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# Research on the Influence of an Online Collaborative English Learning Platform on College Students' English Writing Ability:
## A Mobile-Enabled HCI Perspective

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## ABSTRACT

Against the backdrop of the digital transformation of higher education, English writing ability has become an increasingly critical core competence for college students. This study investigates the impact of an online platform integrating artificial intelligence and collaborative learning mechanisms on students' English writing abilities. The experimental group utilized an online collaborative platform featuring intelligent feedback, structured peer review, cross-cultural vocabulary guidance, and process tracking, while the control group adopted traditional pen-and-paper instruction. Results demonstrated that the experimental group significantly outperformed the control group in four dimensions: grammatical accuracy, lexical diversity, collaborative engagement, and writing efficiency. Student questionnaires also reflected high perceived usefulness and ease of use for the platform. Overall, the findings demonstrate that the proposed platform effectively enhances both writing quality and learning experiences, providing strong empirical support for the reform of intelligent writing pedagogy in higher education.

## KEYWORDS

Online Collaborative, English Writing Proficiency, Learning Platform, AI-Assisted Writing, Educational Technology

## INTRODUCTION

Under the background of rapid globalization and digital transformation, English writing ability has become an essential core competence for college students and plays an important role in academic exchanges, international cooperation, and career development (Philippakos et al., 2023; Sun & Wang, 2024; Zhou & Xu, 2025). Whether writing research papers, project proposals, or engaging in international professional exchanges, students must be able to produce clear and accurate written texts that conform to English discourse norms (Bakri et al., 2024; Fitria, 2022; Hoque et al., 2024). However, traditional English writing instruction in higher education often fails to meet these practical needs and is typically constrained by limited classroom interaction, delayed teacher feedback, and

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a mismatch between instructional content and learners' individual needs (Cheng & Zhang, 2021; Xiao, 2024).

Current teaching practices face multiple challenges in improving students' writing ability. On the one hand, many students possess limited vocabulary and tend to repeatedly use basic words, lacking the ability to employ diverse and contextually appropriate advanced expressions, which results in monotonous language output and limited expressiveness (Zeng et al., 2022). On the other hand, grammatical errors persist over time, particularly tense errors, subject–verb disagreement, and unclear sentence structures, which seriously affect the accuracy and readability of texts (Chen & Liang, 2022). The causes of these problems are complex. First, influenced by China's spiral thinking and rhetorical traditions, students often transfer the argumentative logic and expression patterns of their mother tongue into English writing, such as overreliance on classical quotations and insufficient critical analysis (Wen et al., 2023). Second, second-language writing requires the simultaneous coordination of multiple cognitive tasks, including vocabulary selection, grammatical monitoring, and text organization. Lower-level learners are therefore more prone to cognitive overload, which often simplifies writing into mechanical imitation or template-based production (Kormos, 2023). Third, many colleges and universities remain dominated by summative assessment systems that emphasize final grades, encourage exam-oriented writing strategies, and weaken attention to the development of writing processes (Bai & Zhou, 2024). Finally, despite the widespread use of digital tools, students frequently engage in "copy-and-paste" practices when using machine translation, leading to expressions influenced by negative transfer from the mother tongue and potentially inhibiting the development of autonomous language production (Li et al., 2024).

In recent years, with the development of educational technology, digital tools that support writing instruction have continued to emerge. Among these tools, online collaborative learning platforms that integrate artificial intelligence (AI) and collaborative learning principles have attracted increasing attention (Johinke et al., 2023; Zhang & Zou, 2022). Through functions such as automated grammar correction, real-time peer review, multimodal feedback mechanisms, and shared writing spaces, these platforms reduce the burden of teacher grading while creating a dynamic, interactive, and learner-centered writing environment (Li & Mak, 2022; Zhang, 2022). However, although their instructional potential is widely acknowledged, existing research remains fragmented, and systematic empirical evidence evaluating their effects on multiple dimensions of English writing ability is still limited (Cheng et al., 2023).

In response to these challenges, this study systematically investigates the impact of online collaborative learning platforms on college students' English writing ability. The research focuses on four core dimensions: grammatical accuracy, lexical diversity, collaborative participation, and writing efficiency. Freshmen are selected as the research participants, and differences in writing performance between the experimental group and the control group are examined through a pretest–posttest control group design, combined with quantitative analysis and qualitative feedback. This study evaluates the effectiveness of digital collaborative tools in improving language output quality and examines how technology supports knowledge co-construction and language internalization during the writing process by promoting interaction, feedback, and reflection from a social constructivist perspective. The findings not only substantiate the reform of English writing instruction in higher education but also generate theoretical insights and actionable guidance for educational technology developers seeking to optimize platform design and advance human–machine collaborative learning.

## LITERATURE REVIEW

Meanwhile, grammatical errors remain a persistent issue. Errors involving tense usage, subject–verb disagreement, and unclear sentence structure frequently appear in student compositions, significantly compromising textual accuracy and readability. In recent years, with the rapid development of educational technology, digital tools and AI have been widely integrated into