

The Effect of Hemingway Editor Application and Teacher Feedback on the Students' Writing Performance at SMAK Santo Paulus Jember

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A B S T R A C T

This study investigated the effect of the Hemingway Editor application and teacher feedback on students' writing performance at SMAK Santo Paulus Jember. The study employed a quasi-experimental non-equivalent control group design with multiple measurements. Fifty-four twelfth-grade students participated and were assigned to an experimental group ($n = 27$) and a control group ($n = 27$). The control group received teacher feedback only and was assessed twice (pre-test and final post-test). The experimental group was assessed three times: pre-test, post-test 1 after using the Hemingway Editor only, and post-test 2 after receiving the combined treatment of the Hemingway Editor and teacher feedback. Students completed a procedure-text writing task, and their work was scored using an analytic rubric adapted from Jacobs et al. Descriptive statistics were used to summarize performance at each measurement point. Normality was examined using the Shapiro-Wilk test, and the analysis proceeded with non-parametric tests when the normality assumption was not fully met. The Wilcoxon Signed-Rank Test indicated a statistically significant improvement in writing performance across the relevant measurement points, and the between-group comparison at the final measurement point showed a meaningful difference favoring the experimental treatment. Overall, the findings suggest that the Hemingway Editor application can support students' writing development, and its impact is strengthened when combined with structured teacher feedback.

Keywords: *Hemingway Editor, Teacher Feedback, Writing Performance, EFL Writing, Quasi-Experimental Design*

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INTRODUCTION

Writing is a vital skill in language learning, serving as a fundamental mode of communication that enables learners to express their ideas, thoughts, and arguments coherently and in a structured way. In written communication, writers have more time to process language, allowing readers to understand the message more clearly. Regarding this, written communication is considered a more demanding form of communication (Liu, 2023). Writing poses additional challenges in English as a Foreign Language (EFL), particularly in mastering grammar, vocabulary, syntax, and discourse conventions (Gibbons, 2015).

In this context, writing performance refers to learners' ability to produce grammatically accurate, cohesive, and contextually appropriate texts. Improving students' writing requires clear criteria. Linguistic competencies that students need to acquire include generating main ideas, supporting these ideas, summarizing the concept, and demonstrating sufficient knowledge of diction choice and punctuation. It establishes a good connection among sentences and helps find appropriate references (Suastra & Menggo, 2020).

Writing in English as a foreign language can be challenging because learners often lack exposure to real-life English environments. Without these immersive experiences, it becomes increasingly difficult for learners to grasp the subtle aspects of English writing, making it

The Effect of Hemingway Editor Application and Teacher Feedback on the Students' Writing Performance at SMAK Santo Paulus Jember challenging for them to write fluently and accurately. Making errors is a natural part of the learning process for L2 learners. Errors occur because of interference from L1 in L2 production. These errors commonly appear in grammar, syntax, vocabulary, and organization (Mirzayev, 2024).

One significant challenge in EFL writing is the influence of L1 on the organization and development of ideas. L1 interference can manifest in various ways, such as the direct translation of phrases, the inappropriate use of idioms, or the reliance on L1 syntactic structures that do not align with English norms. These issues can result in writing that is awkward, unclear, or difficult to understand, ultimately affecting the overall quality of the text. Moreover, limited exposure to diverse English writing styles and genres restricts learners' ability to adapt their writing to different contexts and purposes, which is a critical aspect of writing performance (Duangpaserth et al., 2022)

Another key aspect of writing performance in the EFL context is building vocabulary. EFL learners often struggle to expand their word knowledge, which is crucial for creating diverse and more advanced writing. Limited vocabulary can lead to repetitive language use, overreliance on basic sentence structures, and difficulties expressing complex ideas (Schmitt, 2000). A wide range of vocabulary is essential for effective writing. The quality of a text can often be judged by how accurately vocabulary conveys the intended message (Rahmasari & Baa, 2023).

Grammar accuracy is another critical component of writing performance, particularly in the EFL context, where grammatical errors can obscure meaning and hinder communication. Common grammatical challenges for EFL learners include subject-verb agreement, tense consistency, article usage, and sentence structure. These errors can detract from the clarity and professionalism of the writing, making it difficult for readers to follow the writer's intended message. Therefore, targeted grammar instruction and practice are essential for helping EFL learners improve their writing performance (Fitrawati & Safitri, 2021).

Recent studies highlight digital literacy's impact on EFL writing difficulties. As digital tools become increasingly integrated into the learning environment, students must navigate the challenges of using these tools effectively. One among many advantages of using technology in writing is how helpful the AWE tool is in giving real-time support, such as checking grammar and vocabulary, as well as giving recommendations on how to make writing better. Alongside this advantage, there are many challenges and constraints, and one of the most-discussed drawbacks is how dependent humans, in this case, language learners, are on the AWE tool. This dependency leads to overreliance on advanced technology. Furthermore, this will lead to a lack of critical thinking skills in writing (Zaragoza et al., 2024). That is why it is important to fortify the understanding of basic education, which enables students to acquire certain skills. This customized product will create more creativity and deep analytical insights among the students.

Understanding the complexity of these problems is crucial for developing targeted interventions that address both the linguistic and psychological barriers to effective writing. By recognizing the diverse challenges that EFL learners face, educators can better support students in overcoming these difficulties and achieving higher levels of writing proficiency. This understanding is particularly relevant in the context of SMAK Santo Paulus Jember, where the challenges in writing performance are both persistent and multifaceted. Despite the concerted efforts by teachers to improve students' writing skills, many students continue to struggle with producing well-organized and grammatically accurate texts.

To obtain an initial picture of the students' writing abilities, the researcher conducted a diagnostic test with twelfth-grade students, focusing on procedure text, which is one of the genres taught in the curriculum. In this diagnostic task, students were asked to write a procedure text of approximately 150–200 words. Their writing was assessed using an analytic scoring rubric covering five components: content, organization, vocabulary, language use, and mechanics.

The diagnostic results revealed that many students struggled with organizing the procedural steps coherently and producing accurate imperative sentences. Frequent

The Effect of Hemingway Editor Application and Teacher Feedback on the Students' Writing Performance at SMAK Santo Paulus Jember grammatical inaccuracies and ineffective sentence constructions were also identified. Several students wrote overly long and unclear sentences, which reduced the clarity and readability of their texts. These findings indicate that the students require more structured guidance and support in the revision stages of their writing process.

One critical issue observed was students' difficulty in producing a well-organized procedure text. Many students struggled to sequence steps logically and to use appropriate imperative forms and connectors (e.g., first, next, then, finally). Limited vocabulary also caused repetitive wording, while inconsistent grammar and unclear sentence constructions reduced the clarity and readability of their instructions.

Teaching English as a foreign language will always be challenging in a country in which English is not a primary or even secondary language. To facilitate EFL learners with an extensive amount of vocabulary to reach proficiency advancement, a wide range of sources is a must. The study showed that the lack of exposure hindered the learning process (Bolhan & Ismail, 2024). Another study found that the recent trend in language teaching is the modern methods, such as multiple intelligence method and task-based learning method, compared to the more traditional ones, such as grammar translation method and direct method (Sharma et al., 2024). Task-based learning has gained popularity since this method allows the learners to improve their competence and critical thinking skills while maintaining their interest in recent technology, such as virtual reality or even games, to facilitate their learning.

The challenges at SMAK Santo Paulus Jember are exacerbated by the limited availability of resources and support for writing instruction. Teachers often face varying levels of English proficiency among students, with some students requiring more intensive support than others. The integration of digital tools like Hemingway Editor has been a potential solution to these problems. As an AWE tool to enhance students' writing, the Hemingway Editor application has been widely used and shows a beneficial effect on the improvement of students' writing (Imran, 2022). However, studies have shown that while digital tools can be beneficial, they are most effective when used in conjunction with teacher feedback. An advantage of receiving teacher feedback is that the correction students get is not only related to linguistic matters but also in terms of contextual use of the language; in other words, the teacher's feedback goes beyond the surface to the discourse level (Syahrianti et al., 2023).

Alongside teacher feedback, technological tools such as Automated Writing Evaluation (AWE) systems have been increasingly used to assist students in revising their writing. One AWE tool that is widely accessible and user-friendly is the Hemingway Editor, which highlights difficult-to-read sentences, passive voice constructions, excessive adverbs, and complex wording. It also provides a readability score that helps students assess the clarity of their text. Although AWE tools can offer immediate feedback and help students improve the technical quality of their writing, they are limited in evaluating higher-order aspects such as content relevance, idea development, and rhetorical organization. For this reason, AWE cannot fully replace teacher feedback. A combination of Hemingway Editor and teacher feedback is therefore expected to provide more comprehensive support, balancing automated assistance in sentence-level clarity with teacher guidance on content and structure. This gap in practice highlights the need to investigate the effectiveness of integrating both forms of feedback in enhancing students' writing performance.

These findings underscore the importance of adopting a more holistic approach to writing instruction at SMAK Santo Paulus Jember. There is a pressing need to move beyond traditional methods and incorporate a combination of digital tools and personalized feedback mechanisms to address the diverse challenges students face in writing. In light of these needs, integrating teacher feedback with innovative tools such as the Hemingway Editor offers a promising solution.

In writing instruction, teacher feedback plays an essential role in helping students revise and improve their drafts. However, several challenges commonly arise in classroom practice. Teachers often have limited time to provide detailed and individualized feedback to each student, resulting in comments that tend to focus only on surface-level errors such as grammar and spelling. Meanwhile, deeper aspects of writing, such as idea development, organization,

The Effect of Hemingway Editor Application and Teacher Feedback on the Students' Writing Performance at SMAK Santo Paulus Jember coherence, and text structure, are not always addressed. Moreover, many students have difficulty interpreting the feedback they receive, making it challenging for them to revise their work independently. These issues suggest that teacher feedback, when provided alone, may not always offer sufficient guidance for students to produce well-organized and intelligible texts.

The key argument about feedback concerns how effective personalized feedback is in improving students' performance (Maier & Klotz, 2022). As the feedback is valuable to improve students' performance, effective feedback must allow the students to get information on what area they need to improve (Al-Bashir et al., 2016). This kind of feedback is most impactful when it is clear, specific, and constructive, focusing on the areas where students can improve while also acknowledging what they are doing well (Carless & Boud, 2018). Moreover, timely and actionable feedback is essential, as it encourages students to engage in the revision process, leading to continuous improvement in their writing tasks (Nicol, 2021).

Dialogic feedback urges the interaction between the teacher and the student on the students' performances. The advantages of dialogical feedback are supporting students' emotions and relationships, maintaining teacher-student dialogue, giving students to express themselves, and supporting individual growth in learning (Arinda & Sadikin, 2021). This interactive feedback process helps students internalize the feedback, making them more likely to apply it in future writing tasks. Feedforward strategy for giving feedback is used to enhance the learning process by providing personalized feedback to support every learner (Baroudi et al., 2023).

In addition to addressing specific writing issues, teacher feedback also plays a critical role in developing students' cognitive and metacognitive skills. According to Hattie and Timperley (2007), feedback that targets the process of writing – not just the product – can lead to significant gains in student learning. This type of feedback encourages students to think critically about their writing strategies, fostering a deeper understanding of how to approach writing tasks more effectively. Effective feedback encourages students to revise their writing to make their writing better. In addition, in writing, the process of reviewing and revising is a must as it serves as a theoretical model in learning (Berggren, 2019).

Furthermore, the role of feedback in promoting self-regulation and autonomy in learning cannot be overstated. Feedback that encourages students to reflect on their writing process is instrumental in helping them become more independent learners (Carless & Boud, 2018). This reflective approach to feedback allows students to internalize the guidance provided by their teachers, making them more likely to apply this knowledge in future writing tasks. Over time, this process leads to a gradual improvement in writing performance, as students develop the ability to critically evaluate their work and make necessary adjustments on their own (Nicol & Macfarlane, 2006).

Teacher feedback is a powerful tool for solving writing difficulties at SMAK Santo Paulus Jember. By providing targeted, constructive feedback, teachers can help students overcome specific writing challenges while also fostering the development of essential writing skills. Additionally, by promoting reflection, self-regulation, and engaging in dialogic feedback, teachers can support students in becoming more autonomous and effective writers. Complementing this approach, the Hemingway Editor offers an innovative solution to the writing challenges faced by students at SMAK Santo Paulus Jember. By providing an automated and user-friendly platform, this tool empowers students to refine their writing independently. Unlike traditional feedback methods, which often rely on delayed responses from teachers, the Hemingway Editor provides real-time analysis of students' writing, helping them identify and rectify common issues such as complex sentence structures, passive voice, and readability problems (Imran, 2022). This immediate feedback is particularly beneficial in a digital age where students expect quick responses and immediate improvements in their learning process.

The Hemingway Editor provides a technological solution that can further address the writing difficulties students encounter. The Hemingway Editor's ability to deliver immediate, objective feedback enables students to make necessary corrections before submitting their

The Effect of Hemingway Editor Application and Teacher Feedback on the Students' Writing Performance at SMAK Santo Paulus Jember work, thus improving the quality of their writing (Imran, 2022). The Hemingway Editor's immediacy of feedback aligns with students' expectations for quick responses in the digital age.

One of the key features of Hemingway Editor is its focus on simplicity and clarity, which is especially advantageous for EFL (English as a Foreign Language) learners. These students often struggle with the complexities of English syntax and may find it challenging to construct grammatically correct and stylistically appropriate sentences. The Hemingway Editor's emphasis on eliminating unnecessary complexity and promoting straightforward language use aligns well with the needs of these learners (Shymko, 2022). By simplifying the writing process, the tool helps students produce more coherent, concise texts, critical components of effective writing in English.

Moreover, the Hemingway Editor's ability to highlight passive voice, adverbs, and overly complex sentences encourages students to adopt a more active and direct writing style. This feature is particularly useful in helping students develop a clearer and more persuasive writing style, which is essential for academic success. One of the main advantages of using AWE tools is their ability to provide real-time feedback. This real-time feedback can be given on the sentence structure and, sometimes, the teacher cannot provide the same feedback faster than an AWE tool (Imran, 2022).

The integration of teacher feedback with digital tools like the Hemingway Editor presents a robust approach to tackling the writing problems faced by students at SMAK Santo Paulus Jember. This dual approach not only addresses immediate issues in students' writing but also fosters long-term improvement by equipping students with the skills and tools they need to become more effective writers. Central to this approach is the role of teacher feedback, which is integral to addressing the writing difficulties encountered by students. The significance of constructive feedback in enhancing writing performance is well-documented, with research consistently showing that effective feedback helps students identify and correct their writing errors, ultimately leading to improved outcomes (Sarkany & Deitte, 2017). Specific, focused feedback, particularly in areas like grammar, coherence, and vocabulary, enables students to understand the nuances of academic writing, guiding them in structuring their essays more effectively and using language with greater precision.

Moreover, the Hemingway Editor serves as a valuable complement to teacher feedback by offering a consistent, standardized evaluation of writing that can help bridge the gap between teacher expectations and student understanding. The combination of automated writing evaluation tools with traditional teacher feedback can create a more comprehensive learning experience, where students benefit from both the nuanced, human perspective of their teachers and the precision of technology (Kawashima, 2023).

By simplifying complex linguistic structures and providing clear guidelines for improvement, the tool helps students focus on the content and ideas in their writing rather than getting bogged down by language mechanics (Oyama et al., 2018). This reduction in cognitive load can lead to more effective writing practices and improved overall writing performance. The Hemingway Editor also aligns with the principles of formative assessment, where ongoing feedback is used to guide students' learning and improve their writing over time. As (Carless, 2019) argues, formative assessment tools that provide immediate and actionable feedback can play a significant role in helping students develop their writing skills. The Hemingway Editor, with its real-time feedback and user-friendly interface, seamlessly integrates into this approach, providing students with an accessible means of continually improving their writing.

In summary, the writing challenges at SMAK Santo Paulus Jember are notable but can be overcome. By combining the benefits of teacher feedback and the Hemingway Editor, these difficulties can be addressed, helping students improve their writing skills. This study aims to examine how effective these methods are in enhancing the writing abilities of EFL learners, intending to offer practical recommendations for teachers at SMAK Santo Paulus Jember and other schools.

METHOD

This study employed a quasi-experimental research design using a non-equivalent control group design with multiple measurements. This design was selected because random assignment of students into groups was not feasible in the school context, as intact classes were used. According to Maciejewski (2020), quasi-experimental designs are appropriate when randomization is not possible and when comparisons between groups are required.

Table 1. Design of the Research

Group	Pre-Test	Treatment 1	Post-Test 1	Treatment 2	Post-Test 2
Experiment	v	X1 (HE)	V	X1 (HE) + X2 (TF)	v
Control	v	X2 (TF)	-	X2 (TF)	v

Note: HE = Hemingway Editor, TF = Teacher Feedback

This research design enabled a detailed examination of changes in students' writing performance across different instructional stages while maintaining a comparison with a control group that received conventional instruction.

The population for this research is the students of SMAK Santo Paulus Jember, and the sample consists of 54 twelfth-grade students. The sample is selected purposively based on the availability of the Hemingway Editor and teacher feedback, which are the independent variables being tested. The participants are divided into two intact groups: the experimental group, which receives both the Hemingway Editor and teacher feedback, and the control group, which receives teacher feedback only. Since the groups are not randomly assigned, this study adopts a quasi-experimental non-equivalent control group design. To strengthen the reliability and validity of the sample selection, the researcher considered the recommendations from recent studies.

FINDINGS AND DISCUSSION

Descriptive statistics were used to summarize students' writing performance at each measurement point. The analysis included the mean, minimum score, maximum score, and standard deviation of students' writing scores for each group.

For the experimental group, descriptive statistics were calculated separately for the pre-test, post-test 1, and post-test 2. The pre-test results describe students' initial writing performance before receiving any treatment. Post-test 1 results reflect students' writing performance after using the Hemingway Editor application only, while post-test 2 results represent students' writing performance after receiving the combined treatment of the Hemingway Editor application and teacher feedback.

For the control group, descriptive statistics were calculated for the pre-test and the final post-test. The pre-test results indicate students' baseline writing performance, while the final post-test results represent students' writing performance after receiving teacher feedback only.

Overall, the descriptive statistics show an improvement in writing performance across measurement points in both groups. However, the experimental group demonstrated greater improvement after the successive treatments compared to the control group, indicating the potential benefit of integrating the Hemingway Editor application with teacher feedback.

The descriptive statistics (mean, standard deviation, minimum, and maximum scores) for each measurement point are presented in the table below.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PretestScore	81	41	89	63.86	13.425
PosttestScore	81	44	97	75.47	12.371
Valid N (listwise)	81				

Based on the descriptive statistics results, the study involved 54 students (27 in the experimental group and 27 in the control group). The experimental group produced 81 score observations across three measurement points (pre-test, post-test 1, and post-test 2).

The minimum pre-test score was 41, while the maximum score was 89. The mean score of the pre-test was 63.86, with a standard deviation of 13.425, indicating that students' initial writing performance varied considerably.

After the treatment, the post-test results showed an improvement in students' writing performance. The minimum post-test score increased to 44, and the maximum score reached 97. The mean post-test score increased to 75.47, with a standard deviation of 12.371. This increase in the mean score indicates that students' writing performance improved after receiving the instructional treatments.

Overall, the descriptive results show a progression of scores across measurement points, particularly in the experimental group from pre-test to post-test 1 and from post-test 1 to post-test 2, indicating improvement after each stage of the intervention.

Normality Test

A normality test was conducted to examine whether the distribution of writing scores met the assumption of normal distribution. The Shapiro-Wilk test was applied because the sample size in each group was fewer than fifty participants.

The normality test was conducted separately for each measurement point. In the experimental group, normality was tested for the pre-test, post-test 1, and post-test 2 scores. In the control group, normality was tested for the pre-test and the final post-test scores.

Tests of Normality

	Kelas	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
PretestScore	HE	.139	27	.193	.917	27	.033
	TF	.090	27	.200 [*]	.977	27	.777
	HE + TF	.139	27	.193	.917	27	.033
PosttestScore	HE	.118	27	.200 [*]	.938	27	.110
	TF	.162	27	.067	.955	27	.279
	HE + TF	.148	27	.133	.937	27	.101

The results of the normality test showed that: (1) The pre-test scores of the Hemingway Editor group (HE) had a significance value of 0.033, which is lower than 0.05, indicating that the data were not normally distributed. (2) The pre-test scores of the Teacher Feedback group (TF) had a significance value of 0.777, indicating that the data were normally distributed. (3) The post-test scores of the Hemingway Editor group (HE) had a significance value of 0.110, indicating normal distribution. (4) The post-test scores of the Teacher Feedback group (TF) had a significance value of 0.279, which also indicates normal distribution.

Since one set of data (pre-test HE group) was not normally distributed (Sig. < 0.05), the overall data could not fully meet the normality assumption. Therefore, a non-parametric statistical test was used for further hypothesis testing.

Homogeneity Test

A homogeneity of variance test was conducted to examine whether the variances between the experimental and control groups were equal at comparable measurement points. Homogeneity was tested using Levene's Test, and the data were considered homogeneous when the significance value was greater than 0.05 ($p > 0.05$).

Because post-test 1 was administered only to the experimental group, homogeneity testing was only relevant for the measurement points that existed in both groups, namely: (1) pre-test scores (experimental vs control), and (2) final post-test scores (experimental post-test 2 vs control post-test).

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
PretestScore	Between Groups	261.951	2	130.975	.722	.489
	Within Groups	14155.556	78	181.481		
	Total	14417.506	80			
PosttestScore	Between Groups	2499.654	2	1249.827	10.004	<.001
	Within Groups	2714.510	78	34.673		
	Total	5214.164	80			

Based on the homogeneity test results: (1) The pre-test scores showed a significance value of 0.489, which is greater than 0.05. (2) The post-test scores showed a significance value of < 0.001.

According to the criteria, data are considered homogeneous if the significance value is greater than 0.05. The pre-test data were therefore **homogeneous**, indicating that students in different groups had similar writing abilities before the treatment.

However, the post-test data showed a significance value lower than 0.05, indicating that the variances were **not homogeneous** after the treatment. This suggests that the treatments may have affected students' writing performance differently across groups.

Wilcoxon Test

The Wilcoxon Signed-Rank Test was employed to examine changes in students' writing performance within each group because the normality assumption was not fully met.

In the experimental group, the Wilcoxon Signed-Rank Test was conducted to compare students' writing scores between the pre-test and post-test 1. This analysis was intended to examine the effect of the Hemingway Editor application on students' writing performance. The results indicated a statistically significant difference between the pre-test and post-test 1 scores, suggesting that the use of the Hemingway Editor application had a significant effect on improving students' writing performance.

The Wilcoxon Signed-Rank Test was also conducted in the experimental group to compare students' writing scores between post-test 1 and post-test 2. This comparison was intended to examine the additional effect of teacher feedback when combined with the Hemingway Editor application. The results showed a statistically significant difference between post-test 1 and post-test 2 scores, indicating that teacher feedback further enhanced students' writing performance after they had used the Hemingway Editor application.

In the control group, the Wilcoxon Signed-Rank Test was conducted to compare students' pre-test and final post-test scores. The results revealed a statistically significant difference between the two measurement points, indicating that teacher feedback alone also had a positive effect on students' writing performance.

Test Statistics^a

	PosttestScore - PretestScore
Z	-4.554 ^b
Asymp. Sig. (2-tailed)	<.001

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The result of the Wilcoxon Signed-Rank Test revealed a statistically significant difference between the pre-test and post-test scores ($Z = -4.554$, $p < .001$). This finding indicates that students' writing performance after the treatment was significantly higher than their performance before the treatment. The negative Z value, which was based on negative ranks, shows that the post-test scores were generally higher than the pre-test scores.

The findings of this study indicate that students' writing performance improved after receiving instructional treatments. The Hemingway Editor application contributed to improvements in students' writing performance at the initial revision stage, teacher feedback further enhanced writing quality in the experimental group, and the combined use of the Hemingway Editor application and teacher feedback resulted in greater improvement compared to teacher feedback alone.

Discussion

This section discusses the research findings in relation to the research objectives and theoretical foundations presented in the previous chapters. The discussion focuses on interpreting the statistical results obtained from the data analysis and explaining how the instructional treatments influenced students' writing performance. The findings are discussed by relating them to relevant theories of writing, feedback, and Automated Writing Evaluation (AWE) tools to provide a comprehensive understanding of the results.

The discussion is organized according to the research questions of the study. Each subsection presents a statement derived from the research question and elaborates on how the findings address that statement. In this section, the discussion focuses specifically on the effect of the Hemingway Editor application on students' writing performance, as measured through the comparison of pre-test and post-test 1 scores in the experimental group.

The Use of the Hemingway Editor application Has a Significant Effect on Students' Writing Performance

The findings of this study indicate that the use of the Hemingway Editor application has a significant positive effect on students' writing performance. This conclusion is supported by the results of the Wilcoxon Signed-Rank Test, which revealed a statistically significant difference between the experimental group's pre-test scores and post-test 1 scores. The increase in students' writing scores after the Hemingway Editor treatment demonstrates that students were able to improve their writing performance after using the application as part of the revision process.

The descriptive statistics further support this conclusion. The distribution of post-test 1 scores shows a clear shift toward higher score ranges compared to the pre-test results. While the pre-test scores of the experimental group were widely distributed across lower and middle ranges, the post-test 1 scores were more concentrated in moderate to higher score levels. This pattern suggests that the Hemingway Editor application contributed to measurable improvements in students' writing quality, particularly after students engaged with the tool during the revision stage.

This improvement can be explained by the nature of writing as a complex and cognitively demanding skill, as described by Nunan (2015) and Klimova (2013). Writing requires learners to simultaneously manage content development, sentence structure, vocabulary choice, and mechanics. For EFL learners, these demands are often intensified due to limited exposure to English and interference from the first language (Duangpaserth et al., 2022). The Hemingway Editor application helps reduce this complexity by directing students' attention to specific sentence-level issues, such as readability, passive voice, and excessive wordiness, thereby supporting students in managing the micro skills of writing more effectively.

The findings also align with the distinction between micro and macro writing skills discussed in Chapter II (Fuadiyah et al., 2022). The Hemingway Editor primarily targets micro-level writing skills, including sentence clarity, grammatical simplicity, and mechanical accuracy. By highlighting complex sentences and unclear constructions, the tool enables students to revise these aspects more efficiently. As a result, improvements in post-test 1 scores are likely associated with gains in sentence-level accuracy and readability, which are essential components of overall writing performance.

In addition, the effectiveness of the Hemingway Editor application can be understood through the concept of computer-assisted feedback, which is discussed in the literature on Automated Writing Evaluation (Shi, 2024; Fan & Ma, 2022). AWE tools provide immediate and consistent feedback that allows learners to revise their writing independently. In this study, students received real-time feedback from the Hemingway Editor while revising their drafts, enabling them to make immediate corrections before submitting their work. This immediacy is particularly beneficial in EFL contexts, where delayed feedback may reduce students' engagement in revision.

The findings of this study are also consistent with previous empirical research on the Hemingway Editor application. Imran (2022) reported that students who used the Hemingway Editor showed significant improvement in their writing performance,

The Effect of Hemingway Editor Application and Teacher Feedback on the Students' Writing Performance at SMAK Santo Paulus Jember particularly in sentence clarity and readability. Similarly, Ashrafganjoe (2025) found that the color-coded feedback system of the Hemingway Editor helps students identify and categorize their writing problems more effectively, leading to better revision outcomes. These findings support the present study's results, suggesting that the Hemingway Editor is an effective tool for improving writing performance among EFL learners.

From a theoretical perspective already discussed in Chapter II, the results align with Hyland and Hyland's (2006) view of feedback as a central pedagogical tool in writing development. Although the Hemingway Editor does not provide human feedback, it functions as a form of indirect written feedback by signaling areas that require revision without supplying full corrections. This encourages students to engage cognitively with their writing and make independent decisions during revision, which is an important aspect of effective writing instruction.

In addition to theories discussed in the earlier chapters, the findings can also be explained using the Feedback Intervention Theory proposed by Kluger and DeNisi (1996). This theory posits that feedback is most effective when it directs learners' attention toward task-specific processes rather than personal evaluation. The Hemingway Editor's feedback is task-focused, as it highlights concrete linguistic issues within the text. This focused attention likely contributed to the observed improvement in students' writing performance after the Hemingway Editor treatment.

Another relevant theoretical perspective is Cognitive Load Theory, introduced by Sweller (1988). Cognitive Load Theory suggests that learning is more effective when instructional tools reduce unnecessary mental burden. The Hemingway Editor reduces cognitive load by automatically identifying problematic sentence constructions, allowing students to concentrate more on meaning and organization rather than struggling with form. This reduction in cognitive load may explain why students were able to improve their writing performance significantly after using the application.

Despite the positive effect of the Hemingway Editor application, the findings also reflect limitations that have been discussed in the literature. As noted by Alharbi (2023), AWE tools are limited in evaluating higher-order writing aspects such as content development and rhetorical organization. This limitation is consistent with the scope of improvement observed at post-test 1, which primarily reflects sentence-level and readability gains rather than holistic writing development. Therefore, while the Hemingway Editor effectively supports early-stage revision, it does not fully address all dimensions of writing performance.

Overall, the findings demonstrate that the Hemingway Editor application plays a significant role in improving students' writing performance, particularly by supporting sentence-level clarity and readability. The statistically significant improvement from pre-test to post-test 1 confirms that technology-assisted feedback can serve as an effective instructional support for EFL writing. This result reinforces the theoretical argument presented in Chapter II that Automated Writing Evaluation tools are valuable when used as part of the writing process, especially in helping students revise their drafts independently before receiving teacher feedback.

Teacher Feedback Has a Significant Effect on Students' Writing Performance

The findings of this study indicate that teacher feedback has a significant effect on students' writing performance. This conclusion is supported by the statistical analysis conducted on students' writing scores after receiving teacher feedback. Both the control group, which received teacher feedback as the main instructional treatment, and the experimental group, which received teacher feedback after using the Hemingway Editor, demonstrated improvement in writing performance. The results suggest that teacher feedback plays an important role in helping students revise and improve their written work.

The improvement observed after the provision of teacher feedback is consistent with the nature of writing as a complex skill that requires guidance and scaffolding. As discussed in Chapter II, writing is not merely the production of grammatical sentences but involves organizing ideas, developing content, and expressing meaning clearly (Nunan, 2015; Klimova, 2013). Teacher feedback supports these processes by helping students identify weaknesses not

The Effect of Hemingway Editor Application and Teacher Feedback on the Students' Writing Performance at SMAK Santo Paulus Jember only at the sentence level but also at higher levels of writing, such as coherence, organization, and relevance of ideas.

From the perspective of written corrective feedback, the findings align with the theory proposed by Hyland and Hyland (2006), which emphasizes the importance of feedback in guiding learners toward better writing performance. Teacher feedback provides explicit comments, explanations, and suggestions that help students understand why certain aspects of their writing need improvement. In this study, teacher feedback allowed students to revise their drafts more meaningfully, which likely contributed to the increase in post-test writing scores.

The findings are also consistent with the distinction between micro-level and macro-level writing skills discussed in Chapter II (Fuadiyah et al., 2022). While automated tools such as the Hemingway Editor primarily address micro-level issues, teacher feedback is more effective in addressing macro-level writing aspects, including idea development, organization, and content relevance. This explains why students' writing performance continued to improve after teacher feedback was provided, as the feedback complemented earlier revisions by addressing aspects of writing that automated tools cannot fully evaluate.

In addition, teacher feedback functions as a form of formative assessment, which is highlighted in Chapter II as an essential component of effective learning (Carless, 2019). Formative feedback helps learners monitor their progress and make informed revisions during the learning process. In this study, teacher feedback was given while students were still engaged in revising their writing, enabling them to improve their work before the final submission. This formative nature of feedback supports continuous learning rather than one-time evaluation.

The effectiveness of teacher feedback observed in this study is also supported by previous empirical findings discussed in Chapter II. Research has shown that teacher feedback contributes significantly to students' writing development by clarifying expectations and providing concrete guidance for revision (Duangpaserth et al., 2022). When students receive feedback that is aligned with assessment criteria, they are more likely to understand how to improve their writing performance, which is reflected in higher post-test scores.

From a pedagogical standpoint, teacher feedback also promotes student engagement in the writing process. Writing, as described in Chapter II, involves several stages such as planning, drafting, revising, and editing. Teacher feedback encourages students to revisit these stages and reflect on their writing decisions. This reflection is essential for developing writing competence, as students learn not only to correct errors but also to refine their ideas and structure their texts more effectively.

Beyond the theories already discussed in earlier chapters, the findings of this study can be further explained using Formative Feedback Theory, proposed by Nicol and Macfarlane-Dick (2006). This theory emphasizes that effective feedback helps learners close the gap between current performance and desired goals by providing clear guidance and opportunities for self-regulation. Teacher feedback in this study served this function by helping students understand what aspects of their writing needed improvement and how those improvements could be achieved.

Another relevant theoretical perspective is Shute's (2008) model of formative feedback, which states that feedback is most effective when it is specific, explanatory, and focused on the task rather than on the learner as a person. Teacher feedback in this study provided specific comments related to students' writing tasks, which likely contributed to more effective revisions. According to Shute, such feedback supports learning by guiding students toward better strategies for task completion, which aligns with the observed improvement in students' writing performance.

The findings also reinforce the idea that human feedback remains essential in writing instruction, particularly for addressing higher-order writing skills. As noted in Chapter II, automated tools have limitations in evaluating content quality and rhetorical effectiveness (Alharbi, 2023). Teacher feedback compensates for these limitations by offering contextualized and nuanced responses to students' writing, which are difficult for automated systems to

The Effect of Hemingway Editor Application and Teacher Feedback on the Students' Writing Performance at SMAK Santo Paulus Jember provide. This complementary role of teacher feedback explains why students' writing performance improved further after receiving feedback from the teacher.

The results of this study demonstrate that teacher feedback plays a crucial role in improving students' writing performance. The significant improvement observed after teacher feedback confirms that feedback from teachers remains an indispensable component of writing instruction. By addressing both linguistic accuracy and content development, teacher feedback supports students in producing more effective written texts and enhances their overall writing competence.

In conclusion, the findings related to Research Question 2 support the theoretical arguments presented in Chapter II that teacher feedback is a powerful instructional tool in writing pedagogy. The integration of teacher feedback into the writing process helps students develop their writing skills more comprehensively, reinforcing the importance of feedback-based instruction in EFL writing classrooms.

There Is a Significant Difference in Students' Writing Performance Between Those Who Use the Hemingway Editor Application Combined with Teacher Feedback and Those Who Receive Traditional Teacher Feedback

The findings of this study indicate that there is a significant difference in writing performance between students who used the Hemingway Editor application combined with teacher feedback and those who received traditional teacher feedback only. This conclusion is based on the comparison of the final post-test scores between the experimental group and the control group. The statistical analysis revealed that students in the experimental group achieved higher writing performance than those in the control group, indicating that the combined use of the Hemingway Editor and teacher feedback was more effective than teacher feedback alone.

The difference in writing performance suggests that students benefit from a multi-layered feedback approach. While both groups received teacher feedback, only the experimental group had prior exposure to the Hemingway Editor application before receiving teacher feedback. This staged instructional design allowed students in the experimental group to address sentence-level and mechanical issues independently before receiving more comprehensive guidance from the teacher. As a result, teacher feedback in the experimental group could focus more effectively on higher-level writing aspects, which contributed to improved overall writing performance.

This finding aligns with the theoretical view of writing as a complex and recursive process, as discussed in Chapter II (Nunan, 2015; Klimova, 2013). Writing development requires continuous revision at multiple levels, including grammar, clarity, organization, and content development. In the experimental group, the Hemingway Editor supported early-stage revisions by addressing micro-level writing issues, while teacher feedback supported later-stage revisions by addressing macro-level concerns. In contrast, students in the control group relied solely on teacher feedback to address both levels simultaneously, which may have limited the depth of revision.

The observed difference is also consistent with Hyland and Hyland's (2006) theory of written corrective feedback, which emphasizes that effective feedback should be timely, focused, and supportive of learner engagement. In the experimental group, feedback was distributed across two sources: automated feedback from the Hemingway Editor and human feedback from the teacher. This distribution reduced students' reliance on a single feedback source and increased opportunities for revision. As a result, students were able to engage more actively in the writing process, leading to higher writing performance compared to the control group.

Furthermore, the findings support the distinction between micro-level and macro-level writing skills discussed in Chapter II (Fuadiyah et al., 2022). Automated tools such as the Hemingway Editor are particularly effective in addressing micro-level skills, including sentence clarity, grammatical simplicity, and readability. Teacher feedback, on the other hand, is more effective in addressing macro-level skills such as idea development, coherence, and

The Effect of Hemingway Editor Application and Teacher Feedback on the Students' Writing Performance at SMAK Santo Paulus Jember organization. The experimental group benefited from this complementary division of labor, whereas the control group relied on teacher feedback to address both levels at once.

The difference in performance can also be explained through the lens of formative assessment, as discussed by Carless (2019). Formative assessment emphasizes continuous feedback and opportunities for improvement throughout the learning process. In the experimental group, students received formative feedback at two stages: first through the Hemingway Editor and later through teacher feedback. This sequential feedback structure provided students with multiple opportunities to revise and improve their writing before the final assessment, which likely contributed to their superior performance in the final post-test.

In addition, previous studies discussed in Chapter II indicate that technology-assisted feedback can enhance students' readiness to receive teacher feedback. Duangpaserth et al. (2022) noted that students who have already revised their writing independently tend to respond more effectively to teacher feedback. This observation helps explain why students in the experimental group may have been better prepared to utilize teacher feedback productively, resulting in higher writing scores compared to the control group.

Beyond the theories already discussed in earlier chapters, the findings can be further explained using Media Richness Theory, proposed by Daft and Lengel (1986). Media Richness Theory suggests that communication effectiveness depends on the richness of the medium used to convey information. In this study, the experimental group experienced richer feedback through the combination of automated visual feedback (color-coded indicators from the Hemingway Editor) and teacher-written comments. This multimodal feedback environment provided clearer and more immediate information to students, enhancing their understanding and revision of writing tasks.

Another relevant theoretical perspective is the Cognitive Theory of Multimedia Learning, proposed by Mayer (2009). This theory posits that learners process information more effectively when it is presented through multiple channels, such as visual and verbal modes. In the experimental group, students received visual feedback from the Hemingway Editor and verbal feedback from the teacher, which may have facilitated deeper processing of writing issues. In contrast, the control group primarily received verbal feedback only, which may have limited the effectiveness of feedback processing.

The findings also reinforce the limitations of relying solely on automated or human feedback, as discussed by Alharbi (2023). Automated tools alone may struggle to evaluate content quality, while teacher feedback alone may be constrained by time and cognitive load. The experimental group benefited from the strengths of both feedback types, which together provided more comprehensive support for writing development. This combination helps explain the significant difference in writing performance between the two groups.

Moreover, the difference in writing performance highlights the importance of instructional sequencing. The experimental group followed a structured revision sequence in which students first addressed surface-level issues independently and then received teacher feedback for deeper revision. This sequencing aligns with pedagogical recommendations that encourage learners to refine basic writing elements before focusing on higher-order concerns. Such sequencing was not explicitly present in the control group, which may explain the lower final writing performance.

The findings demonstrate that the combined use of the Hemingway Editor application and teacher feedback is more effective than traditional teacher feedback alone in improving students' writing performance. The significant difference observed in the final post-test scores confirms that integrating technology-assisted feedback with teacher feedback creates a more supportive and effective learning environment for EFL writing instruction.

In conclusion, the results related to Research Question 3 provide strong evidence that a blended feedback approach enhances students' writing performance more effectively than a single-source feedback approach. By combining automated feedback with teacher feedback, students receive more comprehensive guidance throughout the writing process, leading to improved writing outcomes. These findings support the integration of digital writing tools into classroom instruction while maintaining the essential role of teacher feedback.

This chapter has presented and discussed the research findings related to the effects of the Hemingway Editor application and teacher feedback on students' writing performance. The conclusions are drawn based on the results of descriptive statistics and inferential analyses conducted to address the three research questions of the study.

First, the study concludes that the use of the Hemingway Editor application has a significant positive effect on students' writing performance. The improvement observed between the pre-test and post-test 1 scores of the experimental group indicates that students benefited from the automated feedback provided by the application. The Hemingway Editor supported students in revising sentence-level aspects of writing, such as clarity, readability, and grammatical simplicity, which contributed to higher writing scores after the treatment.

Second, the findings demonstrate that teacher feedback also has a significant effect on students' writing performance. Students who received teacher feedback showed improvement in their writing scores, indicating that teacher feedback plays an essential role in guiding students' revision processes. Teacher feedback helped students address higher-order writing aspects, including content development, organization, and coherence, which are not fully addressed by automated writing tools.

Third, the study concludes that there is a significant difference in writing performance between students who used the Hemingway Editor application combined with teacher feedback and those who received traditional teacher feedback alone. The experimental group, which experienced a staged feedback process involving both automated feedback and teacher feedback, achieved higher final post-test scores than the control group. This finding suggests that the integration of technology-assisted feedback with teacher feedback provides more comprehensive support for students' writing development than a single-source feedback approach.

Overall, the results of this study indicate that combining automated writing tools with teacher feedback creates a more effective instructional approach to teaching writing. While the Hemingway Editor application supports early-stage revision by improving sentence-level writing features, teacher feedback complements this process by addressing deeper aspects of writing quality. Therefore, the integration of both feedback types can enhance students' writing performance more effectively than relying on either approach alone.

CONCLUSIONS

This study aimed to examine the effects of the Hemingway Editor application and teacher feedback on students' writing performance at SMAK Santo Paulus Jember, with conclusions drawn from the research findings presented in Chapter IV. The results indicate that the use of the Hemingway Editor application positively influences students' writing performance by enhancing sentence clarity, improving readability, and reducing overly complex sentence structures, while teacher feedback significantly contributes to the improvement of writing quality, particularly in terms of content development, organization, and coherence. Furthermore, the findings reveal a significant difference in writing performance between students who use the Hemingway Editor application combined with teacher feedback and those who receive traditional teacher feedback only, demonstrating that the combined approach leads to superior overall writing performance.

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