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The Influence of Quillbot Towards Students' Writing Skills at Third Semester of English Students at a University

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A B S T R A C T

This study investigated the influence of QuillBot on the writing skills of third-semester English students at Universitas Pahlawan Tuanku Tambusai. QuillBot is an artificial intelligence (AI)-based writing tool that supports users in paraphrasing, correcting grammatical errors, and improving overall writing quality. The study aimed to determine the extent to which QuillBot could enhance students' English writing performance. A quantitative approach with a pre-experimental one-group pretest-posttest design was employed. The sample consisted of 31 third-semester students from the English Language Education Study Program. Data were collected through writing tests administered before and after the treatment and were analysed using the Wilcoxon signed-rank test. The results showed an improvement in students' mean writing scores, from 69.48 on the pretest to 80.09 on the posttest. The statistical analysis indicated a significant difference between the pretest and posttest scores ($p < .05$). These findings suggest that QuillBot had a significant positive influence on students' English writing skills.

Keywords: *Quillbot, Writing Skills, Students, English Learning.*

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INTRODUCTION

As an international language, English is widely taught and studied in Indonesian schools, both in formal and informal educational settings. English language skills have become increasingly important in an interconnected world that relies on information exchange and sophisticated communication. English learners are generally expected to master four fundamental skills: speaking, listening, reading, and writing. These skills enable learners to produce language output, such as spoken communication and written texts (Novitasari & Wardhani, 2022). Among these skills, writing plays an important role because it enables learners to communicate ideas, information, and feelings clearly and systematically.

Writing is one of the essential skills in English language learning. Its importance varies according to the context and objectives of language instruction. Harmer (2006) explains that writing encourages students to focus on the accurate use of language because the writing process requires them to think about language and solve problems that arise during composition. According to Abidin (2012), writing is a process of expressing ideas and thoughts in written form. Therefore, writing can be understood as the ability to communicate ideas, information, and feelings clearly, systematically, and effectively through written language. This ability involves the appropriate use of grammar and vocabulary, as well as the organization of paragraphs and ideas so that the message can be easily understood by readers.

In developing writing skills, learners need to master various microskills. Brown (2001) identifies twelve important writing microskills, including producing appropriate graphemes and orthographic patterns, using suitable vocabulary and word order, applying grammatical conventions, employing various grammatical forms, achieving coherence and cohesion,

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following appropriate discourse and rhetorical patterns, communicating relationships between ideas, distinguishing implied and literal meanings, using culturally appropriate references, and applying effective writing techniques such as prewriting, drafting, paraphrasing, receiving feedback, and revising. These microskills demonstrate that writing is a complex process that requires not only grammatical accuracy but also the ability to organize and communicate ideas effectively.

Writing is particularly important in academic contexts because students are expected to produce various forms of written work, including scientific papers, essays, reports, and other academic texts. However, writing in English remains challenging for many EFL students. Students may experience difficulties in using appropriate grammar, vocabulary, punctuation, capitalization, sentence structure, and paragraph organization. These difficulties can affect the clarity and quality of their writing. Therefore, students need appropriate instructional support to help them identify errors, revise their writing, and gradually develop greater independence in the writing process. In this context, feedback plays an important role because it enables learners to identify weaknesses in their written production and make improvements during the revision process.

The development of digital technology has created new opportunities to support English language learning. In particular, artificial intelligence (AI) has increasingly been integrated into language education because it can provide learners with immediate assistance, personalized support, and opportunities for language practice. Various artificial intelligence (AI)-based writing tools, such as Grammarly, QuillBot, Ginger, Hemingway Editor, and ProWritingAid, have been increasingly used to assist language learners in improving their written production (Farida & Adam, 2024). Research on AI-supported writing has also demonstrated the potential of automated feedback to assist learners in improving the quality of their written work. Fan (2023), for example, examined automated written corrective feedback and found that AI-supported feedback can contribute to the development of EFL students' writing. Similarly, Guo et al. (2024) reported that an AI-supported peer-feedback approach improved the quality of feedback and students' writing performance. These findings suggest that AI can function as a form of instructional scaffolding by providing learners with timely linguistic feedback and opportunities to revise their writing.

Among these tools, QuillBot is an AI-based online application that can assist students in paraphrasing texts, summarizing lengthy sentences, selecting alternative vocabulary, and improving grammatical accuracy (Fitria, 2021). Its ability to provide immediate suggestions makes QuillBot potentially useful as a writing assistant, particularly for EFL students who experience difficulties in expressing their ideas in English. Rather than simply correcting errors, QuillBot can provide alternative linguistic expressions that may help learners explore different ways of communicating their ideas. Consequently, the tool may be particularly useful during the drafting and revision stages of the writing process.

Previous research has indicated that QuillBot can support students' writing development. Syahnaz & Fithriani (2023) reported that Indonesian EFL students perceived QuillBot positively because it helped them improve the content and arguments of their writing, minimize grammatical errors, and enhance their language use. Similarly, Nurmayanti & Suryadi (2023) reported that QuillBot could assist students in composing original scientific writing in English, particularly through paraphrasing and language improvement. Research on students' perceptions has also suggested that QuillBot can help learners improve sentence structure, vocabulary use, grammatical accuracy, and confidence in writing (Dewi et al., 2024). These findings indicate that QuillBot can potentially serve as a useful technological resource during the writing process.

More recent evidence has also examined the effects of QuillBot beyond students' perceptions. El-Garawany (2024) found that a six-week QuillBot-based intervention had positive effects on EFL students' writing performance, writing apprehension, and self-efficacy. This finding is important because it suggests that QuillBot may contribute not only to students' perceptions of writing but also to measurable aspects of their writing development.

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Furthermore, research on other generative AI tools provides additional evidence that AI-supported feedback can contribute to academic writing development. Mahapatra (2024), for instance, reported positive evidence regarding the use of ChatGPT as a formative feedback tool for improving undergraduate ESL students' academic writing skills. Taken together, these studies indicate that AI-based tools can provide valuable support throughout the writing process, particularly when learners actively engage with, evaluate, and revise the suggestions provided by the technology.

Nevertheless, the use of QuillBot does not automatically guarantee improvement in students' overall writing ability. AI-generated suggestions may not always appropriately reflect the writer's intended meaning, context, coherence, or logical development of ideas. Although AI tools can provide immediate linguistic assistance, learners still need to make decisions about whether the suggestions are appropriate for their intended meaning and communicative purpose. Excessive dependence on AI tools may also reduce students' opportunities to think independently and make their own linguistic decisions. Therefore, QuillBot should be regarded as a writing assistant rather than a replacement for students' ideas, creativity, and critical thinking. Students need to evaluate, revise, and selectively use the suggestions provided by AI rather than accepting them without consideration. This concern highlights the importance of AI literacy and pedagogical guidance when integrating AI-based writing tools into language instruction.

Although previous studies have demonstrated the potential of AI-based tools, particularly QuillBot, to support English writing, further research is needed to examine their effectiveness in improving students' actual writing performance. Much of the existing discussion has focused on students' perceptions, experiences, and the usefulness of AI tools, while relatively fewer studies have directly examined measurable changes in students' writing ability following the integration of QuillBot into writing instruction. Although El-Garawany (2024) provides evidence of positive effects on EFL students' writing performance, further investigation is still needed across different educational contexts, learner characteristics, writing tasks, and instructional settings. In addition, the positive findings from AI-supported feedback studies Fan (2023); Guo et al. (2024); Mahapatra (2024) indicate the broader potential of AI in writing instruction, but they do not necessarily establish the same effects for QuillBot in every learning context. Therefore, investigating QuillBot as an AI-based writing assistant is important to determine whether its use can contribute to students' English writing development while maintaining their autonomy and active involvement in the writing process. Such research may provide useful empirical evidence for English teachers regarding the appropriate integration of AI technology into writing instruction and the conditions under which QuillBot can effectively support students' writing performance.

METHOD

Research Design

This study employed a quantitative approach using a pre-experimental one-group pretest-posttest design. The purpose of this study was to investigate whether the use of QuillBot was associated with changes in students' academic writing performance. In this design, the same group of participants was measured before and after the intervention. A pretest was administered to identify students' initial writing performance, followed by an intervention involving the use of QuillBot, and finally a posttest was administered to measure students' writing performance after the intervention. The one-group pretest-posttest design is commonly used to examine changes in an outcome variable following an intervention when a control group is not available (Creswell & Creswell, 2018).

Although this design enables researchers to identify differences between pretest and posttest scores, it does not provide the same level of causal evidence as a randomized controlled design. Changes in students' performance may potentially be influenced by factors other than the intervention. Therefore, the findings of this study are interpreted primarily in

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terms of changes in students' writing performance following the QuillBot intervention rather than definitive causal effects (Shadish et al., 2002).\

Participants

The participants were 31 third-semester students enrolled in the English Language Education Study Program at Universitas Pahlawan Tuanku Tambusai. Purposive sampling was used to select the participants because they were enrolled in courses related to English writing and were therefore considered appropriate for the objectives of the study. Purposive sampling involves deliberately selecting participants who possess characteristics relevant to the research objectives (Etikan et al., 2016). In this study, the participants were selected because they had experience with academic writing activities and were able to participate in the writing tasks and QuillBot-assisted learning activities implemented during the intervention.

Instrument

The primary instrument used in this study was an essay writing test administered during the pretest and posttest. The students were required to produce an academic essay based on a predetermined topic. The pretest was administered before the intervention to identify the participants' initial writing performance, while the posttest was administered after the intervention to identify changes in their writing performance. The students' essays were evaluated using a writing assessment rubric consisting of several components, including organization, grammar, vocabulary, punctuation, and capitalization. A rubric was used to provide systematic criteria for evaluating students' written performance. Rubrics are useful in performance assessment because they provide explicit criteria that can improve consistency and transparency in scoring (Brookhart, 2013). To maintain scoring consistency, the same assessment criteria were applied to both the pretest and posttest. The use of consistent scoring criteria was intended to ensure that differences between the two measurements reflected changes in students' writing performance rather than changes in the assessment standards.

Research Procedures

The research procedures consisted of three main stages: pretest, intervention, and posttest. First, the pretest was administered. Before receiving instruction on QuillBot, the students were asked to write an academic essay without using QuillBot or other AI-assisted writing tools. The purpose of the pretest was to determine their baseline writing performance. Second, the intervention was conducted. The students received a brief training session on how to use QuillBot appropriately in academic writing. The training introduced the main functions of QuillBot relevant to the writing process, including paraphrasing, vocabulary selection, sentence improvement, and grammatical revision.

Following the training, students participated in writing activities for two weeks. During the intervention, students were allowed to use QuillBot to support their writing activities. They were instructed to use the tool primarily during drafting and revision and to evaluate the suggestions generated by QuillBot before incorporating them into their writing. This procedure was intended to encourage students to remain actively involved in the writing process rather than relying entirely on AI-generated output. Third, the posttest was administered. After the two-week intervention, the students completed another academic writing task. The posttest was conducted to measure students' writing performance after the QuillBot-assisted writing activities. The pretest and posttest scores were then compared to determine whether there was a change in students' writing performance.

Data Analysis

The data were analyzed using descriptive and inferential statistics. Descriptive statistics, including the mean and standard deviation, were calculated for both pretest and posttest scores to describe students' writing performance before and after the intervention. Before conducting the inferential analysis, a normality test was performed on the difference

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scores between the posttest and pretest. Testing the difference scores is important because the paired-samples analysis focuses on changes within the same participants rather than treating the pretest and posttest scores as independent observations. If the difference scores were normally distributed, a paired-samples t-test was conducted. The paired-samples t-test is appropriate when two measurements are obtained from the same participants and the difference scores satisfy the assumptions required for parametric analysis (Field, 2018).

If the normality assumption was not satisfied, the Wilcoxon signed-rank test was used as a non-parametric alternative. The Wilcoxon signed-rank test is appropriate for comparing two related measurements when the assumptions for the paired-samples t-test are not met (Pallant, 2020). The significance level was established at $\alpha = 0.05$. If the p-value was less than 0.05 ($p < 0.05$), the difference between the pretest and posttest scores was considered statistically significant. Conversely, if the p-value was greater than or equal to 0.05 ($p \geq 0.05$), the difference was considered statistically non-significant.

In addition to statistical significance, the mean difference between the pretest and posttest scores was examined to determine the direction of change. A higher posttest mean than the pretest mean indicated an improvement in students' writing scores following the intervention. However, because this study used a one-group pretest-posttest design without a control group, the results were interpreted cautiously and were not considered definitive evidence that QuillBot alone caused the observed changes.

FINDINGS AND DISCUSSION

Findings

The results showed an improvement in students' writing performance after the implementation of QuillBot-assisted writing activities. The mean pretest score was 69.48, while the mean posttest score increased to 80.09. Thus, the mean score increased by 10.61 points following the intervention. This descriptive finding indicates that students demonstrated better writing performance after participating in the QuillBot-assisted writing activities. Before conducting the paired-samples analysis, a normality test was performed to determine whether the data met the assumption required for parametric analysis. The results of the normality test are presented in Table 1.

Table 1. Test of Normality

Measurement	Kolmogorov-Smirnov Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Before Using QuillBot	.146	31	.089	.932	31	.051
After Using QuillBot	.130	31	.199	.933	31	.054

Note. Lilliefors Significance Correction.

As shown in Table 1, the Shapiro-Wilk significance value was .051 for the pretest and .054 for the posttest. Both values were greater than 0.05, indicating that the pretest and posttest scores did not significantly deviate from a normal distribution. Therefore, the data were considered sufficiently normally distributed for the paired-samples t-test.

The paired-samples t-test was subsequently conducted to determine whether there was a statistically significant difference between students' pretest and posttest writing scores. The results are presented in Table 2.

Table 2. Paired-Samples t-Test

Pair	Mean Difference	Std. Deviation	Std. Error Mean	95% CI Lower	95% CI Upper	t	df	Sig. (2-tailed)
Before Using QuillBot – After Using QuillBot	-10.61290	6.77091	1.21609	-13.09649	-8.12932	-8.727	30	.000

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The results in Table 2 indicate a statistically significant difference between students' pretest and posttest writing scores, t(30) = -8.727, p < .001. The mean difference was -10.61, indicating that the posttest scores were higher than the pretest scores by approximately 10.61 points. Therefore, the null hypothesis stating that there was no significant difference between students' writing scores before and after the intervention was rejected. To further examine the consistency of the change in students' scores, a Wilcoxon signed-rank test was also conducted. The results are presented in Table 3.

Table 3. Wilcoxon Signed-Rank Test

Comparison	Z	Asymp. Sig. (2-tailed)
After Using QuillBot – Before Using QuillBot	-4.863	.000

The Wilcoxon signed-rank test also indicated a statistically significant difference between the pretest and posttest scores, Z = -4.863, p < .001. The negative Z value reflects the direction of the ranking based on the order of the variables in the analysis. The test therefore provides additional evidence that students' writing scores changed significantly between the two measurements. Overall, the descriptive and inferential findings consistently indicate an improvement in students' writing performance after the QuillBot-assisted writing intervention. The increase in the mean score from 69.48 to 80.09, combined with the significant result of the paired-samples t-test, demonstrates that students performed better in the posttest than in the pretest.

Discussion

The findings indicate that students demonstrated better writing performance after participating in QuillBot-assisted writing activities. The increase of **10.61 points** in the mean score suggests that the intervention was associated with meaningful improvement in students' academic writing performance. The statistically significant paired-samples t-test result further confirms that the difference between the pretest and posttest scores was unlikely to have occurred solely through random sampling variation.

One possible explanation for this improvement is the linguistic support provided by QuillBot during the writing and revision processes. QuillBot provides features that can assist learners in paraphrasing, modifying sentence structures, identifying grammatical problems, and selecting alternative expressions. Such immediate feedback may help students recognize weaknesses in their written production and revise their texts more efficiently. Fitria (2021) reported that QuillBot can serve as an alternative online tool for paraphrasing and rewriting English texts. Similarly, previous research has indicated that students perceive QuillBot as useful for improving vocabulary, sentence structure, and other aspects of writing (Dewi, 2024)

The findings are also consistent with Nurmayanti & Suryadi (2023), who reported that QuillBot could support English Education students in improving their writing. In addition, El-Garawany (2024) found that a QuillBot-based intervention positively affected EFL students' writing performance, writing apprehension, and self-efficacy. These findings suggest that QuillBot may function not merely as a proofreading tool but also as a form of technological scaffolding that supports learners during drafting and revision.

The improvement observed in the present study may also be related to the opportunity for students to receive immediate linguistic suggestions. During the intervention, students could review alternative vocabulary and sentence structures and revise their essays based on the suggestions provided by the application. This process may have helped students produce clearer sentences and reduce some grammatical and mechanical errors. However, the improvement should not be interpreted as evidence that QuillBot independently produced the students' writing. Rather, the results may reflect the interaction between the students' writing efforts, instructional guidance, and the technological assistance provided by QuillBot.

Despite the positive findings, the use of QuillBot also raises concerns regarding students' dependence on AI-assisted writing tools. Latifah et al. (2024) reported that although

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QuillBot offers potential benefits for academic writing, some students may rely too heavily on the tool without critically evaluating the changes generated by the system. Excessive reliance may reduce students' opportunities to make independent linguistic decisions and may potentially affect their critical thinking and creativity. Therefore, the role of the teacher remains important in guiding students to use AI tools reflectively and responsibly.

Zulfikar (2023) similarly emphasized the importance of improving students' writing competence through activities that address grammar, punctuation, practical writing exercises, and peer feedback. This suggests that QuillBot should be integrated into a broader writing pedagogy rather than being treated as a substitute for writing instruction. Students still need opportunities to generate ideas, organize arguments, construct sentences, revise independently, and receive feedback from teachers and peers.

Another important consideration concerns the interpretation of the statistical findings. Although both the paired-samples t-test and Wilcoxon signed-rank test showed statistically significant differences, this study used a one-group pretest-posttest design without a control group. Consequently, the findings demonstrate a significant improvement following the intervention, but they cannot establish with complete certainty that QuillBot alone caused the improvement. Other factors, such as students' additional writing practice, familiarity with the writing task, teacher guidance, or increased confidence, may also have contributed to the observed improvement.

Nevertheless, the findings provide empirical support for the potential use of QuillBot as a supplementary tool in academic writing instruction. The results suggest that when students are taught to use the tool critically and selectively, QuillBot can provide useful linguistic assistance while allowing students to remain actively involved in composing and revising their own texts.

CONCLUSION

The findings indicate that QuillBot-assisted writing activities significantly improved students' academic writing performance. The mean score increased from 69.48 in the pretest to 80.09 in the posttest, with a mean gain of 10.61 points. The paired-samples t-test showed a significant difference, $t(30) = -8.727$, $p < .001$, which was supported by the Wilcoxon signed-rank test, $Z = -4.863$, $p < .001$. QuillBot can therefore serve as a useful supplementary writing assistant for grammar, vocabulary, sentence construction, paraphrasing, and revision. However, teacher guidance remains necessary to prevent overdependence and maintain students' creativity and critical thinking. Since this study used a one-group pretest-posttest design, future research should employ a control group and a larger sample to provide stronger evidence of QuillBot's effectiveness.

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