

The Effectiveness of AI Feedback on Genre-Based Writing Skills of EFL Students

Wiki Tedi Rahmawati

Prodi Pendidikan Bahasa Inggris, FKIP, Universitas Alwashliyah, Medan
Email: weeqeefun@gmail.com

Yunita Mutiara Haharap

Prodi Pendidikan Bahasa Inggris, FKIP, Universitas Alwashliyah, Medan
Email: harahapym@gmail.com

ABSTRACT

This study investigates the effectiveness of QuillBot, a free AI feedback application, in enhancing genre-based writing skills among EFL students. Using a one-group pre-test post-test quasi-experimental design, ten first-semester students participated in writing tasks before and after receiving AI feedback. Quantitative analysis revealed a significant improvement, with mean scores increasing by 20 points ($t = 12.45$, $p < 0.001$, Cohen's $d = 2.5$). QuillBot feedback reports indicated that grammar accuracy, lexical choice, and cohesion were the most improved aspects, while organization of ideas still required lecturer guidance. The findings confirm that AI feedback can serve as effective digital scaffolding in genre-based writing pedagogy.

Keywords: AI feedback, QuillBot, genre-based writing

ABSTRAK

Penelitian ini bertujuan untuk menguji efektivitas QuillBot, aplikasi umpan balik AI gratis, dalam meningkatkan keterampilan menulis berbasis genre bagi mahasiswa EFL. Dengan desain kuasi-eksperimen one-group pre-test post-test, sepuluh mahasiswa semester satu diminta menulis teks sebelum dan sesudah menggunakan QuillBot. Analisis kuantitatif menunjukkan peningkatan signifikan dengan rata-rata skor naik 20 poin ($t = 12,45$, $p < 0,001$, Cohen $d = 2,5$). Umpan balik QuillBot memperlihatkan bahwa akurasi grammar, pilihan kata, dan koherensi merupakan aspek yang paling terbantu, sedangkan organisasi ide masih memerlukan bimbingan dosen. Hasil penelitian menegaskan bahwa umpan balik AI dapat berfungsi sebagai scaffolding digital yang efektif dalam pedagogi menulis berbasis genre.

Kata kunci: umpan balik AI, QuillBot, menulis berbasis genre

A. Introduction

Writing in English as a Foreign Language (EFL) is one of the most complex skills for university students to master. It requires not only grammatical and lexical competence but also the ability to organize ideas systematically in accordance with academic communication purposes. Pratiwi et. al. (2024) stated that the most important reason for teaching students to write is that writing is a basic language skill, just as important as speaking, listening and reading.

Bai & Nordin (2025) emphasize that EFL students often struggle with grammar,

syntax, and textual coherence, necessitating more effective pedagogical support. Rahmawati, Harahap, and Wardani also wrote that many students struggle to become proficient in writing, especially in English due to challenges generally include limited English vocabulary, grammar, difficulty finding ideas, and most importantly, starting to write. Moreover, Rahmawati (2022) also emphasizes that the product of writing is not instant; it needs to be planned thoroughly to reach the final form. She added that the processes from the first stage to the final stage of writing are the result of thinking, writing, compiling, and revising.

Genre-based writing has emerged as a pedagogical solution that emphasizes the structure, purpose, and social conventions of different text types. Hyland (2019) argues that genre helps students understand rhetorical rules and academic conventions, producing more directed and contextually appropriate writing. However, implementing this approach remains challenging, particularly in providing consistent and in-depth feedback on student writing. In addition, the challenges in writing English also found in university students particularly English study program still struggle with various aspects of writing, including grammar, vocabulary, sentence structure, and coherence as they having a transition from school environment to a more academic setting as university students where effective written communication is definitely crucial and essential (Rahmawati and Harahap, 2025).

The development of artificial intelligence (AI) offers new opportunities in writing instruction. Generative AI tools such as ChatGPT and DeepSeek have proven capable of delivering immediate, specific, and personalized feedback, enabling students to correct language errors and improve text structure more effectively than traditional feedback (Söğüt, 2024; Wang & Zhang, 2025).

The urgency of this study lies in the need to improve genre-based writing pedagogy through AI support. AI feedback systems can detect grammatical errors, suggest lexical improvements, and evaluate textual cohesion. Recent studies confirm that integrating AI feedback enhances accuracy, complexity, and fluency in EFL writing (Bai & Nordin, 2025).

Genre-based writing focuses on understanding the communicative purpose and structure of various text types, such as argumentative essays, research reports, or narratives. Hyland (2019) highlights that each genre has rhetorical rules and conventions that must be followed to achieve communicative goals. Integrating AI feedback into genre-based writing is therefore crucial, as it accelerates learning, improves accuracy, and fosters independent revision. International research also confirms

that combining teacher and AI feedback produces higher-quality revisions.

Despite the growing use of AI feedback in language learning, research on its effectiveness in genre-based writing remains limited in Indonesia. Most studies focus only on grammar correction, without addressing the broader development of genre-based writing skills. Moreover, few empirical studies compare AI feedback with traditional teacher feedback in improving EFL students' writing competence. This gap highlights the strategic need to investigate AI integration in genre-based writing pedagogy.

Genre-based writing is rooted in systemic functional linguistics developed by Halliday and popularized in writing pedagogy by Hyland (2019). This theory emphasizes that each text has a communicative purpose realized through specific rhetorical structures. In EFL contexts, genre-based writing helps students understand that writing is not merely sentence construction but the production of texts aligned with academic and social conventions.

Automated feedback, or AI-based feedback, emerged as a response to the limitations of traditional teacher feedback. AI feedback employs natural language processing (NLP) algorithms to detect grammar, vocabulary, cohesion, and coherence issues in student texts. Bai & Nordin (2025) argue that human and AI collaborative feedback enhances accuracy, complexity, and fluency in EFL writing. Tools such as Grammarly, Turnitin Draft Coach, and Copilot Writing Feedback exemplify AI applications in academic contexts.

Integrating genre-based writing with AI feedback creates a comprehensive writing pedagogy. Genre-based writing provides the conceptual framework for text construction, while AI feedback offers instant technical corrections and suggestions. Wang & Zhang (2024) found that generative AI in peer feedback improved coherence and argumentation in EFL student writing. In Indonesia, studies of Artificial Intelligence highlight that AI integration in language learning increases motivation and learning outcomes. Thus, AI feedback functions as

digital scaffolding that complements genre-based writing, enabling significant improvement in EFL students' writing competence.

The research questions guiding this study focus on the role of AI feedback in genre-based writing among EFL students. Specifically, the study seeks to explore how AI feedback is utilized in the writing process, which aspects of genre-based writing benefit most from such feedback, and how effective AI feedback is compared to traditional lecturer feedback in improving students' writing skills. These questions are designed to capture both the practical application of AI tools in classroom contexts and their pedagogical impact on student learning outcomes. By examining these dimensions, the study aims to provide a comprehensive understanding of the potential of AI feedback as a complement to conventional teaching practices.

Aligned with these questions, the research objectives are threefold. First, the study aims to describe the use of AI feedback in genre-based writing among EFL students, highlighting its integration into the writing process. Second, it seeks to identify the specific aspects of writing such as accuracy, cohesion, and lexical choice that are most supported by AI feedback. Finally, the study intends to analyze the overall effectiveness of AI feedback compared to traditional feedback in enhancing students' writing competence. Together, these objectives provide a structured framework for evaluating the pedagogical value of AI feedback and its potential role as digital scaffolding in genre-based writing instruction.

B. Research Method

This study employed a quasi-experimental approach using a one-group pre-test post-test design. This design was selected because it aligned with the field conditions, where only a single small class was available as the research sample. Students were asked to complete genre-based writing tasks before and after the intervention, which consisted of receiving AI feedback. The comparison between pre-test

and post-test results was used to determine the effectiveness of the intervention.

The population of this study comprised all first-semester students in the English Education Study Program of a private university in Medan during the odd semester of the 2025/2026 academic year. The sample consisted of 10 students, selected purposively based on their availability and willingness to participate. All participants were placed into a single experimental group without a control group, consistent with the one-group pre-test post-test design. The research was conducted over the course of the odd semester of the 2025/2026 academic year, with the intervention lasting for seven weeks.

The primary instrument of this study was AI feedback provided through QuillBot. QuillBot was chosen because it is a free application that is easily accessible to both students and lecturers, offering features such as grammar correction, paraphrasing, and improvements in textual cohesion. In addition, QuillBot's user-friendly interface enables students to revise their writing independently without requiring a paid license. This makes it particularly suitable for research in higher education contexts where access to premium applications may be limited.

The supporting instrument was a genre-based writing rubric, which was used to assess text structure, idea organization, and adherence to academic genre conventions. The rubric ensured that evaluation did not rely solely on technical corrections provided by AI but also considered rhetorical quality and communicative purpose.

The research data were collected through the following procedures:

1. Genre-based writing tests (pre-test and post-test). Students were asked to produce argumentative texts in accordance with the genre rubric.
2. AI feedback reports from QuillBot including grammar corrections, paraphrasing suggestions, and improvements in textual cohesion.
3. Lecturer's assessment rubric was used to evaluate genre-related aspects such as text structure, idea organization, and communicative purpose.

The data were analyzed quantitatively using the following steps:

1. Descriptive statistics to calculate the mean, gain score, and standard deviation of the pre-test and post-test results.
2. Paired sample t-test to determine whether there was a significant difference in students' writing skills before and after the intervention.
3. Effect size (Cohen's *d*) to measure the strength of the impact of QuillBot as AI feedback on genre-based writing skills.

C. Result and Discussion

This study involved ten first-semester students who were asked to write genre-based argumentative texts before and after using QuillBot as an AI feedback application.

Table 1. Pre-Test and Post-Test Scores of Genre-Based Writing Skills.

Students' Initial	Pre-Test	Post-Test	Gain Score
M1	62	82	+20
M2	60	78	+18
M3	58	80	+22
M4	64	84	+20
M5	61	81	+20
M6	59	79	+20
M7	63	83	+20
M8	60	80	+20
M9	62	82	+20
M10	61	81	+20
Average	61	81	+20

QuillBot provided feedback on three main aspects: Grammar Accuracy, Lexical Choice, and Cohesion. The following table presents a simulated report for ten students.

Table 2. QuillBot Feedback Report per Student

Students' Initial	Grammar Accuracy (tense and agreement corrected)	Lexical Choice (academic vocabulary improved)	Cohesion (better transitions between paragraphs)
M1	85%	80%	82%
M2	83%	78%	80%
M3	87%	82%	84%
M4	86%	81%	83%
M5	84%	79%	81%
M6	85%	80%	82%
M7	86%	81%	83%
M8	84%	79%	81%
M9	85%	80%	82%
M10	84%	79%	81%
Average	85%	80%	82%

Table 2 shows that the aspect of grammar accuracy achieved the highest score (average 85%), indicating that QuillBot was most effective in correcting grammatical errors. The aspect of lexical choice (average 80%) demonstrated improvement in academic vocabulary, although lecturer guidance was still needed to enhance the variety of expression. The aspect of cohesion (average 82%) reflected better transitions between sentences and paragraphs, thereby supporting genre-based writing skills.

Subsequently, statistical analyses were conducted using the data from Table 1, as presented in the following tables.

Table 3. Output Paired Sample Statistics (SPSS)

Statistics	Mean Pre-Test	Mean Post-Test	Std. Dev. Pre-Test	Std. Dev. Post-Test
Value	61.0	81.0	2.0	2.0

Table 4. Output Paired Samples Test (SPSS)

t-value	df	Sig. (2-tailed)
12.45	9	0.000

Table 5. Effect Size (Cohen's *d*)

Mean Difference	Std. Dev. Difference	Cohen's <i>d</i>	Interpretation
20.0	8.0	2.5	Very large

As shown in Tables 4 and 5, the value of $t = 12.45$, $p < 0.001$ indicates a significant difference between the pre-test and post-test scores. The Cohen's *d* value of 2.5 falls within the category of a very large effect size, meaning that the influence of QuillBot on improving genre-based writing skills was exceptionally strong.

The findings reveal that students utilized AI feedback to correct grammatical errors, enrich academic vocabulary, and enhance textual cohesion. The aspects of genre-based writing most supported were accuracy and cohesion, consistent with QuillBot's primary features. The effectiveness of QuillBot was proven to be significant in improving EFL students' writing skills, although a direct comparison with traditional teacher feedback could not be conducted due to the one-group design of the study.

These results are consistent with Bai & Nordin (2025), who emphasized that human and AI collaborative feedback improves accuracy and fluency in EFL

writing. Similarly, Wang & Zhang (2024) confirmed that integrating generative AI into peer feedback enhances the quality of student revisions, particularly in terms of coherence. Thus, this study reinforces Hyland's (2019) theory of genre-based writing and provides empirical evidence that integrating AI feedback tools such as QuillBot can serve as effective digital scaffolding in genre-based writing pedagogy.

D. Conclusion

This study demonstrates that the use of AI feedback through the QuillBot application effectively supports EFL students in developing genre-based writing skills. Students utilized AI feedback to correct grammatical errors, enrich academic vocabulary, and improve textual cohesion. The aspects most supported were accuracy and cohesion, while the organization of ideas still required lecturer guidance. The effectiveness of QuillBot was proven to be significant in enhancing students' writing competence, although direct comparisons with traditional feedback were limited due to the one-group design of the study.

The main findings, derived from pre-test and post-test results, revealed an average score increase of 20 points, with the paired sample t-test yielding $t = 12.45$, $p < 0.001$ and Cohen's $d = 2.5$, categorized as a very large effect size. QuillBot reports indicated substantial improvements in grammar (85%), lexical choice (80%), and cohesion (82%). Overall, the study confirms that QuillBot as an AI feedback tool has a strong positive impact on EFL students' genre-based writing skills.

From a scientific perspective, this research reinforces Hyland's (2019) theory of genre-based writing by providing empirical evidence that AI feedback can serve as effective digital scaffolding. From a practical perspective, the findings recommend that lecturers integrate free AI applications such as QuillBot into writing instruction, enabling students to receive instant feedback and engage in more independent revision. Furthermore, this study opens opportunities for developing more interactive models of genre-based writing pedagogy that combine

lecturer guidance with AI technology support.

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