

Text-Level Effects of AI-Supported Revision in EFL Writing: Evidence from Score Changes and Revision Patterns

Xuan Thu Thi Tuong *

Faculty of Information Technology, Ho Chi Minh City University of Foreign Languages – Information Technology, Vietnam.

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Abstract

This study examines the text-level effects of AI-supported revision in EFL writing through evidence from score changes and revision patterns. Thirty Vietnamese EFL university students wrote an initial draft without AI support and then revised the same draft with ChatGPT. The drafts were assessed using a 10-point analytic rubric, and the revisions were coded by type. The results showed a modest but statistically significant increase after AI-supported revision, $t(29) = 3.01$, $p = .005$. The mean score increased from 6.5 to 6.7, with a mean gain of 0.25 points. However, the changes were uneven: 19 students improved, six showed no change, and five received lower scores. Most revisions involved grammar correction, vocabulary replacement, and sentence clarification. Idea expansion and organization changes were less frequent. The findings suggest that AI-supported revision mainly affects surface-level features of EFL writing. Therefore, AI-supported drafts should be examined through both score changes and revision patterns, not only through final text quality.

Keywords: Artificial Intelligence Applications; EFL Writing; AI-Supported Writing; Chat GPT; Revision Behavior.

1. Introduction

Generative artificial intelligence (AI) is increasingly used in English as a Foreign Language (EFL) writing. Tools such as ChatGPT can provide immediate language feedback, suggest alternative expressions, and support draft revision. Previous studies show that AI tools can help learners improve some aspects of writing, including grammar, vocabulary, fluency, and language accuracy [1], [2], [3]. These functions make AI useful for revision, especially when learners need quick support with language problems in their drafts.

However, improvement after AI use is not always clear or consistent. An AI-supported draft may appear more fluent, but this does not necessarily mean that the text has improved at all levels. Some studies suggest that AI support may be more effective for selected dimensions such as vocabulary, language use, or sentence clarity, while organization, coherence, and deeper content development may show smaller gains [3]. In addition, learners may accept AI-generated suggestions without fully checking whether the revised text still reflects their original meaning [4], [5].

For this reason, AI-supported revision should be examined through its text-level effects. A score increase can show whether the revised draft is better overall, but revision patterns can show where the improvement occurs. For example, revisions may focus on grammar correction, vocabulary replacement, sentence clarification, idea expansion, or organization change. These categories provide a clearer picture of how AI affects EFL writing at the textual level.

Current research has provided useful insights into the use of ChatGPT in EFL writing. Some studies focus on learners' perceptions, motivation, or general writing improvement [1], [2], [6]. Other studies examine interaction logs and AI-

* Corresponding author: Xuan Thu Thi Tuong

supported revision behavior [5], [7], [8]. However, more evidence is needed to connect writing score changes with text-level revision patterns. This is important because AI may improve surface-level language features without producing deeper changes in content or organization.

To address this issue, the present study examines the text-level effects of AI-supported revision in EFL writing. Thirty Vietnamese EFL university students wrote an initial draft without AI support and then revised the same draft with ChatGPT. The study compares the initial and revised drafts using writing scores and analyzes the types of revisions made after AI support. It aims to clarify whether AI-supported revision improves writing performance and what kinds of textual changes are most common in AI-supported drafts.

2. Literature Review

2.1. AI Feedback and EFL Writing Performance

AI tools are increasingly used to support EFL writing. ChatGPT can provide immediate feedback, explain grammar problems, suggest vocabulary, and offer alternative sentence structures. Previous studies show that AI-assisted writing tools can help learners improve some aspects of writing performance, especially fluency, vocabulary use, and language accuracy [1], [2], [6]. Experimental studies also report positive effects of AI-assisted learning on EFL writing scores, although the degree of improvement may vary across writing dimensions [3].

However, AI support does not improve all aspects of writing equally. Some studies suggest that learners may benefit more in language-related areas than in higher-level writing areas. For example, vocabulary, language use, and sentence clarity may improve more easily than organization, argument development, or deeper coherence [3]. This distinction is important because a revised draft may appear more accurate and fluent, but still show limited development in ideas or structure.

Therefore, the effect of AI in EFL writing should be examined carefully. It is not enough to ask whether AI improves writing in general. It is also necessary to identify which aspects of writing improve and which aspects remain limited after AI-supported revision.

2.2. AI-Supported Revision and Text-Level Changes

Revision is an important stage in writing because it allows learners to improve meaning, organization, and language. In AI-supported writing, revision is influenced by external feedback generated by the system. Learners can ask ChatGPT to correct sentences, improve word choice, clarify meaning, or suggest better organization. This makes revision faster and more accessible, but it also changes the nature of revision.

Previous studies show that AI-supported writing often involves multiple exchanges between learners and AI. Learners ask questions, receive feedback, review suggestions, and revise their drafts [7]. These interaction records are useful because they show how learners use AI during writing, not only what the final draft looks like. Other studies also show that the way learners use AI suggestions matters. Writers who modify AI-generated text tend to produce better essays than those who accept AI-generated text without changes [5].

From a text-level perspective, AI-supported changes can occur at different levels. Some changes are local, such as grammar correction, vocabulary replacement, and sentence clarification. Other changes are more global, such as idea expansion, organization change, and improvement of argument structure. The difference between these revision types is important because local changes may improve readability, while global changes may contribute more to content development and overall writing quality.

At the same time, AI-supported revision may create risks. AI suggestions may sound fluent but may not fully match the learner's intended meaning. When learners accept these suggestions without careful checking, the revised draft may lose personal voice or change the original message [4], [5]. For this reason, text-level revision patterns need to be examined together with writing scores.

2.3. Research Gap

Previous studies have provided useful evidence on the role of AI in EFL writing. Some studies have examined learners' writing performance and motivation after using ChatGPT [1], [3]. Others have focused on learner perceptions, strategies, or interaction with AI tools [6], [7], [8]. These studies show that AI can support EFL writing, but they also suggest that its effects are uneven.

However, more evidence is needed to connect writing score changes with text-level revision patterns. A score comparison can show whether revised drafts improve after AI support, but it cannot fully explain how the drafts change. Revision analysis can show whether changes occur mainly in grammar and vocabulary, or whether they also involve idea development and organization. This distinction is important for understanding the actual text-level contribution of AI-supported revision.

The present study addresses this gap by examining both score changes and revision patterns in AI-supported EFL writing. It compares initial drafts and ChatGPT-supported revised drafts produced by 30 Vietnamese EFL university students. It also codes the revisions by type to identify the most common textual changes after AI support. This approach provides a clearer view of the text-level effects of AI-supported revision and where its limitations remain.

3. Methodology

3.1. Research Design

This study used a classroom-based within-subject design to examine the text-level effects of AI-supported revision in EFL writing. The same participants produced two drafts: an initial draft written without AI support and a revised draft produced after using ChatGPT. The initial and revised drafts were compared to identify score changes after AI-supported revision.

In addition to score comparison, the study analyzed revision patterns in the revised drafts. The purpose was not only to examine whether writing scores changed, but also to identify what types of textual changes occurred after AI support. This design allowed the study to connect quantitative score changes with revision-based evidence.

3.2. Participants

The participants were 30 Vietnamese EFL university students enrolled in an English writing course at a Vietnamese university. Their English proficiency levels ranged from A2 to B1. All participants had basic experience using digital tools, but they had not received formal training in using ChatGPT for academic writing. The activity was conducted as part of a classroom writing task.

3.3. Writing Task and Procedure

Participants were asked to write a short opinion paragraph of approximately 180–220 words on the topic “Should university students use AI tools for learning English writing?” This topic was selected because it was familiar to the participants and directly related to their learning context. It also allowed them to express an opinion, provide reasons, and include simple examples.

The procedure included two main stages. In the first stage, participants wrote an initial draft without using AI tools. This draft was used as the baseline for comparison. In the second stage, participants used ChatGPT to revise the same draft. They were allowed to ask ChatGPT for feedback on grammar, vocabulary, sentence clarity, idea development, and organization. After receiving feedback, they revised their drafts and submitted the final AI-supported version.

3.4. Data Collection

The data included initial drafts, AI-supported revised drafts, and revision records. The initial and revised drafts were used to compare writing scores before and after AI-supported revision. The revision records were used to identify the types of changes made in the revised drafts.

The analysis focused on observable textual changes between the two drafts. These changes included grammar correction, vocabulary replacement, sentence clarification, idea expansion, organization change, and meaning distortion. This allowed the study to examine AI-supported revision at the text level rather than relying only on final scores.

3.5. Data Analysis

The initial and revised drafts were scored using a 10-point analytic rubric. The rubric included four criteria: task response and idea clarity, organization and coherence, language accuracy, and vocabulary and expression. Each criterion was worth 2.5 points. To improve scoring consistency, the drafts were evaluated by two raters using the same rubric. Any differences in scores were discussed before the final scores were recorded.

The scores were analyzed using descriptive statistics and a paired-samples t-test. The normality of score differences was checked before the t-test. The analysis reported the mean scores, standard deviations, mean difference, confidence interval, significance value, and effect size.

Revision records were coded by revision type. Six categories were used: grammar correction, vocabulary replacement, sentence clarification, idea expansion, organization change, and meaning distortion. The frequency of each revision type was counted to identify the most common revision patterns after AI support. This analysis helped show whether AI-supported revision mainly affected local language features or broader aspects of writing.

4. Results

4.1. Writing Score Changes

The score analysis showed a modest improvement after AI-supported revision. The mean score increased from 6.5 in the initial drafts to 6.7 in the revised drafts, with a mean gain of 0.25 points. A paired-samples t-test was conducted to compare the initial draft scores and the AI-supported revised draft scores. The result showed a statistically significant increase after AI-supported revision, $t(29) = 3.01$, $p = 0.005$, 95% CI [0.08, 0.42]. The normality assumption for the score differences was checked using the Shapiro-Wilk test and was not violated, $p = 0.120$. The observed effect size was medium, Cohen's $d = 0.55$.

However, the improvement was not uniform across participants. Nineteen participants improved their scores, six showed no change, and five received lower scores after revision. This shows that AI-supported revision produced a positive overall effect, but the effect was modest and uneven.

Table 1 Summary of writing score changes

Score Change Category	Number of Participants	Percentage
Improved	19	63.3%
No change	6	20.0%
Decreased	5	16.7%
Total	30	100%

Table 2 Descriptive and inferential statistics

Measure	Initial Draft	Revised Draft	Difference
Mean	6.5	6.7	0.25
Standard deviation	0.6	0.7	0.45
Sample size	30	30	30
Paired-samples t-test	-	-	$t(29) = 3.01$, $p = 0.005$
95% confidence interval	-	-	[0.08, 0.42]
Cohen's d	-	-	0.55

4.2. Revision Outcome Patterns

The comparison between the initial drafts and the AI-supported revised drafts showed four revision outcome patterns: substantive revision, surface revision, limited revision, and problematic revision. These patterns were identified from the revised drafts and revision records.

Substantive revision was observed when participants made language changes together with some improvement in idea development or organization. Surface revision was observed when the revised draft mainly showed grammar correction, vocabulary replacement, or sentence clarification. Limited revision occurred when only a few changes were

made after AI support. Problematic revision occurred when AI-supported changes made the writing more fluent but weakened meaning, clarity, or consistency.

Table 3 Distribution of Revision Outcome Patterns

Revision Pattern	Outcome	Number of Participants	Percentage	Main Features
Substantive revision		8	26.7%	Language changes with some idea or organization improvement
Surface revision		12	40.0%	Mainly grammar, vocabulary, and sentence-level changes
Limited revision		5	16.7%	Few changes between initial and revised drafts
Problematic revision		5	16.7%	AI-supported changes weakened meaning or clarity
Total		30	100%	

The most common pattern was surface revision. This indicates that AI-supported revision mainly helped participants improve language accuracy and readability. Fewer participants made broader textual changes related to idea development or organization. The presence of problematic revisions also shows that a more fluent revised draft was not always a stronger draft.

4.3. Types of Textual Revisions

The revision coding showed that most AI-supported changes occurred at the sentence level. Grammar correction, vocabulary replacement, and sentence clarification were the most frequent revision types. These revisions often made the drafts more accurate and easier to read.

Broader textual revisions were less common. Only 11 drafts showed idea expansion, and seven drafts showed organization change. In six drafts, some AI-supported revisions changed or weakened the original meaning. This result suggests that AI support was more effective for local language improvement than for broader content or structure improvement.

Table 4 Types of Textual Revisions in AI-Supported Drafts

Revision Type	Number of Drafts	General Pattern
Grammar correction	26	Most common revision type
Vocabulary replacement	23	Frequent changes to word choice and expression
Sentence clarification	21	Common changes to improve readability
Idea expansion	11	Some participants added reasons or examples
Organization change	7	Limited changes to paragraph flow
Meaning distortion	6	Some revisions changed or weakened the original meaning

Overall, the results show that AI-supported revision produced a statistically significant but modest score increase. The revision analysis also shows that most changes were local and language-focused. Broader changes related to ideas and organization were less frequent, and some revisions created problems in meaning. This suggests that the text-level effects of AI-supported revision should be evaluated through both score changes and revision patterns.

5. Discussion

5.1. Score Changes After AI-Supported Revision

The findings show that AI-supported revision produced a statistically significant but modest improvement in EFL writing scores. The mean score increased from 6.5 to 6.7, with a mean gain of 0.25 points. This result suggests that ChatGPT support can help learners improve their revised drafts, but the practical size of the improvement was limited.

This finding is consistent with previous studies showing that AI tools can support EFL writing performance, especially in language-related areas such as grammar, vocabulary, and fluency [1], [2], [3]. However, the result also shows that AI support should not be understood as an automatic way to produce strong writing improvement. Although 19 participants improved after revision, six showed no change and five received lower scores. This uneven pattern suggests that AI-supported revision may improve some drafts but not all drafts.

The score distribution is important because it shows that the final revised draft alone may not fully represent the text-level effects of AI support. A statistically significant score increase can indicate an overall positive effect, but it does not explain where the improvement occurred. For this reason, revision-pattern analysis provides additional evidence about how AI-supported revision changes EFL writing texts.

5.2. Local Text-Level Revision as the Main Pattern

The revision analysis showed that most AI-supported changes were local text-level changes. Grammar correction, vocabulary replacement, and sentence clarification were the most common types of revision. This suggests that ChatGPT was most useful for helping learners improve local language features. These changes made many revised drafts more accurate, clearer, and easier to read.

This result is consistent with previous research showing that AI feedback can support language accuracy and vocabulary use in EFL writing [1], [3], [6]. It also supports the view that AI tools are especially useful when learners need immediate feedback on sentence-level problems. For A2–B1 learners, this type of support can be helpful because grammar errors, limited vocabulary, and unclear sentences often affect writing quality.

However, local text-level revision does not necessarily mean broader textual improvement. In this study, idea expansion and organization change were less frequent. Only 11 drafts showed idea expansion, and only seven drafts showed organization change. This indicates that AI-supported revision mainly improved how learners expressed ideas, rather than how they developed or organized those ideas. Therefore, AI-supported revision may make a text more readable without substantially changing its content or structure.

5.3. Limits of AI-Supported Revision

The results also show some limitations of AI-supported revision. Five participants received lower scores after revision, and six drafts showed meaning distortion. In these cases, AI-supported changes sometimes made the language more fluent but weakened the original meaning or reduced clarity. This finding is important because fluent language can create the impression of improvement even when the revised text becomes less accurate or less connected to the learner's intended message.

This problem is related to previous concerns about overreliance on AI-generated suggestions [4], [5]. When learners accept AI feedback without checking its meaning, the revised draft may lose focus or become less personal. Yang et al. also found that modifying AI-generated text was associated with better writing quality, while accepting AI-generated text without changes could lead to weaker outcomes [5]. The present study supports this point from a revision-pattern perspective. The quality of AI-supported revision depends not only on receiving feedback, but also on how the feedback changes the draft.

Overall, the discussion suggests that AI-supported revision has both value and limits in EFL writing. It can produce measurable score improvement and help learners improve local language features. However, its effect is modest, uneven, and mainly local. Broader aspects of writing, such as idea development and organization, may require more than AI-generated language feedback. Therefore, AI-supported writing should be evaluated through both score changes and revision patterns, because final scores alone cannot fully explain the text-level effects of AI-supported revision.

6. Implications for EFL writing instruction

The findings have several implications for EFL writing instruction in AI-supported contexts. First, teachers should help learners understand that AI-supported revision is not the same as complete writing improvement. In this study, ChatGPT mainly supported grammar correction, vocabulary replacement, and sentence clarification. These changes are useful, but they do not always improve idea development, organization, or argument quality. Therefore, learners should be taught to see revision as more than correcting language errors.

Second, teachers should design revision tasks that require learners to examine different levels of textual change. Instead of asking learners only to use AI to “improve” a draft, teachers can ask them to check specific aspects such as clarity of ideas, paragraph flow, supporting details, word choice, and possible meaning changes. This can help learners move beyond local text-level revision. It can also reduce the risk that learners accept AI-generated corrections without considering the whole text.

Third, writing assessment should include both the initial draft and the revised draft. If teachers assess only the final version, they may not see how much of the improvement comes from revision and what types of textual changes were made. Comparing drafts can help teachers identify whether AI support led to meaningful revision or only local language correction. This approach is useful because the present study showed that some revised drafts became more fluent but did not necessarily become stronger overall.

Fourth, teachers can use revision categories as part of classroom instruction. Categories such as grammar correction, vocabulary replacement, sentence clarification, idea expansion, organization change, and meaning distortion can help learners understand the quality of their revisions. These categories also give teachers a practical way to discuss AI-supported writing without treating all AI changes as equally useful.

Finally, teachers should remind learners that AI-generated feedback needs to be checked against the writer’s intended meaning. AI may suggest fluent sentences, but these sentences may change the original message or weaken the learner’s voice. For this reason, AI should be used as a revision support tool, not as the final authority on writing. In EFL writing classrooms, the goal should be to help learners use AI to improve drafts while still maintaining responsibility for meaning, organization, and the quality of text-level changes.

7. Limitations and future directions

This study has several limitations. First, the sample size was limited to 30 Vietnamese EFL university students in one classroom context. Although the data provided useful evidence of score changes and text-level revision patterns, the findings should be interpreted as exploratory rather than generalizable. Future studies should include larger and more diverse samples from different proficiency levels and educational contexts.

Second, the study used only one short opinion writing task. The topic was familiar to the participants and suitable for A2–B1 learners, but different genres may produce different revision patterns. For example, argumentative essays, reports, or research-based writing may require more complex idea development and organization. Future research should examine the text-level effects of AI-supported revision across different writing genres and task types.

Third, the study examined short-term revision only. It compared initial drafts and AI-supported revised drafts in one classroom activity. Therefore, it cannot show whether learners develop stronger writing ability over time or whether they can apply revision skills in later tasks without AI support. Longitudinal studies are needed to examine the long-term effects of AI-supported revision on EFL writing development.

Fourth, the revision analysis focused on observable textual changes between drafts. Although this approach helped identify revision types, it did not fully capture learners’ thinking during revision. Future studies may combine draft comparison with interviews, screen recordings, or think-aloud protocols to better understand why learners accept, modify, or reject AI-generated suggestions.

Finally, this study did not include a separate control group. The within-subject design allowed comparison between initial and revised drafts from the same participants, but future studies could compare AI-supported revision with teacher feedback, peer feedback, or traditional self-revision. Such comparisons would provide clearer evidence of the specific contribution of AI to text-level changes in EFL writing revision.

8. Conclusion

This study examined the text-level effects of AI-supported revision in EFL writing by analyzing score changes and revision patterns. Thirty Vietnamese EFL university students wrote an initial draft without AI support and then revised the same draft with ChatGPT. The findings showed a modest but statistically significant improvement after AI-supported revision. The mean score increased from 6.5 to 6.7, with a mean gain of 0.25 points.

However, the improvement was uneven. Nineteen participants improved, six showed no change, and five received lower scores after revision. This indicates that AI-supported revision can improve some drafts, but it does not automatically improve all writing outcomes. The revision analysis also showed that most changes were related to grammar correction, vocabulary replacement, and sentence clarification. Broader textual revisions, such as idea expansion and organization change, were less frequent.

Overall, the study suggests that ChatGPT can support EFL writing revision, especially at the sentence and local language level. However, AI-supported revision should not be evaluated only through final writing scores. Revision patterns are also important because they show how the text changes after AI support. In EFL writing instruction, AI should be used as a revision support tool that helps learners improve drafts while still requiring them to check meaning, organization, and the quality of text-level changes.

Compliance with ethical standards

Acknowledgments

ChatGPT was used only for language editing support. The author developed the study design, analysis, and content, and takes full responsibility for the manuscript.

Disclosure of conflict of interest

The authors declare that there is no conflict of interest.

Statement of ethical approval

Ethical approval was not required because this study is a review article and did not involve human participants, animals, or clinical data collection.

Statement of informed consent

Informed consent was not required because this study is a review article and did not involve human participants.

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