

The Influence of AI-Powered Translation and Paraphrasing Tools on Academic Writing English Department: A Mixed-Methods Study

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ABSTRACT

Artificial intelligence (AI)-powered technologies are increasingly being employed to help EFL students with academic writing. However, research into the combined use of DeepL and QuillBot during the writing process is sparse. This study looks on students' use and perceptions of DeepL and QuillBot in academic writing. Using a mixed-methods design, quantitative data were gathered from 49 English Education students through a 35-item five-point Likert-scale questionnaire and analysed using descriptive statistics, while qualitative data were obtained through semi-structured interviews with nine participants and analysed thematically. The data revealed that both instruments were generally viewed positively. DeepL was mostly utilized for translation and phrase improvement during planning and drafting, while QuillBot helped with paraphrasing and editing. Students did not rely solely on AI results; rather, they critically analyzed and corrected generated texts. The study finds that DeepL and QuillBot serve as supportive tools that improve academic writing while allowing students to retain control over content and meaning.

Keywords: *Academic Writing, Artificial Intelligence, Deepl, Quillbot, Students' Perceptions*

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INTRODUCTION

Artificial Intelligence (AI) is increasingly transforming educational practices, particularly in higher education, where digital technologies are integrated into academic writing activities. AI-powered tools provide linguistic assistance, facilitate sentence restructuring, support text revision, and help students address various writing challenges. For English as a Foreign Language (EFL) learners, academic writing requires not only grammatical accuracy and appropriate vocabulary but also coherence, cohesion, critical thinking, and adherence to academic conventions. These demands can create difficulties for students who have limited linguistic proficiency or insufficient experience in producing academic texts. The development of AI-based writing technologies has therefore created new opportunities for learners to improve their writing processes and outcomes (Holmes et al., 2019; Kasneci et al., 2023).

Among the available AI-powered applications, DeepL and QuillBot have gained attention for their different but potentially complementary functions in academic writing. DeepL is primarily designed to translate texts between languages, helping EFL students understand source materials and express ideas in English. Meanwhile, QuillBot provides paraphrasing and sentence-restructuring features that can assist learners in revising their writing and improving linguistic expression. These applications may support different stages of academic writing, from developing initial drafts to refining sentences and reviewing written work. The use of such technologies also reflects broader developments in computer-assisted language learning, in which digital tools facilitate access to linguistic resources and support independent language learning (Lee, 2020; O'Neill, 2019).

The potential benefits of AI-assisted writing tools have been demonstrated in previous research examining QuillBot use among university students. QuillBot has been reported to help learners paraphrase and rewrite English texts, offering an alternative approach to addressing difficulties in academic writing (Fitria, 2021). Further evidence indicates that the application can contribute to improvements in writing performance among students in English education programs (Nurmayanti & Suryadi, 2023). Positive experiences have also been documented among undergraduate students, particularly regarding the usefulness of paraphrasing features for supporting academic writing tasks (Rahmani, 2023). These findings suggest that QuillBot may serve as a practical linguistic resource; however, its contribution to writing development depends on how students evaluate, revise, and incorporate its suggestions into their own work.

Research has also highlighted students' perceptions and experiences of using QuillBot in academic contexts. Postgraduate students have expressed favorable views of its application in English academic writing, particularly in relation to its perceived usefulness and ease of use (Kurniati & Fithriani, 2022). Students' experiences have further revealed the role of QuillBot in supporting paraphrasing practices and managing the linguistic demands of academic writing (Asmara & Kastuhandani, 2024). Research on students' self-efficacy has also drawn attention to the relationship between the use of paraphrasing technology and learners' confidence in completing academic writing tasks (Andriani et al., 2024). These findings can be interpreted through the Technology Acceptance Model, which explains how perceived usefulness and perceived ease of use influence individuals' acceptance of technology (Davis, 1989). Nevertheless, favorable perceptions do not necessarily demonstrate that students develop stronger independent writing skills or use AI-generated suggestions critically.

In addition to paraphrasing applications, AI-based translation tools have become important resources for EFL students who experience difficulties expressing ideas in English. DeepL can assist learners in translating ideas from their first language into English and reviewing alternative linguistic expressions. Positive findings have been reported regarding the contribution of DeepL to EFL students' writing skills and the development of written texts (Payung & Sukarno, 2025). Research involving secondary-school students has likewise examined its potential contribution to writing performance in a vocational education context (Purnamawati, 2025). More broadly, research on machine translation has shown that translation technologies can influence the writing processes of second-language learners, although their educational value depends on how learners interact with and evaluate the resulting translations (Lee, 2020). These findings demonstrate the relevance of translation technology in academic writing while emphasizing the need to examine how students incorporate translated material into their own compositions.

Despite these potential benefits, the increasing use of AI-powered writing tools raises concerns about students' autonomy, critical engagement, and dependence on automated suggestions. Although translation and paraphrasing applications can reduce linguistic difficulties, students may accept generated sentences without adequately examining their accuracy, contextual appropriateness, or intended meaning. Cognitive Load Theory suggests that learning is influenced by the mental resources required to process information, making technological assistance potentially beneficial when it reduces unnecessary processing demands (Sweller, 2011). However, the educational value of such assistance should not be assessed solely through convenience or the quality of the resulting text. Research on AI-supported writing practices has emphasized the importance of understanding how learners engage with these technologies and the extent to which their use supports rather than replaces independent decision-making (Suryani & Fithriani, 2024). Accordingly, investigating students' perceptions alongside their actual use of AI tools is necessary to understand both the opportunities and limitations of AI-assisted academic writing.

Another important consideration is the integration of different AI applications within a single writing process. Previous research has generally examined QuillBot in relation to paraphrasing, writing performance, or students' perceptions, while studies on DeepL have primarily focused on translation and its contribution to writing development. Research on AI-

powered writing tools has also explored students' preferences and lecturers' perceptions of their use in writing classrooms (Jaladara et al., 2023; Yoandita & Hasnah, 2024). Although these studies provide useful insights into individual applications, they offer less information about how students combine translation and paraphrasing tools to complete academic writing tasks. The Technology Acceptance Model has been extended to consider additional factors influencing technology acceptance and use, suggesting that students' decisions may involve more than the immediate convenience of a particular application (Venkatesh & Davis, 2000). Furthermore, discussions of generative AI in education highlight the importance of considering both its educational opportunities and its potential limitations when evaluating technology-supported learning practices (Tlili et al., 2023).

Addressing this gap, the present study investigates the use and perceptions of DeepL and QuillBot among seventh-semester English Education students engaged in academic writing in Indonesian higher education. Using a mixed-methods approach, the study examines how students utilize the two applications throughout the writing process and how they perceive their respective contributions to completing academic writing tasks. Particular attention is given to the ways students use DeepL for translation and initial language development and QuillBot for paraphrasing, sentence restructuring, and revision, as well as their experiences in combining these functions. By examining both usage practices and student perceptions, the study seeks to provide a more comprehensive understanding of the complementary roles of AI-assisted translation and paraphrasing in EFL academic writing. The findings are expected to contribute to discussions of responsible AI integration in higher education and inform instructional practices that encourage students to use digital writing tools effectively while maintaining critical judgment, academic integrity, and independent writing development.

METHOD

This study took a mixed-methods approach with a convergent parallel design. Quantitative and qualitative data were collected during the same phase, processed separately, then combined during interpretation. This approach was chosen to provide a complete knowledge of students' use and perceptions of AI-powered tools, including DeepL and QuillBot, in academic writing.

Respondents

The study was carried out in the English Education Department of UIN Sulthan Thaha Saifuddin Jambi. The quantitative participants included 49 seventh-semester students who completed a questionnaire. For the qualitative phase, nine students were chosen using purposive sampling based on the following criteria: (1) they were seventh-semester students, (2) they had used DeepL and QuillBot in academic writing, and (3) they were willing to take part in an interview. These participants acted as informants in the qualitative inquiry.

Instruments

This study included two instruments: a questionnaire and a semi-structured interview guide. The questionnaire included 35 Likert-scale items adapted from prior research on AI-assisted writing tools and the Technology Acceptance Model (TAM), which addressed characteristics such as perceived utility, perceived ease of use, writing help, and social influence. The questionnaire was adapted from previous studies on AI-assisted writing tools and the Technology Acceptance Model (TAM). To ensure content validity, the instrument was reviewed by two experts in English language education and educational research. Their feedback was incorporated to improve the clarity, relevance, and appropriateness of the questionnaire items. The reliability of the instrument was assessed using Cronbach's Alpha coefficient. The analysis showed a Cronbach's Alpha value of .976, indicating excellent internal consistency and reliability of the questionnaire. The interview guide was created to elicit

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students' experiences, practices, and perceptions on the use of DeepL and QuillBot during the academic writing process.

Procedures

Data gathering was done concurrently. Quantitative data were acquired by distributing an online questionnaire to 49 students. At the same time, qualitative data were gathered through face-to-face semi-structured interviews with nine selected individuals. Each interview lasted about 30-45 minutes and was audio-recorded with the participants' consent. To support the interview results, participants were invited to demonstrate how they used DeepL and QuillBot during academic writing activities.

Data analysis

To discover broad patterns in students' perspectives, quantitative data were examined using descriptive statistics with SPSS, which included mean scores and standard deviations. Braun and Clarke's thematic analysis processes were used to analyze qualitative data, which included familiarization, coding, theme creation, and interpretation. Finally, the quantitative and qualitative findings were combined to provide a holistic knowledge of students' use and perceptions of AI-powered writing tools.

FINDINGS AND DISCUSSION

This section presents and discusses research findings on students' use and perceptions of AI-powered writing tools, specifically DeepL and QuillBot, in academic writing. The study's research questions guide the organization of the findings. The first and second sections concentrate on how students utilize DeepL and QuillBot during the writing process, while the third and fourth sections examine students' perceptions of both tools based on questionnaire responses. The findings are evaluated with reference to prior studies and the Technology Acceptance Model (TAM).

Students' Use of DeepL in Academic Writing

The interview results revealed that DeepL was used at several stages of academic writing, including drafting, revising, and editing. During the drafting stage, students largely utilized DeepL to translate ideas from Indonesian to English and to help with sentence structure when they encountered linguistic issues. As one participant explained: *"I usually write my ideas in Indonesian first, then use DeepL to translate them into English. It helps me arrange my sentences more clearly and quickly."* (Informan 3).

The application also helped students with word selection and meaning transfer, allowing them to articulate their thoughts more effectively. During the revision and editing stages, students utilized DeepL to increase grammatical accuracy, sentence clarity, and general readability. However, participants stated that they still required to check and alter the generated translations to ensure contextual appropriateness and the intended meaning. Another participant noted: *"Although DeepL provides accurate translations, I still need to revise some words and expressions to make them fit the context of my writing."* (Informan 7)

These data indicate that DeepL serves as a linguistic assistance tool rather than a standalone writing system. Consistent with prior research on AI-assisted translation, students profited from its translation accuracy and efficiency while still actively analyzing and modifying the result. As a result, DeepL appears to help students write better by eliminating linguistic barriers without substituting their own writing choices.

Students' Use of QuillBot in Academic Writing

The findings show that QuillBot was primarily employed during the revision and editing stages of academic writing. Students used the tool to paraphrase phrases, improve grammar, produce alternative vocabulary, and increase sentence fluency. As Informan 5 stated: *"QuillBot helps me paraphrase journal sources and gives me alternative vocabulary that sounds more academic."* Many participants reported utilizing QuillBot after completing an initial draft

to improve their writing and make it more natural and academically relevant. Furthermore, students saw QuillBot as beneficial for learning new terminology and other ways of expressing ideas in English. Despite these improvements, pupils reported limitations such as meaning distortion and contextual mismatch. Informant 8 commented *"Sometimes the paraphrased sentence changes the original meaning, so I always review the result before using it in my paper."* As a result, they regularly evaluated and revised QuillBot-generated ideas before putting them into their final compositions. This conclusion suggests that QuillBot functions as a language refinement tool that enables revision and editing activities while still requiring human judgment to ensure accuracy and appropriateness.

Students' Perceptions of DeepL in Academic Writing

The questionnaire results show that seventh-semester students had generally positive impressions of DeepL. All DeepL-related items had mean scores higher than the neutral midpoint of 3.00, ranging from 3.61 to 3.92. The greatest mean score was obtained for Item P15 ($M = 3.92$), which indicates students' beliefs that DeepL helps enhance and modify sentence structure, while the lowest mean score was discovered for Item P16 ($M = 3.61$), which pertains to initial exposure via peers. These findings suggest that students see DeepL as advantageous for academic writing activities. The findings also reveal that students predominantly favor DeepL's writing help capabilities, which include translation accuracy, sentence improvement, and vocabulary assistance. According to the Technology Acceptance Model (TAM), consistent positive mean scores indicate high perceived usefulness and ease of use. Students said DeepL was practical, approachable, and useful for completing writing tasks more swiftly. Although social and affective aspects were present, they proved to have less influence than the tool's practical benefits. Overall, students saw DeepL as a useful linguistic resource that improves academic writing skills.

Students' Perceptions of QuillBot in Academic Writing

The questionnaire results also show that QuillBot is seen positively in academic writing. All QuillBot-related items had mean scores higher than the neutral midpoint, ranging from 3.57 to 4.04. The highest mean score was obtained in Item P31 ($M = 4.04$), which reflects students' impressions of QuillBot's ease of use, while the lowest mean score was found in Item P24 ($M = 3.57$), which is associated with writing engagement. These findings suggest that students have generally positive sentiments concerning the usage of QuillBot in academic writing. Students praised QuillBot's paraphrase feature, convenience of use, and capacity to improve writing quality. In addition to functional gains, some questionnaire items elicited favorable affective responses, indicating that students felt more confident and comfortable using the tool during writing activities. The findings corroborate the Technology Acceptance Model's assumptions, particularly those involving perceived usefulness and simplicity of use. However, the interview data show that positive perceptions did not result in complete reliance on AI-generated output. Instead, students evaluated and revised the tool's ideas before putting them into their work. This demonstrates that students' reception of QuillBot is critical and selective, rather than passive.

CONCLUSIONS

This study examined seventh-semester students' use and perceptions of DeepL and QuillBot in academic writing. DeepL was primarily used during drafting to translate ideas and construct sentences, whereas QuillBot was used during revision and editing to paraphrase sentences, correct grammar, and improve fluency. Students evaluated and revised AI-generated outputs to ensure contextual relevance and accuracy. Quantitative findings indicated positive perceptions of both tools, with DeepL receiving a slightly higher mean score ($M = 3.80$, $SD = 0.63$) than QuillBot ($M = 3.74$, $SD = 0.68$). The questionnaire demonstrated excellent internal consistency, with a Cronbach's alpha of .976 across 35 items. These findings suggest that both tools can support academic writing when used strategically without replacing students' independent judgment. However, the study was limited to 49 students

The Influence of AI-Powered Translation and Paraphrasing Tools on Academic Writing English Department: A Mixed-Methods Study from one Indonesian university, relied primarily on self-reported perceptions, and examined only two AI applications. Future research should involve larger, more diverse samples, objectively assess writing quality, and investigate additional AI-assisted writing tools across educational contexts.

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