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## A SYSTEMATIC LITERATURE REVIEW OF GENAI ASSISTED WRITTEN FEEDBACK IN SECOND LANGUAGE WRITING IN HIGHER EDUCATION

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### Abstract:

Generative artificial intelligence (GenAI) has advanced rapidly in recent years. Powerful systems such as ChatGPT have begun to reshape how written feedback is provided in second language (L2) writing courses at universities. This report presents a comprehensive analysis of 33 empirical studies published between 2022 and 2025. It examines the characteristics of GenAI-supported written feedback, its classroom applications, and its impact on L2 writing. The review follows the PRISMA guidelines and draws on studies indexed in Scopus, Web of Science, and ScienceDirect. It analyzes research trends, methods of use, participant backgrounds, feedback types, and reported learning outcomes. The results show that research in this area has grown rapidly since 2024. Most studies adopt mixed-methods approaches. They mainly focus on students learning English as a foreign language (EFL) in higher education institutions in Asia and the Middle East. GenAI-assisted feedback in L2 writing is most effective in improving language accuracy, expanding vocabulary, and supporting revision. However, its impact on more advanced writing skills, such as logical coherence and sentence structure, remains inconsistent. The research findings reveal that students generally respond positively to GenAI feedback. They value its quick responses, ease of use, and ability to provide personalized support. These features can also increase learners' motivation and sense of autonomy. Some studies find that GenAI feedback can be as effective as feedback from teachers or peers in improving writing performance. However, it often lacks the detailed pedagogical guidance and ethical oversight provided by human instructors. Future research should place greater emphasis on long-term instructional designs and more effective prompting strategies. It should

also examine more closely the cognitive and metacognitive processes involved when students revise their writing with the support of GenAI.

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**Keyword:**

Genai, ChatGPT, L2 Writing, Written Feedback, Higher Education, EFL, Genai Assisted Learning



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## Introduction

The emergence of artificial intelligence (AI) has significantly reshaped the field of education. Among these technologies, GenAI has attracted particular attention for its disruptive potential and promising applications (Faisal, 2024). Large language models (LLMs), such as ChatGPT, have rapidly entered many academic fields. They are especially effective at generating text, summarizing information, and providing personalized feedback (Kasneji et al., 2024). In L2 writing, teachers have traditionally spent considerable time correcting students' work. GenAI now offers a promising way to address long-standing instructional challenges, particularly in higher education settings with limited teaching resources (McCarthy et al., 2022). Effective written feedback plays a crucial role in improving L2 writing. It guides learners through repeated revision and helps them develop both language accuracy and writing skills (Barrot, 2023). However, several constraints limit the effectiveness of teacher feedback. Large class sizes, diverse learner needs, and heavy workloads often reduce the quantity, quality, and timeliness of individualized feedback (Wu, 2024). This tension has encouraged researchers to explore scalable feedback solutions. As a result, technologies such as automated writing evaluation (AWE) systems and, more recently, GenAI-based support tools have been developed (Avramenko et al., 2025).

In higher education, the use of GenAI in L2 writing classes is more than the introduction of a new tool. It represents a shift in how writing is taught and how feedback is provided (Yang, 2025). Unlike AWE systems, which mainly detect surface errors and assign scores based on fixed criteria, GenAI tools enable more dynamic and context-aware interaction. They can generate detailed feedback, rephrase text, and engage in dialogue with learners (Fu et al., 2024). These capabilities allow GenAI to provide immediate and personalized feedback that is easy to access. As a result, L2 learners can work more independently, and the writing process becomes more interactive and reflective (Barrot, 2023). However, the rapid spread of GenAI has also raised new pedagogical, ethical, and practical concerns that require careful consideration (Khan et al., 2025). Researchers and educators are now examining several key issues. These include the effectiveness of GenAI feedback in improving writing proficiency, its influence on learner motivation and engagement, and the risk of student over reliance on the technology. Other concerns involve how to protect learners' individual voice and creativity, and how GenAI can be integrated effectively into existing curricula (Abduljawad, 2024).

This study reviews current research on the use of GenAI for providing written feedback in L2 writing within higher education. It examines both the potential benefits and the limitations of these advanced systems. The aim is to synthesize existing knowledge on GenAI-supported writing feedback in teaching contexts. The study focuses on three key areas: the different forms and characteristics of research in this field; the impact of GenAI feedback on L2 learners' writing skills; and comparisons between GenAI feedback, traditional teacher feedback, and computer-assisted feedback methods. Based on these areas, the study addresses two research questions:

RQ1: What are the characteristics of GenAI-assisted written feedback research in empirical studies of L2 writing in higher education?

RQ2: How are GenAI tools integrated into L2 writing instruction and feedback practices in higher education?

## **Methods**

### ***Research Design***

This study employs a systematic literature review (SLR) to examine how GenAI is used to assist university students in revising their second-language compositions. Using an SLR ensures that research on GenAI feedback in higher education is detailed, replicable, and comprehensive. Unlike traditional narrative reviews, SLR follows strict procedures for selecting studies, assessing their quality, and extracting data. These rules help reduce bias and enhance the reliability of the findings. SLR also minimizes the subjectivity commonly found in conventional literature reviews and provides a standardized framework to track the development and trends within a field. Furthermore, it is a powerful method for evaluating qualitative research, helping to address common design limitations in social science studies. Given the extensive literature on GenAI feedback in L2 writing, the SLR approach is particularly well-suited to achieving the objectives of this study.

### ***Search Strategy***

Following PRISMA guidelines, systematic literature reviews (SLR) typically require data from at least three databases. For this study, Scopus, Web of Science, and ScienceDirect were selected because they comprehensively cover leading journals in applied linguistics, education, and educational technology (Wang et al., 2025). The search aimed to identify empirical studies on GenAI-assisted written feedback for L2 writing in higher education, published between 2022 and 2025.

To define the search terms, several keyword lists from the field of GenAI-assisted written feedback were consulted. GenAI-related keywords included "generative AI," "large language model," "ChatGPT," "GPT-4," and "artificial intelligence writing tools." Feedback-related keywords included "written corrective feedback," "writing feedback," "error correction," and "writing response." Keywords for higher education and second-language instruction included "higher education," "second language writing," and "English writing." After removing duplicates, the initial search yielded 481 unique documents.

### *Inclusion and Exclusion Criteria*

To ensure that the selected studies were directly relevant to the research objectives, a set of inclusion and exclusion criteria was established prior to the screening process. The criteria were developed based on the research questions and the scope of the review.

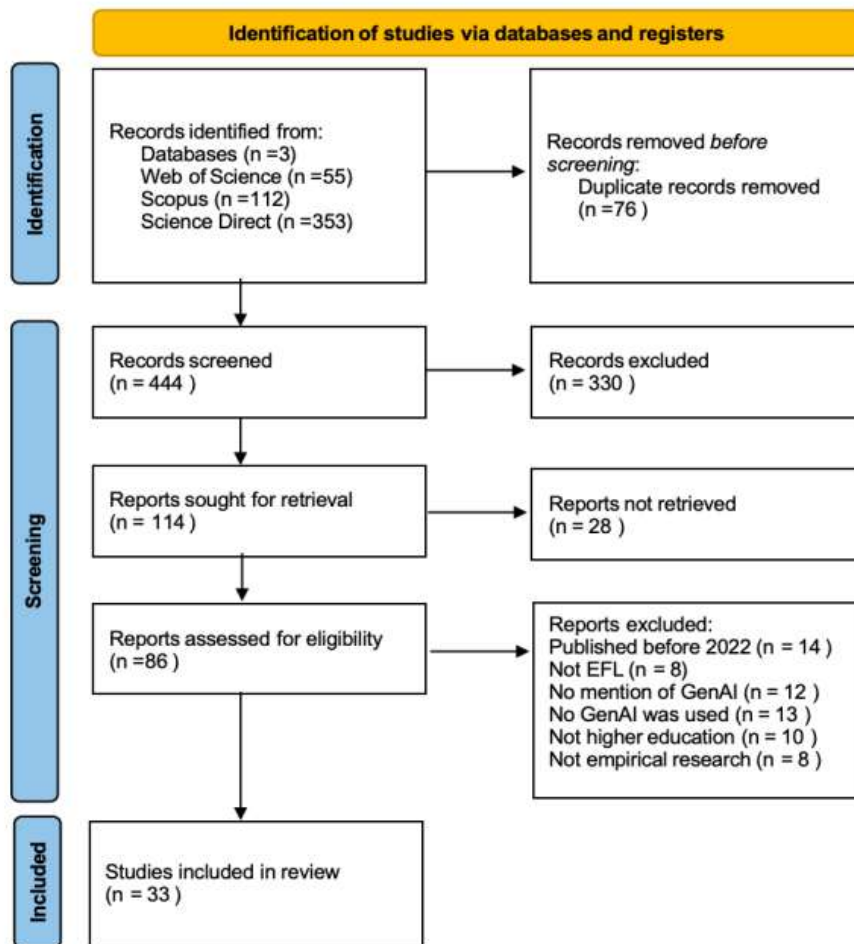
**Table 1: Literature Inclusion/ Exclusion Criteria**

No.	Inclusion	Exclusion
1	Empirical studies investigating GenAI-assisted written feedback	Studies not focusing on feedback
2	Studies related to second language writing learning	Studies not related to second language writing learning
3	Research conducted in higher education settings	Studies conducted in primary or secondary education
4	Peer-reviewed journal articles	Conference papers, book chapters, opinion papers
5	Studies published in English	Non-English publications

This review focuses on higher education contexts, including universities and colleges. University students typically work on complex academic writing tasks, such as argumentative essays and research papers, which require detailed feedback on language accuracy and organization. Higher education institutions have also been among the first to integrate GenAI tools into writing instruction. Limiting the review to this context helps ensure greater comparability across studies, as writing tasks and teaching practices can differ significantly across educational levels.

### *Study Selection Process*

The study selection process followed the four stages recommended by the PRISMA framework: identification, screening, eligibility assessment, and final inclusion. The initial database search yielded 481 records. To ensure the inclusion of articles relevant to the research topic, the retrieved literature was manually screened. Initially, literature that was completely irrelevant was excluded based on titles and abstracts. This phase took one week to complete and involved two team members. After removing duplicates and clearly irrelevant entries, 114 studies remained for preliminary screening. Titles, abstracts, and keywords were then examined to assess relevance to GenAI-assisted written feedback in L2 writing, resulting in 86 studies retained for full-text review. During the eligibility assessment, studies that did not meet the inclusion criteria were excluded. After the final screening, 33 empirical studies were selected for inclusion in the systematic review. The PRISMA flow diagram (Figure 1) presents the detailed selection process.



**Figure 1: PRISMA flow chart for including studies for review**

### ***Data Extraction and Integration***

A structured data extraction form was developed to systematically collect key information from the included studies. The framework was designed based on the research questions and the main analytical dimensions identified in previous reviews of GenAI-supported writing feedback. Using this form, relevant data were systematically gathered from the 33 empirical studies included in the analysis. The primary types of data extracted are presented in Table 2.

**Table 2: Overview of the 33 Empirical Studies on GenAI-Supported Written Feedback in L2 Writing**

No.	Author	Year	Country	Research participants	Research method	Research topics
1	Abdullah Al Fraidan (2025)	2025	Saudi Arabia	60 higher education EFL students	Mixed Methods Research	AI and Uncertain Motivation in EFL Argumentative Writing
2	Liqaa Habeb Al-Obaydi, Marcel Pikhart (2025)	2025	Iraq and the Czech Republic	18 higher education EFL students	Mixed Methods Research	AI vs Human Peer Feedback in EFL Writing
3	Fatemeh Etaat (2025)	2025	Norway	34 higher education EFL students	Quantitative Research	AI-based prediction of L2 writing progress
4	Xue Yin, Kun Dou (2025)	2025	China	250 higher education EFL students	Mixed Methods Research	AI-Enhanced CT Writing for EFL Learners
5	Yu Huang, Di Wang (2025)	2025	China	9 higher education EFL students	Qualitative Research	ChatGPT as EFL Writing Collaborator
6	Yoko Fujisawa, Natsuko Shintani (2025)	2025	Japan	32 higher education EFL students	Quantitative Research	AI vs. Direct Feedback in L2 Grammar Learning
7	Huawei Shi, Ching Sing Chai, Sihan Zhou, Scott Aubrey (2025)	2025	China	150 higher education EFL students	Mixed Methods Research	ChatGPT vs AWE: Effects on L2 Writing and Ideal Self
8	Lili Qin, Jingjing Dong (2025)	2025	China	19 higher education EFL students	Mixed Methods Research	GenAI-Mediated L2 Writing Revision and Presheaves
9	Bin Zou, Chenghao Wang, Huimin He, Congxin Li, Erick Purwanto, Ping Wang (2025)	2025	China	60 higher education EFL students	Quantitative Research	Visualized GenAI Feedback Enhances EFL Writing Revision

10	Hwang Myunghwan, Jeens Robert, Lee Hee-Kyung (2025)	2025	South Korea	11 higher education EFL students	Mixed Methods Research	Learner Prompting Behaviour in ChatGPT Writing Revision
11	Haerim Hwang, Xingyu Chang, Jiaxin Sun (2025)	2025	China	35 higher education EFL students	Mixed Methods Research	Real-time ChatGPT Use in L2 Writing
12	Chunlin Lei, Dan Zhu, Linyi Li (2025)	2025	China	59 higher education EFL students	Mixed Methods Research	AI vs Peer Feedback in Business English Writing
13	Mark Feng Teng, Jerry Huang (2025)	2025	China	169 higher education EFL students	Quantitative Research	ChatGPT's Impact on EFL Writing Engagement
14	Amal Aljasser (2025)	2025	Saudi Arabia	112 higher education EFL students	Mixed Methods Research	AI vs. Instructor Feedback in EFL Writing
15	Sookyung Cho (2025)	2025	South Korea	16 higher education EFL students	Qualitative Research	EFL Students' Noticing of ChatGPT Feedback
16	Lam Ky Nhan, Nguyen Thi My Hoa, Luong Vo Nhat Quang (2025)	2025	Vietnam	150 higher education EFL students	Mixed Methods Research	AI in EFL Writing: Opportunities and Challenges
17	Muh Syafei, Nuraeningsih (2025)	2025	Indonesia	66 higher education EFL students	Mixed Methods Research	AI Enhances ELT Students' Writing Skills
18	Abrar H. Alsofyani, Amal M. Barzanji(2025)	2025	Saudi Arabia	102 higher education EFL students	Mixed Methods Research	ChatGPT vs. Teacher Feedback in EFL Writing
19	Steven Yeung(2025)	2025	China	4 higher education EFL students	Qualitative Research	Student Engagement with GAI Writing Feedback
20	Samah Abduljawad(2024)	2025	Saudi Arabia	130 higher education EFL students	Mixed Methods Research	AI Tools Enhancing Saudi ESL Writing

21	Mark Feng Teng(2025)	2024	China	4 higher education EFL students	Mixed Methods Research	EFL Learners' Perceptions of ChatGPT Feedback in Writing
22	Li Dong (2024)	2024	China	215 higher education EFL students	Mixed Methods Research	ChatGPT Use and L2 Writing Proficiency
23	Sirin Sawangwan (2024)	2024	Thailand	50 higher education EFL students	Mixed Methods Research	Teacher vs. ChatGPT in EFL Writing
24	Da Alex Yan (2024)	2024	China	117 higher education EFL students	Quantitative Research	Collaborative vs. Individual ChatGPT Feedback in L2 Writing
25	Kai Guo, Mengru Pan, Yuanke Li, Chun Lai (2024)	2024	China	124 higher education EFL students	Quantitative Research	AI-enhanced peer feedback in EFL writing
26	Jining Han, Mimi Li(2024)	2024	China	104 higher education EFL students	Mixed Methods Research	AI-Enhanced Teacher Feedback in EFL Writing
27	Ji-Young Seo(2024)	2024	South Korea	44 higher education EFL students	Quantitative Research	AI-Assisted Narrative Writing in EFL Education
28	Afsheen Rezai, Ehsan Namaziandost, Gwo-Jen Hwang (2024)	2024	Iran	21 higher education EFL students	Qualitative Research	ChatGPT's Role in Enhancing EFL Learning
29	Samah Abdulhadi Abduljawad (2024)	2024	Saudi Arabia	130 higher education EFL students	Mixed Methods Research	ChatGPT's Impact on Saudi ESL Writing
30	Da Yan, Shuxian Zhang (2024)	2024	China	4 higher education EFL students	Mixed Methods Research	L2 Writers' Engagement with ChatGPT Feedback
31	Petra Polakova & Petra Ivenz (2024)	2024	Czech Republic	110 higher education EFL students	Mixed Methods Research	ChatGPT Feedback Enhances EFL Writing Skills

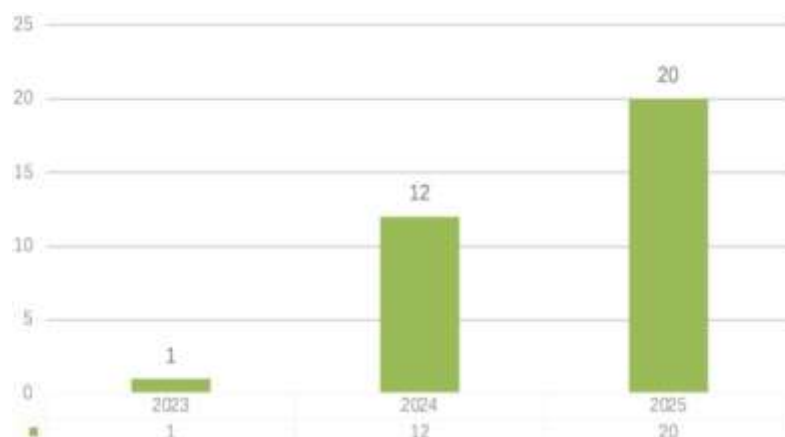
32	Cheng Ching Ho (2024)	2024	China	10 higher education EFL students	Qualitative Research	AI Tools in Tertiary English Writing
33	Juan Escalante, Austin Pack, Alex Barrett (2023)	2023	United States	43 higher education EFL students	Mixed Methods Research	AI Feedback vs Human Feedback in ENL Writing

## Findings and Discussion

This study examines the use of GenAI-assisted feedback in second-language writing within higher education. It considers research trends, study designs and participants, research objectives, and the types of feedback provided by GenAI along with their effects. Accordingly, the presentation and discussion of findings are organized around these themes. The results are drawn from an in-depth analysis of 33 empirical studies.

### *RQ1: What Are the Key Characteristics of Research into GenAI-assisted Written Feedback? Research Trends in GenAI-Assisted Written Feedback Studies*

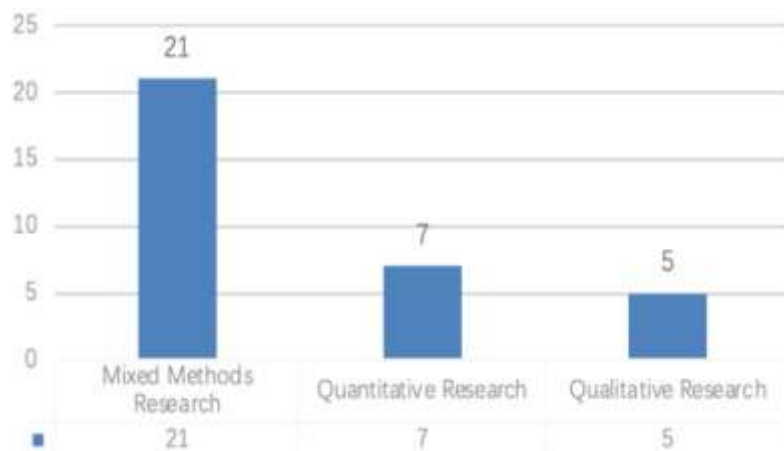
This study first conducted a statistical analysis of the publication dates of the included literature, with the results presented in Figure 2. The graph indicates that research in this area has grown rapidly. In 2023, only a few exploratory studies were published, accounting for approximately 3% of the total sample. This reflects researchers' cautious approach as GenAI technology, particularly ChatGPT, began to enter the field of second-language writing instruction. By early 2024, the number of related articles had increased significantly, reaching about 36% of the sample, which reflects a sudden surge of interest in the topic. Scholars began systematically investigating the potential benefits and challenges of using GenAI to provide feedback on second-language writing. By 2025, research had expanded further in scope and become more methodologically sophisticated, covering a wider range of participants and employing more rigorous analytical techniques. Studies from this year account for 60% of the total materials included in this review. This temporal trend reflects the development of GenAI in the evaluation of L2 writing in higher education, progressing from initial awareness, through rapid adoption, to deeper and more comprehensive applications (Cheng et al., 2024).



**Figure 2 Research Publication Trends in GenAI-Assisted L2 Writing Feedback (2023–2025)**

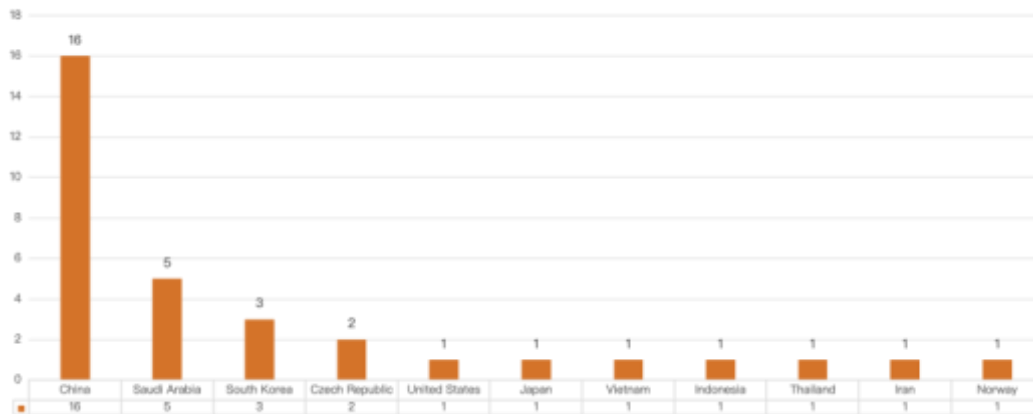
## Research Methods

This study examined the research designs of the included studies and found that the mixed-methods approach was the most frequently used, adopted by 21 studies (63.6%). Quantitative research was the second most common, with seven papers (21.2%), while qualitative research was the least represented, with only five studies (15.2%). This suggests that researchers prefer to combine different types of data such as pre- and post-test writing scores, error counts, and interviews, observations, or reflective journals to capture both the subtle influences and the practical effects of GenAI feedback more clearly. Within mixed-methods research, embedded designs are particularly popular. These studies combine quantitative data, such as experimental and control group writing scores, with qualitative data from interviews or learning log analyses collected after the intervention. This approach not only explains changes in performance but also documents learners' personal experiences and perceptions (Park & Kim, 2025). Quantitative studies primarily employ quasi-experimental designs. By using control groups or pre- and post-tests, these studies measure the objective effects of GenAI feedback on writing accuracy, such as the reduction of grammatical errors, as well as its impact on fluency indicators (e.g., T-unit length), complexity measures (e.g., clause frequency), and overall writing scores (Wu et al., 2025). Qualitative research typically involves in-depth interviews, focus group discussions, analysis of reflective texts, and classroom observations. These methods explore learners' cognition, attitudes, trust in GenAI, usage strategies, and potential changes in their learning processes (Lee, 2025). Although mixed-methods research represents the largest proportion of studies, it is important to note that some investigations do not fully integrate quantitative and qualitative findings.



**Figure 3 Distribution of Research Methods in Genai-Supported L2 Writing Studies**  
*Research Participation*

Most participants in these studies are university students learning a second language. The majority are EFL learners from non-English-speaking countries, including China, the Middle East, and South Asia (Sun et al., 2025). Sample sizes vary widely: small case studies include fewer than 10 participants, medium-sized experiments involve approximately 30 to 60 participants, and several large-scale studies include over 100 participants (Liu et al., 2025). This variation highlights the challenge researchers face in balancing two objectives: conducting in-depth studies of complex learning processes while ensuring a sufficient sample size to produce credible results.



**Figure 4 Distribution of Research Participants by Country**

***RQ2 : How are GenAI tools integrated into L2 writing instruction and feedback practices in higher education?***

### ***Specific Applications of GenAI in Feedback***

Many studies have demonstrated that GenAI can significantly support foreign language learners in improving their writing skills. For instance, Syafei and Nuraeningsih (2025) found that English majors made substantial gains in writing after using GenAI-assisted learning, with average post-test scores increasing markedly. Similarly, Ahmed et al. (2024) and Abduljawad (2025) studied ESL students in Saudi Arabia and reported that tools such as ChatGPT positively influenced learners' writing abilities. In addition, Polakova and Ivenz (2024) conducted a quasi-experimental study with 110 college EFL students. They found that students' writing improved significantly after receiving feedback from ChatGPT, particularly in areas such as conciseness, grammatical accuracy, information organization, and use of the passive voice. Collectively, these studies indicate that GenAI is an effective tool for enhancing overall writing performance. Beyond general proficiency, researchers have also explored its impact on specific linguistic and rhetorical skills.

### ***Linguistic Accuracy and Syntactic Complexity***

GenAI tools are widely valued for their ability to provide immediate and accurate feedback on grammatical errors and to help students expand their vocabulary. Rezai et al. (2024) and colleagues found that after using ChatGPT, students' vocabulary increased and their grammar improved, even among native English speakers. Similarly, Syafei (2025) reported that artificial intelligence supports learners by offering real-time word suggestions, providing synonyms, and correcting grammar errors immediately. These features make writing more varied and sentences more standardized. In 2024, Seo studied how ChatGPT assists English-speaking college students in writing stories and found that students' most frequent need was language support a domain in which ChatGPT excels. Collectively, these studies demonstrate that GenAI is highly effective in helping second-language learners address fundamental issues of language accuracy.

However, its impact on syntactic complexity appears less consistent. Seo (2024) reported that while stories produced with ChatGPT were fluent and performed well overall, post-test syntactic complexity scores were significantly lower than pre-test scores. This raises an important pedagogical question: does advanced AI, while ensuring clarity and correctness, inadvertently simplify sentence structures, potentially limiting learners' mastery of more complex syntactic skills? On the other hand, Seo (2024) also found a significant increase in the number of complements per clause, suggesting that GenAI's effect on complexity may vary across different aspects of syntax. Further research is needed to determine how to maintain accuracy without sacrificing syntactic complexity when using advanced GenAI, thereby identifying the most effective strategies for instruction.

### ***Coherence And Fluency***

The impact of GenAI on higher-order writing skills, such as coherence and cohesion, is more nuanced. Zou et al. (2025), drawing on the cognitive-affective theory of multimedia learning, found that feedback provided through visual AI can significantly improve the coherence and cohesion of EFL students' writing. These findings highlight that the format of feedback can influence its effectiveness in developing advanced writing skills. However, other studies offer a less optimistic view. Huang and Wang (2025) reported that when learners focus only on surface-level details and rely on standardized, non-specific hints, they show minimal improvement in higher-order skills, including content structure, organizational framework, and cohesion. These results suggest that cultivating complex writing abilities with AI requires learners to employ targeted and strategic prompting techniques.

### ***Learner Perceptions, Engagement, and Motivational Aspects***

Many studies have found that most students learning a second language enjoy using GenAI technology, and its use is widespread. Students consistently praise these tools for their ease of use, including quick responses and a simple interface. According to Aljasser (2025), although students pay more attention to teacher feedback, they also find ChatGPT's comments immediate and readily available, which is particularly important for college students with tight schedules. Similarly, Nhan et al. (2025) confirmed that AI platforms can provide fast and consistent feedback, promote autonomous learning, and ultimately improve writing skills. This immediate and continuous support addresses a longstanding issue in second-language writing instruction: teacher feedback often takes time, which can interrupt the writing process and reduce learning effectiveness.

Beyond practical support, learners also view GenAI as useful for content generation and language development. Semantic network analysis by Hwang et al. (2025) shows that participants generally have a positive attitude toward ChatGPT, seeing it as very helpful for generating content and managing time. Huang and Wang (2025) noted that students believe ChatGPT can stimulate creativity and enhance language expression and that its strong language capabilities and rich knowledge base provide advantages over peer interaction. A phenomenological study by Rezai et al. (2024) summarized several positive aspects, including expanded vocabulary, improved grammatical accuracy, interactive language practice, and personalized learning opportunities. Fraidan (2025) and Abduljawad (2025) also highlighted the benefits of customized feedback, such as enhanced language proficiency, enriched vocabulary, and greater learning autonomy. These findings indicate that GenAI is not only an

error-correction tool but also a collaborative writing assistant, providing support for both language development and cognitive processes.

Positive perceptions of GenAI often translate into greater motivation, self-efficacy, and engagement. Teng and Huang (2025) reported significant positive effects of AI assistance on writing motivation, self-efficacy, engagement, and collaborative writing tendencies among EFL learners. Polakova and Ivenz (2024) provided qualitative support through focus group interviews, where students expressed positive views of ChatGPT's role in enhancing their writing skills. Syafei and Nuraeningsih (2025) noted that students perceived AI integration as beneficial, recognizing its role in providing useful resources and guidance. Alsofyani and Barzanji (2025) found that students held a positive attitude toward using ChatGPT for academic writing. Furthermore, Yin and Dou (2025), applying the Extended Unified Theory of Acceptance and Use of Technology (UTAUT2) model, observed positive changes across four dimensions of ChatGPT acceptance in a critical-thinking-focused writing context: performance expectancy, effort expectancy, trust, and behavioral intention. Collectively, these findings highlight GenAI's potential to create a supportive and engaging learning environment, fostering agency and confidence in L2 writers.

### ***Comparative Study of GenAI Feedback and Other Feedback Sources***

#### ***Teachers' Feedback vs. GenAI Feedback***

Comparative research on generative artificial intelligence and teacher feedback presents a mixed but highly informative picture. Aljasser (2025) studied English students in Saudi Arabia and found that although students appreciated the speed and convenience of ChatGPT, they considered teachers' guidance more useful. This indicates that, despite its many advantages, GenAI is still inferior to the detailed and careful instruction provided by teachers. In contrast, Escalante et al. (2023) conducted an experimental study and found no significant difference in English writing scores between college students who received ChatGPT feedback and those who received teacher feedback. This suggests that GenAI feedback can be an effective and easily scalable option for evaluating second-language writing. However, a comprehensive study by Sawangwan (2024) showed that students supervised by teachers achieved higher scores and made greater progress than those who used ChatGPT for revision. This underscores the irreplaceable role of educators in understanding writing standards, fostering independent critical thinking, and providing ethical guidance. This perspective highlights the unique qualitative aspects of teacher feedback that GenAI may struggle to fully replicate. Nevertheless, Strobl et al. (2024) reported different findings: test scores of students who received ChatGPT-generated feedback were similar to those of students who received teacher guidance. This suggests that both types of feedback can be equally effective. These apparently contradictory results underscore the complexity of comparing human and GenAI feedback. Such differences may depend on the specific writing skills being assessed, the instructional context, and learners' cognitive levels. As Lee (2024) notes, researchers are increasingly supporting a GenAI-enhanced teaching model, which preserves the core value of teacher-student interaction while leveraging the analytical strengths of GenAI.

#### ***Peer feedback vs. GenAI feedback***

The research examines the effects of a feedback system that combines GenAI with peer evaluation. Liqaa (2025) employed a mixed-methods design with a qualitative focus to

compare three approaches: traditional peer evaluation, human evaluation, and ChatGPT evaluation. The results showed that Group A, using traditional peer evaluation, made steady progress in writing and experienced more social interaction and cognitive engagement. In contrast, Group B, evaluated by AI, received faster and more accurate feedback but demonstrated lower emotional engagement and less participation in reflective thinking. This highlights the need for GenAI models to balance efficiency with engagement and emphasizes the benefits of human-to-human interaction for learning. In another study, Guo et al. (2024) introduced an AI chatbot, Eva, into an online peer evaluation platform and found that this AI-enhanced approach significantly improved the quality of student feedback and strengthened writing skills. These findings suggest that AI can make peer review both more efficient and effective. Lei et al. (2025) specifically investigated feedback for improving writing and found that ChatGPT's feedback was generally more accurate than that from human evaluators. However, humans were better at assessing the depth and coherence of compositions, aligning with limitations of AI noted by Zhou et al. (2023). Yan (2024) explored responses to ChatGPT-generated feedback in individual and group contexts. He found that students working individually completed tasks more quickly, while those who discussed their feedback with teachers sustained improvements in academic performance for longer periods. These results indicate that how GenAI feedback is used also plays a crucial role in its effectiveness.

### ***AWE Feedback vs. GenAI Feedback***

The GenAI platform is considerably more powerful than traditional AWE technology. Shi et al. (2025) compared ChatGPT with a well-known AWE system and a control group. The results showed that the ChatGPT group achieved significantly higher scores than both the AWE and control groups in the post-writing evaluation, indicating that GenAI is particularly effective in improving writing performance. However, the study also identified a notable concern: students using ChatGPT tended to have a lower self-assessment of their second-language writing ability. This suggests that while GenAI can enhance writing quality, overreliance on it may reduce learners' awareness of their true abilities and undermine their independence. Liu et al. (2023) proposed a teaching method combining AWE with peer evaluation (PA-AWE). This mixed approach outperformed traditional AWE in several areas, including English writing ability, learning motivation, and analytical skills, while also reducing writing pressure. This indicates that combining interpersonal evaluation with AWE can compensate for its limitations a principle that also applies to integrating GenAI. Yang et al. (2024) investigated how college students use GenAI to enhance AWE feedback and found that it can improve the quality and practicality of feedback, although the effects vary across individuals. These findings demonstrate that GenAI outperforms traditional AWE systems, but they also serve as a caution: GenAI should not compromise students' independence or self-awareness.

### **Conclusions and Recommendations**

This systematic literature review examines current research trends and feedback types for GenAI-assisted written feedback in second-language writing within higher education, as well as the associated advantages and challenges. Overall, the findings indicate that GenAI is primarily used in writing instruction to provide automated language error correction, content refinement suggestions, feedback on structural organization, and comprehensive writing evaluations. These feedback formats help address the time and scalability limitations of traditional teacher feedback, offering learners more timely and sustained support.

The study also found that the benefits of GenAI in writing instruction are most evident in the immediacy of feedback, personalized support, and enhanced learner autonomy during revision. Research by Syafei (2025), Abduljawad (2025), and Polakova and Ivenz (2024) demonstrates that GenAI can significantly improve writing quality, particularly in grammatical accuracy, vocabulary, content development, and information organization. This technology is especially effective in strengthening basic language correctness, providing immediate suggestions for word choice, and helping learners adjust and optimize sentences (Cho, 2025; Rezai et al., 2024b; Seo, 2024). Moreover, when used effectively, GenAI can support the development of higher-order skills, such as analytical thinking and strategies for writing persuasive essays (Fraidan, 2025b; Yin & Dou, 2025b). Through a well-structured feedback loop, the tool can also enhance the coherence and logical flow of writing (Zou et al., 2025).

Although some studies suggest that GenAI feedback is comparable to human feedback and can help students improve their grades (Alsofyani & Barzanji, 2025), other research emphasizes that teachers play an irreplaceable role. This includes fostering critical thinking, providing moral guidance, and building deep teacher–student relationships functions that machines cannot fully replicate (Aljasser, 2025; Sawangwan, 2024). GenAI can enhance writing ability more effectively than traditional automated writing scoring tools (Shi et al., 2025), but it may still be less effective than human evaluators in supporting overall logical coherence (Lei et al., 2025; Zhou et al., 2023). Currently, the academic consensus favors a collaborative approach in which AI and human teachers complement each other. AI can deliver rapid and comprehensive feedback, while teachers provide encouragement, situational understanding, and interpersonal support (Lee, 2025).

Despite increasing research, there are still many problems with what we know now. One of the main shortcomings is the lack of research on long-term effects. At present, most research has been conducted for only a short time, often only a few weeks or a semester. As scholars such as Yin and Dou (2025) noted, we urgently need long-term follow-up studies to examine the long-term impact of AI feedback on second-language writing ability. This kind of research is very important; it can help us understand how short-term progress can turn into lasting language fluency and the ability to write independently.

In addition, there is an obvious gap in the process of deep cognitive input and metacognition. Although GenAI may lead to visible behavior and emotional engagement, its influence on deep thinking and self-monitoring during self-learning remains unclear. In fact, some studies have noted a lack of solid cognitive input or complex metacognitive methods (Mark Feng Teng and Huang, 2025; Yang et al., 2024). Future research should focus on how to teach people to critically evaluate AI-generated content and improve their metacognitive abilities. In addition, there is little research on how to design effective prompts (questioning methods) and on the effectiveness of prompts for users' writing. The quality of the AI's answers depends largely on the prompts we provide. Previous studies have found that prompts written by many people are too vague or too broad, rendering the AI's advice useless (Huang, 2025). Therefore, we should focus on how to write good prompts, especially for second-language writing, and develop teaching methods to instruct this skill. Finally, there is not enough research on individual differences. Experimental data show that people's language abilities, technical skills, and learning styles differ, which affects their effectiveness in using GenAI (Yan and Zhang, 2024; Yang et al., 2024). In the future, we should analyze these influencing factors thoroughly so that AI tools can better adapt to the needs of different users.

It is noteworthy that this review highlights a pronounced geographical imbalance in existing research, with most studies concentrated in Asia and the Middle East, while research from Europe, North America, and other Western educational systems remains relatively scarce. This concentration may limit the generalizability of research findings, given the significant differences across countries in writing pedagogy, curriculum assessment, and levels of technology integration. Therefore, future research should include empirical studies across a wider range of educational contexts to examine the applicability of GenAI-assisted writing feedback in diverse cultural and institutional settings.

Based on the above findings, future research could proceed in several directions. First, to enhance the global applicability of research conclusions, more cross-regional comparative studies should be conducted across diverse educational systems and cultural contexts. Second, the evolving role of teachers in GenAI-assisted feedback, and how instructional design can support effective collaboration between human educators and AI, should be further examined. Third, more comprehensive guidance frameworks addressing academic integrity, data privacy, and ethical standards need to be established to ensure the responsible use of GenAI in education. Overall, GenAI is progressively transforming second-language writing instruction and feedback practices. By thoughtfully integrating AI technology with traditional pedagogical approaches, higher education institutions can develop more efficient, personalized, and sustainable writing support systems.

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