses as more conducive to creative writing and open expression, whereas AI responses were perceived to be limiting, and this resulted in repetitive sentence formatting. This argument justifies the critiques in recent research that AI tools, regardless of the level of linguistic sophistication, are insensitive to narrative subtlety and rhetorical purpose (Posthumanism.co.uk, 2025). All in all, the results contribute to the results of a complementary or hybrid feedback model that is promoted by modern studies (Junaid, 2025). AI-generated feedback is very useful to enhance grammatical accuracy and promote autonomous error correction, but human feedback can never be replaced to develop creativity, reflection, and higher-order writing skills. Combining the two methods can hence optimize the results of learning trading efficiency against pedagogical richness. The research has been added to the emerging agreement that AI ought to enhance, but not to substitute, human teacher feedback in holistic English writing training.

VII. CONCLUSION

The paper shows that AI feedback and human teacher feedback exert different and complementary effects on the development of English writing. AI-generated feedback was very useful in enhancing grammar correctness and the development of independent self-correction by recognizing errors immediately and regularly. By comparison, human feedback had a more significant influence in improving creativity, reflective learning, and higher-order writing skills through the provision of contextualized, personalized, and dialogic feedback. The results of the mixed methods prove that no single method in itself is sufficient to discuss the multifaceted nature of writing proficiency. Rather, a unified feedback system that incorporates the effectiveness of AI tools with the educational richness of human education is the most compatible and efficient approach. Accuracy, creativity, and learner autonomy in the holistic English writing pedagogy can be promoted with the help of such a hybrid approach.

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