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A Study on the Application of Generative Artificial Intelligence in Senior High School English Writing Feedback

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Abstract

For a long time, senior high school English writing instruction has faced challenges such as a heavy feedback burden on teachers, delayed feedback, and insufficient personalized guidance, which have severely hindered the effective improvement of students' writing skills. The rapid development of Generative Artificial Intelligence (GAI) offers new opportunities to address these issues. Based on a systematic review of relevant research and practice, this paper conducts an in-depth analysis of the three-fold dilemma faced by traditional writing feedback. It proposes a GAI-assisted writing feedback application model centered on "human-machine collaboration and tiered empowerment," constructs a three-stage feedback process spanning pre-writing planning, in-writing assistance, and post-writing revision, and designs specific prompt strategies tailored to typical application scenarios. Research indicates that generative AI offers significant advantages in linguistic accuracy and text structure, but still requires teacher oversight regarding content depth and logical argumentation. The teacher's role should shift from that of a "sole grader" to a designer of feedback activities and a facilitator of higher-order thinking. By balancing technological empowerment with humanistic care, this approach can achieve an overall improvement in the quality of writing instruction.

Keywords

Generative Artificial Intelligence; Senior High School English; Writing Feedback; Human-Machine Collaboration; Prompt Strategies

1. Introduction

1.1. Research Background

Writing proficiency is a crucial component of core English literacy. The General High School English Curriculum Standards (2017 Edition, Revised in 2025) explicitly state that students should "be able to use appropriate language forms for written

expression based on communicative needs." This places higher demands on content depth, critical thinking, and personalized guidance in writing instruction. Reading and writing skills are integral components of language proficiency and influence the development of students' overall English abilities (Song Chao, 2025). However, there is a significant gap between the current state of high school English writing instruction and the requirements of the curriculum standards.

From the teachers' perspective, a high school English teacher typically teaches two classes with nearly 100 students, and grading essays requires at least several hours each time. For English teachers, essay grading is a time-consuming and labor-intensive task (Yu You, 2025). The heavy grading burden often results in feedback cycles lasting a week or even longer. Through a survey, Tong Xiaoxi (2025) found that writing classes suffer from delayed feedback, insufficient personalized guidance, and low student engagement. By the time students receive feedback, their writing momentum has long faded, and their motivation to revise is significantly diminished. More importantly, due to time and energy constraints, teacher feedback often focuses on superficial issues such as grammatical errors and spelling, while guidance on higher-order dimensions—such as content logic, text structure, and depth of thought—is notably lacking.

From the students' perspective, issues such as hollow content, stilted expression, and unclear logic are quite common. Liu Jing (2025) points out that high school English writing instruction suffers from a test-oriented approach, superficial thinking, and one-dimensional assessment methods, which severely hinder the development of students' writing skills. Students generally neglect logical connections between paragraphs, rely on fixed sentence patterns and writing templates, and struggle to develop personalized expression.

In recent years, generative AI tools such as ChatGPT, Wenxin Yiyan, Doubao, and Kimi have rapidly emerged. With their powerful natural language processing capabilities and real-time interactivity, they offer new approaches to addressing the aforementioned challenges (Liu Mengjun et al., 2025). These tools can perform multidimensional analyses of essays within seconds, providing feedback on grammar corrections, vocabulary optimization, structural suggestions, and even content expansion, which holds promise for addressing the shortcomings of traditional teacher feedback in terms of timeliness and comprehensiveness. Applying GAI technology to high school English reading and writing instruction can help effectively enhance students' language proficiency (Song Chao, 2025). However, how to scientifically and effectively integrate Generative Artificial Intelligence (GAI) into the writing feedback process, and how to leverage the technology's advantages while upholding the essence of education, remain topics for further exploration.

1.2. Research Objectives and Significance

This paper aims to systematically explore the application models and practical

strategies of Generative Artificial Intelligence (GAI) in high school English essay feedback. The study focuses on three core questions: What challenges does current high school English writing feedback face? What unique feedback functions can GAI provide? How can a scientific and effective "human-machine collaborative" feedback process be established? What risks exist during implementation, and how should they be addressed ?

The theoretical significance of this study lies in: responding to the demands of the era of educational digital transformation; examining the mechanisms of GAI integration into writing instruction from the perspectives of process writing theory and formative assessment theory; and providing a theoretical framework for the deep integration of GAI with subject-specific instruction. The practical significance lies in: providing frontline teachers with an actionable practical framework to help reduce their grading burden, improve feedback quality, and ultimately promote the authentic development of students' writing abilities.

2. The Threefold Dilemma of Traditional High School English Essay Feedback

To understand the value of GAI in writing feedback, one must first systematically examine the fundamental problems inherent in traditional feedback models. Based on empirical investigations and theoretical analyses by numerous scholars in recent years, these issues can be summarized across three dimensions.

2.1. Delayed Feedback Dampens Motivation to Revise

Process writing theory emphasizes that the value of feedback lies in embedding it within the "zone of proximal development" of the writing process, providing timely guidance when students' memories are fresh and their thinking is active (Flower & Hayes, 1981). Formative assessment theory similarly holds that evaluation should permeate the learning process rather than focus solely on the final outcome (Black & Wiliam, 1998).

However, traditional writing feedback suffers from significant issues regarding timeliness. Teachers commonly report that "writing feedback is time-consuming, yet classroom time is limited," leading to an awkward situation in writing instruction where assignments are prioritized over feedback. Delayed feedback directly undermines students' motivation to revise: by the time teachers return their comments, students' initial writing mindset has faded, and revisions often become perfunctory, limited to correcting isolated grammatical errors without deeper reflection on content and structure.

2.2. Limited Feedback Dimensions and Lack of Support for Higher-Order Thinking

In terms of feedback content, traditional teacher feedback clearly exhibits a

tendency to "prioritize language over thinking." In actual teaching, teachers often focus on only one or two aspects, making it difficult to address broader and deeper dimensions such as "content and depth" or "writing style and creativity." Constrained by time and energy, teachers "can only focus on 'hard metrics' such as linguistic accuracy," paying "insufficient attention to creativity and lacking the energy to provide precise feedback on content and creative writing."

This bias has led to serious consequences: students' writing revisions have been reduced to "correction of errors" rather than "optimization." Over time, students have developed a writing mindset centered on avoiding grammatical errors, while higher-order skills such as content conception, logical reasoning, and supporting arguments are noticeably lacking.

2.3. Lack of Personalized Feedback Hinders Differentiated Instruction

In large-class teaching settings, it is difficult for teachers to provide differentiated feedback based on students' varying writing proficiency levels. Students with weaker writing foundations most need correction feedback on grammar and vocabulary, while those with stronger writing skills require suggestions for improving content logic, text structure, and even rhetorical style. However, constrained by limited teacher resources, only generalized feedback can be provided, creating a dilemma where "high-achieving students are dissatisfied, while struggling students cannot process the feedback."

2.4. Comparative Advantages of GAI Feedback

Against the backdrop of this dilemma, the advantages of Generative Artificial Intelligence (GAI) are becoming increasingly apparent. First, GAI enables "instant feedback"—students receive detailed evaluations within seconds of submitting their essays, thereby sustaining their motivation to revise. Zhou Ying (2026) notes that GenAI "can provide dynamic error correction and evaluation suggestions through real-time interaction, not only accelerating feedback speed but also ensuring the objectivity and consistency of evaluations." Second, GAI can provide feedback across an extremely broad range of dimensions, simultaneously covering linguistic form (grammar, vocabulary, syntax), content structure (relevance, logic, coherence), and the writing process (ideation, outline generation), thereby compensating for teachers' limitations in providing in-depth and creative feedback. Finally, GAI can offer tiered guidance tailored to students' varying writing proficiency levels.

3. Solution: A Tiered Model of Human-Machine Collaboration

The key to addressing the above issues lies not in replacing teachers with GAI, but in establishing a collaborative feedback model characterized by "teacher-led, GAI-assisted" instruction. GAI handles repetitive, foundational error-correction tasks, freeing up teachers' time and energy; teachers, in turn, focus on guiding

higher-order thinking and providing humanistic care—tasks that GAI struggles to perform. The theoretical foundation of this model includes Process Writing Theory (Flower & Hayes, 1981) and Formative Assessment Theory (Black & Wiliam, 1998), both of which emphasize that feedback should permeate the entire writing process and promote learners' cognitive development through continuous interaction.

3.1. Design Principles

Constructing a human-machine collaborative feedback framework requires adherence to three core principles.

First, teacher-led with GAI as an assistant, avoiding technological overreach. No matter how powerful GAI may be, the essence of writing instruction remains the cultivation of human potential—nurturing students' critical thinking, expressive abilities, and aesthetic sensibilities. The development of these higher-order skills cannot be separated from the teacher's professional judgment and emotional support. Therefore, GAI should be positioned as a "teaching assistant" or "learning partner," responsible for foundational tasks; the teacher, meanwhile, bears ultimate responsibility for instructional decisions and controls the quality and direction of feedback.

Second, with cognitive development at the core, feedback should aim to promote understanding rather than merely correct errors. The ultimate goal of feedback is to foster genuine development of students' writing abilities, not simply to correct mistakes in a single essay. This requires that GAI feedback go beyond merely "pointing out errors"; instead, it should help students understand the root causes of problems through explanations, questions, and demonstrations, thereby enabling them to internalize writing knowledge and strategies at a cognitive level. Liu Xi's (2025) research offers a noteworthy perspective: while GAI feedback shows the most significant improvement in accuracy, its impact on complexity and certain fluency indicators is relatively limited, suggesting that teachers need to play a more active role in these dimensions.

Third, gradually shift responsibility to promote autonomous learning. As students' writing abilities and experience with GAI improve, teachers should progressively reduce their intervention, allowing students to grow into "reflective writers" through collaboration with GAI. Formative assessment theory emphasizes that feedback should help students bridge the gap between their current level and the target level (Sadler, 1989).

3.2. Design of a Three-Stage Feedback Process

Based on the above principles, human-computer collaborative writing feedback can be integrated into three stages—"pre-writing, during-writing, and post-writing"—to form a systematic teaching process.

3.2.1. Pre-writing Brainstorming Phase: GAI as an "Inspiration Generator"

Before students begin writing, teachers can guide them to use GAI for brainstorming, helping them gather relevant viewpoints, background knowledge, and structural templates related to the writing topic. For example, for the argumentative essay prompt "Should students be prohibited from using cell phones at school?", students can ask GAI: "Please list the pros and cons of students using cell phones from both perspectives and provide a basic framework for an argumentative essay." The materials generated by GAI can help students broaden their thinking, but teachers should require students to filter and refine the content provided by GAI and use tools such as mind maps to organize their thoughts, thereby fostering independent thinking skills.

3.2.2. Writing Stage: GAI as an "Instant Q&A Assistant"

When students encounter specific difficulties—such as word choice, sentence structure, or grammar rules—while drafting their first draft, they can ask GAI questions at any time and receive immediate answers. For example, if a student is unsure about the usage of a particular phrase, they can ask GAI: "Please explain the difference between 'on the contrary' and 'in contrast,' and provide example sentences for each." This kind of immediate "scaffolding" support helps keep the cognitive load during the writing process at a moderate level, ensuring that students neither lose their train of thought due to language barriers nor abandon independent expression due to overreliance.

3.2.3. Post-Writing Revision Stage: Initial GAI Evaluation, In-Depth Teacher Guidance

This is the most critical stage of the entire process. After completing a first draft, students first submit their essay to GAI to receive multidimensional feedback through carefully designed prompts, including grammar correction, vocabulary optimization, structural analysis, and content evaluation. Students use this feedback to make their first revisions, producing a second draft. Subsequently, when teachers review the submitted second drafts, they combine the first draft with the GAI feedback records to focus on higher-order dimensions—such as content depth, logical argumentation, and innovative thinking—which GAI struggles to evaluate comprehensively, and provide supplementary feedback. Students then finalize their essays based on this feedback.

3.3. Prompt Strategies

The quality of GAI feedback depends largely on the design of the prompts. High-quality prompts should include a clear role definition, explicit evaluation criteria, and specific requirements for the output format. The following provides corresponding prompt templates for three typical scenarios in high school English writing.

3.3.1. Feedback on Linguistic Accuracy

This is the area where GAI excels most and where it can most directly alleviate the teacher's workload. The prompt can be designed as follows: "Please assume the role of a high school English teacher and check the grammar errors and inappropriate word choices in the student essay below. For each error, please explain the error type and the reason for the correction in Chinese, and provide the correct expression. Please present your feedback in a table format with four columns: 'Original Sentence Error,' 'Error Type,' 'Suggested Correction,' and 'Reason for Correction.'"

3.3.2. Text Structure Feedback

For genres that emphasize logic, such as argumentative essays, GAI can provide structural analysis. Sample prompt: "Please read this high school English argumentative essay and analyze its structure from the following three aspects: whether the thesis is clear, whether the evidence is sufficient, and whether the transitions between paragraphs are natural. Please offer specific revision suggestions for each aspect and demonstrate how to improve the structure using a paragraph of optimized text."

3.3.3. Personalized, Tiered Feedback

GAI can adjust the difficulty and focus of feedback for students at different proficiency levels. For students with weaker foundations, the prompt can be set as: "Please identify the three most critical grammatical errors in this essay using simple Chinese and provide suggestions for correction." " For students with stronger writing skills, the prompt can be upgraded to: "Please evaluate this essay in terms of rhetorical devices, sentence variety, and depth of argumentation, and provide three suggestions to further strengthen the argument."

Teachers can organize classroom discussions on "What Makes a Good Prompt," allowing students to compare the quality of feedback received from different prompts. This gradually cultivates their ability to independently design and optimize prompts, truly achieving "learning from GAI." Xu Linlin et al. (2024) point out that "the limitation of GAI's strategy provision lies in the fact that its effectiveness is constrained by 'prompts' or 'instructions'"; therefore, "teachers should focus on guiding students to apply knowledge to real-world contexts, fostering their ability to collaborate with GAI and transfer knowledge."

3.4. Redefining the Roles of Teachers and Students

With the introduction of GAI tools, the roles of both teachers and students need to be adjusted accordingly.

The teacher's role shifts from "corrector" to "designer" and "facilitator." With GAI taking on most of the basic error-correction tasks, teachers' time and energy are

freed up to focus on more creative and professional work: designing targeted writing assignments and feedback activities, reviewing the accuracy of GAI feedback and applying professional judgment, providing personalized guidance tailored to individual differences, organizing classroom discussions and peer evaluations, and guiding students toward deep reflection. Yuan Rui et al. (2026) vividly illustrate the process by which teachers transition from "technology anxiety" to "integration and innovation." One participating teacher noted in an interview: "Although GAI can efficiently handle basic tasks such as information retrieval, students often use it more proficiently than teachers. If left to self-exploration alone, the application of technology easily remains superficial." Therefore, teachers need to guide students to "further enhance their ability to discern the authenticity of information and engage in higher-order thinking, while preserving the value of problem transfer."

The Transformation of the Student Role: From "Passive Recipient" to "Active Reflector." GAI provides students with an environment of immediate, private feedback, reducing their anxiety about making mistakes and encouraging them to boldly experiment and revise repeatedly. However, this also places higher demands on students: they must actively pose questions to GAI, critically evaluate the effectiveness and appropriateness of its suggestions, and integrate the feedback into their own cognitive frameworks. Research by Pei Yanlin (2024) indicates that GAI-assisted instruction effectively alleviates writing anxiety precisely because it creates a "low-threat, high-support" learning environment, allowing students to gradually build writing confidence without the pressure of negative evaluation.

3.5. Potential Risks and Mitigation Strategies

Although GAI demonstrates tremendous potential in writing feedback, its application is accompanied by risks that cannot be ignored.

Issues with feedback accuracy. GAI may generate grammatically correct but contextually or factually inaccurate expressions, or even "invent" errors that do not exist. Huang Jianhong's (2024) research found that ChatGPT sometimes exhibits "self-doubt"—when students question GAI's feedback, GAI may immediately retract previously correct suggestions. Therefore, educators should establish a mechanism combining "human review with feedback reliability prompts" to guide students toward maintaining a critical attitude toward GAI feedback rather than accepting it uncritically.

Risks of Overreliance and Academic Integrity. Some students may have GAI directly generate entire essays or large sections of text to replace their own thinking. Tong Xiaoxi (2025) observed in teaching practice that "some students blindly copy content generated by GAI in order to finish their writing sooner." In response, teachers should strengthen formative assessment by requiring students to submit records of their interactions with GAI and evidence of revisions along with their final drafts; they should also design assignments that align with students' authentic

personal experiences and emotions to reduce the likelihood of GAI substitution. As one student noted, the use of GAI should "follow certain principles and combine traditional teaching methods with GAI" (Yang Jinghuan, 2025).

Teachers and students lack sufficient GAI literacy. Yuan Rui et al. (2026) described the "technological anxiety" experienced by teachers in the early stages of the project: "The rapid iteration of GenAI technology and the explosive growth of various tools have caused them to feel technologically alienated." If teachers are unable to formulate effective prompts or evaluate feedback, and students cannot use the technology appropriately, the empowering effects of GAI will be significantly diminished. Therefore, schools should incorporate GAI usage skills—such as "prompt design"—into teaching research activities and school-based professional development to help teachers and students enhance their digital literacy.

4. Conclusion

4.1. Research Findings and Key Insights

Through a systematic analysis of the challenges in providing feedback on traditional high school English essays, combined with the functional characteristics of GAI and existing empirical research, this paper draws the following key insights:

First, generative artificial intelligence can effectively resolve the "impossible triangle" in traditional feedback—where "timeliness, comprehensiveness, and personalization" are difficult to achieve simultaneously. It not only reduces teachers' repetitive workload but also provides students with immediate, diverse, and targeted feedback support, turning "personalized guidance in large-class settings" from an ideal into reality. Empirical research by Liu Mengjun et al. (2025) indicates that "GAI feedback can comprehensively improve students' writing performance," with particularly significant effects on grammatical correctness and the accuracy of vocabulary and phrasing.

Second, human-machine collaboration is the optimal solution, rather than GAI replacing teachers. Although GAI's feedback capabilities at the linguistic level are relatively mature, limitations remain in humanistic dimensions such as content depth, logical argumentation, reader awareness, and value guidance. Xu Fang (2025) points out that the key pedagogical issue facing GAI-enhanced writing instruction is the "dialectical relationship between empowerment and cognitive dependency." Therefore, the most effective model should be "GAI handling foundational tasks + teachers focusing on higher-order guidance" to ensure the comprehensiveness and professionalism of feedback.

Third, the digital literacy of teachers and students is a key variable determining the effectiveness of GAI applications. The use of GAI does not automatically lead to instructional improvements; only when teachers and students possess the ability to design high-quality prompts, critically evaluate GAI outputs, and reasonably define the division of labor between humans and machines can the technology's potential

for empowerment be truly unleashed. As Zhou Ying (2026) noted, "Teachers and students should become the masters of GAI, playing a leading role, while GAI serves merely as an auxiliary scaffold, not a shortcut."

4.2. Limitations and Reflections

As a non-empirical study based on literature analysis, this paper has obvious limitations. The main theoretical deductions and case analyses lack support from first-hand data, and the application models and strategic recommendations proposed in this paper still require further validation through classroom practice.

4.3. Recommendations and Outlook

The following recommendations are proposed for future teaching practice and research: First, teachers should proactively conduct "micro-experiments" in GAI-assisted writing instruction, starting with a single class or a specific type of writing task to accumulate practical experience and gradually optimize application strategies. As demonstrated by the lesson study model presented by Yuan Rui et al. (2026), evidence-based continuous improvement by teachers can effectively drive teaching innovation and professional development. Second, schools should incorporate GAI usage skills—such as "prompt design"—into teaching research activities and school-based professional development programs to help teachers enhance their digital literacy and lower the barriers to technology adoption. Third, researchers and frontline teachers can strengthen collaboration to systematically validate and iterate different application models through action research and other methods, providing empirical evidence for broader implementation. Future research could extend the intervention period, integrate diverse teaching strategies and task types, and further explore the long-term impact and applicability of GAI feedback (Liu Xi, 2025).

Generative AI offers tangible hope for resolving the long-standing challenge of providing feedback on high school English writing. It is not merely a tool for efficiency but a transformative force with the potential to reshape the ecosystem of writing instruction. However, the boundaries of technology are never the boundaries of education—what truly determines educational quality remains the professional wisdom of teachers and their deep commitment to every student. While embracing the empowerment of technology, GAI can only truly become a powerful support for the development of students' writing abilities if we consistently uphold the fundamental purpose of education: "nurturing students."

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