



Generative AI as a Collaborative Companion: Enhancing Peer Feedback in EFL Writing Classes

Xiaolin Wang^{1†}

Wenxia Zhang²

1. Northeast Forestry University

2. Tsinghua University

This paper explores the integration of Generative Artificial Intelligence (GAI) into peer feedback in English as a Foreign Language (EFL) writing class as a collaborative companion, aiming at enhancing peer feedback engagement and improving overall writing ability. This study first proposes a framework for integrating GAI in peer feedback, focusing on its dual roles as a feedback provider and recipient, and introduces the steps of implementing GAI in peer feedback. It continues with a discussion of the major advantages of this new feedback approach such as creating a less-pressured learning environment, providing dynamic and customizable feedback and fostering collaboration between humans and GAI. Additionally, the major implications of this study are also discussed. This exploratory study will shed light on a deeper understanding of incorporating GAI as a digital peer to improve students' peer feedback experience in EFL writing classes and equip them with AI competencies.

Introduction

As a popular pedagogical activity in process-oriented instruction, peer feedback has been widely used in teaching and learning EFL writing and has attracted much attention from writing researchers for various benefits, such as helping writers identify weaknesses in their essays, improve their writing ability and deepen their understanding of writing

[†]Address for correspondence: Northeast Forestry University - 26 Hexing Rd, Xiangfang District, Harbin, Heilongjiang, 150040, China. Email: dqwangxl@163.com

(Villamil & Guerrero, 2019; Yu & Hu, 2017). Additionally, participating in peer feedback can help students develop critical evaluation skills (Berg, 1999) and become more autonomous learners (Lee, 2017). However, traditional peer feedback often encounters challenges such as variability in feedback quality and sociocultural issues (Tsui and Ng, 2000). The rapid rise of GAI is having profound implications for teaching and learning and also introduces new possibilities for peer feedback. This paper presents a framework for incorporating GAI into peer feedback in EFL classrooms. The framework is designed to enhance human-AI collaboration by treating GAI as a collaborative peer rather than an authority. This new approach helps students build AI-integrated feedback literacy, improve their revision strategies, and further develop more effective writing skills.

Literature Review

Peer Feedback in EFL Writing

Peer feedback was defined by Breuch (2004) as “responding to one another’s writing for the purpose of improving writing” (p. 10). In comparison with peer assessment which requires students to grade the work of their peers, Liu and Carless (2006) characterized peer feedback as a form of communication in which learners participate in dialogues focused on their performance and the criteria for achievement. (p. 280). Peer feedback was defined by Liu and Hansen (2002) as:

The use of learners as sources of information and interactants for each other in such a way that learners assume roles and responsibilities normally taken on by a formally trained teacher, tutor, or editor in commenting on and critiquing each other’s drafts in both written and oral formats in the process of writing. (p. 1)

This definition was employed in many previous studies (Min & Chiu, 2021; Yu, 2014; Yu & Lee, 2016). Researchers have investigated various issues of peer feedback, among which the benefits of peer feedback have attracted considerable attention (Berg, 1999; Villamil & Guerrero, 2019; Yu & Hu, 2017; Zamel, 1983). Many studies proved that feedback could assist learners’ growing understanding of writing (Cho et al., 2010), help

them see weaknesses in their writing and make improvements (Lam, 2010; Pope, 2001), facilitate meaningful interaction with peers and greater exposure to ideas (Berg, 1999), make them better writers (Yu & Hu, 2017), and develop critical writing techniques, such as writing to a real audience, acknowledging others' points of view (Lee, 1997, 2016; Rollinson, 2005).

Several studies have been conducted to compare which is more beneficial, to give or to receive. Lundstrom and Baker (2009) found that feedback providers made more progress in writing than feedback receivers. On the contrary, Trautmann's (2006) research indicated that receiving peer feedback was more effective in prompting revision than providing feedback. Mutual benefits found in both writers and reviewers include 1) a supportive socio-interactive environment in which students receive and provide social supports and peer scaffolding (Hu & Lam, 2010); 2) mutual learning that takes place within the socially constructive process and meaning-making and knowledge transformation realized through peer feedback (Berg, 1999; Zamel, 1983); 3) a favorable instructional environment for feedback providers and receivers to work within their ZPD (Zone of Proximal Development), and moving from the stage of other-regulation to self-regulation (Villamil & Guerrero, 2019).

However, some scholars did not show such optimism. Nelson and Carson (1998) and Tsui and Ng (2000) discovered that students trusted peer comments less than teacher feedback. Mendonca and Johnson's (1994) study showed low uptake rates of revisions based on peer feedback. Several previous research found that Chinese cultural issues such as "face" and "power distance" constrained the peer feedback activity (Carson & Nelson, 1996; Crampton, 2001; Hyland, 2000; Nelson & Carson, 1998).

Training for peer feedback has been widely investigated for improving the quality of peer feedback (Berg, 1999; Min, 2005; Rollinson, 2005) since many teachers and researchers were concerned that students may lack the ability to construct effective peer feedback (Min, 2005; McConlogue, 2015; Panadero, 2016). Trained peer review positively influenced ESL students' revision types and the quality of texts (Berg,

1999) , and improved students' attitudes toward peer feedback (Min, 2008). Scholars have suggested various approaches for peer feedback training. Rollinson (2005) explored how L2 writing teachers could develop appropriate implementation procedures and create a positive environment for peer feedback. He proposed that the objectives of pre-training should mainly concern three areas: awareness-raising, productive group interaction, and productive response and revision.

Min (2005) designed a four-step procedure for peer review: clarifying the writer's intention, identifying the problem, explaining the nature of the problem, and making specific suggestions. She found that the number and the quality of the peer comments increased after the training. Hu (2005) provided six types of peer feedback training activities to ESL university students: awareness-raising (whole-class and small-group discussion), demonstration (examination and discussion of sample peer comments on excerpts and revisions), practice (students providing feedback to an essay written by a previous student and discuss the appropriacy of the feedback), reflection and instruction (discussion and instruction in appropriate response behavior), explanation of procedures (explanation of how peer review works and the use of the guiding questions), and pre-response review (a teacher-led brief review of essential aspects of peer review). These training programs developed students' positive attitudes toward peer feedback and improved their writing at both local and global levels (Hu, 2005; Min, 2005).

Generative AI in Writing Instruction and Feedback

The rapid development of generative AI has drawn considerable attention from researchers exploring its integration into writing instruction and feedback. A growing number of studies compared AI and human feedback. For example, Wei and Li (2023) compared the features of ChatGPT feedback and teacher feedback in providing written corrective feedback, finding that ChatGPT primarily provided direct feedback, such as "correct 'a' to 'the,'" which helped students quickly identify and correct errors in their writing. While teacher feedback tended to be indirect, such as "please adjust the sentence to make it more concise," encouraging students to actively engage in the revision process and develop critical thinking skills.

Some studies revealed that compared with ChatGPT feedback, well-trained evaluators, such as teachers, were generally better able to meet students' needs when providing feedback (Evmenova et al., 2024; Steiss et al., 2024). However, these studies also acknowledged that GAI could serve as a valuable supplementary tool in education, particularly when teacher resources were limited or when quick feedback was needed (Evmenova et al., 2024; Steiss et al., 2024). Besides, there was a strong alignment between the AI's evaluations and those of teachers' assessments (Jauhiainen & Garagorry, 2024). Escalante and Barrett's study (2023) revealed that for ENL (English as a New Language) students, AI-generated feedback did not result in superior linguistic progress compared to those who received feedback from a writing teacher. Their study also found that student preferences were almost evenly divided between AI-generated feedback and feedback from human instructors. Banihashem et al.'s research (2024) focused on peer feedback and found that students' feedback was evaluated as higher quality compared to the ChatGPT-generated feedback. Their findings also suggested that both ChatGPT and peer feedback could play complementary roles in enhancing the feedback process.

The research findings suggested that while generative AI might not fully replace human feedback, it can play a valuable, supportive role in writing instruction for various advantages. Most scholars acknowledged that utilizing AI for providing feedback could significantly reduce the time teachers spend on responding to students' assignments and could give individualized feedback (Escalante & Barrett, 2023; Evmenova et al., 2024; Jauhiainen & Garagorry, 2024; Parker et al., 2023; Washington, 2023). The ability to provide quick feedback can be particularly beneficial for students, which might enhance the feedback process by providing students with immediate insights into their work (Banihashem et al., 2024; Evmenova et al., 2024). Besides, AI tools like ChatGPT are widely accessible, making them a convenient resource for educators aiming to support writing instruction (Evmenova et al., 2024). These tools not only address immediate writing needs, such as enhancing language and overcoming writer's block, but also offer personalized feedback that encourages students to engage more deeply with their writing (Washington, 2023).

In addition to providing corrective feedback, generative AI can also be used to offer feedforward—feedback that focuses on future improvement rather than just identifying past mistakes. This proactive approach helps students understand how to enhance their writing in future tasks, rather than solely focusing on what they did wrong in the current piece (Lee, 2017). AI's ability to suggest strategies for future writing improvements can be particularly beneficial in writing instruction (Kim et al., 2024). The integration of feedforward into AI-generated feedback could encourage students to develop their writing skills over time, fostering a growth-oriented mindset.

Despite its many benefits, researchers also identified challenges and limitations associated with using GAI for writing tasks. First, GAI tools are usually used by students without supervision, which limits their effective use, as GAI may generate hallucinations or incorrect information (Alkaissi & McFarlane, 2023; Choudhuri et al., 2023). Students should develop communication skills to prompt GenAI effectively, along with critical thinking abilities to evaluate AI-generated content and incorporate it into their writing (Choudhuri et al., 2023). Second, GAI can effectively evaluate factual accuracy but struggles with complex, higher-level responses, which require more precise prompts and detailed input (Jauhiainen & Garagorry, 2024). Third, the feedback provided by GAI was sometimes excessive and not always aligned with students' specific needs (Banihashem et al., 2024; Evmenova et al., 2024). Fourth, frequent use of AI tools might diminish students' writing skills and gradually lead them to over-reliance on technology rather than developing writing abilities (Cummings, 2024; Washington, 2023). In addition, researchers expressed concerns about inappropriate use of GAI in writing such as plagiarism and ethical issues (Fengchun & Wayne, 2023; Tlili et al., 2023).

From the reviewed literature, it is evident that GAI can offer valuable support in writing instruction and feedback. It also presents distinct challenges that must be addressed to ensure effective use. How to make full use of GAI in writing instruction to avoid these potential disadvantages urgently needs to be explored. Many studies focused on applying GAI as a content generator which provides help in writing, or as an assistant to writing teachers (Evmenova et al., 2024; Wei & Li,

2023). Few studies focus on integrating GAI in peer feedback. This study, therefore, seeks to bridge this gap by exploring GAI as a digital peer in a feedback group and providing explicit guidance for the process.

Framework for Generative AI in Peer Feedback

The Dual Roles of Generative AI in Peer Feedback

Generative AI has the potential as both a feedback provider and a feedback recipient, which can enhance students' peer feedback experience.

Generative AI as a Feedback Provider

Generative AI plays the role of a feedback provider in peer feedback activity. Based on the general criteria for peer feedback and task-specific criteria given by the peer, GAI acts as an additional peer, helping students by offering both positive and negative feedback from various aspects such as organization, vocabulary, sentence structure and mechanics. In addition, GAI peers can also provide feedback from task-specific aspects such as stance and logic of argumentative writing. By aligning with the writing criteria or classroom learning objectives, GAI feedback can be customized to emphasize particular writing skills that students are practicing, such as thesis development or supporting evidence.

Different from a real student peer, a GAI peer can tailor the feedback according to the directions of its peer. For example, besides the criteria given by the teacher, different students have their unique learning focus, some students want to improve their vocabulary use, and some want to enhance the coherence of the essay. Once they input these directions, GAI peers can give particular feedback immediately. From this aspect, a GAI peer could meet the specific needs better than a human peer. Students can also ask follow-up questions if they cannot understand the feedback given by the GAI peer and get immediate answers.

Generative AI as a Writer and Feedback Recipient

Generative AI also serves as a feedback recipient by producing texts that students evaluate. GAI writes an article based on the same prompt as student writers and receives student peers' feedback. In this role reversal, students take on the responsibility of providing feedback to GAI's

writing according to the same criteria, allowing them to exercise their evaluative skills and internalize criteria. This process encourages students to think critically about what makes writing effective. By reading and analyzing AI-generated texts, students identify strengths and weaknesses in the drafts and reflect on their own work. As a feedback recipient, GAI revises the text based on the feedback, and it has the ability to choose whether to incorporate the feedback or not and give the reason. This process transforms the feedback process from a static evaluation activity into a reciprocal process, where students witness the impact of their feedback on their peer's writing quality. By observing the GAI's revisions, students learn how to apply revision strategies in their work, gaining insights into how to make revisions to enhance the overall quality of their essays. GAI can further enrich this process by giving responses to students' feedback including the effectiveness and feeling of receiving the feedback, which can enhance students' ability of evaluating peers' drafts and their feedback literacy.

Implementation Process of AI Integration in Peer Feedback

In an AI integration peer feedback system, two students and one GAI peer work together in a collaborative group. The three-peer group allows students to compare human and GAI feedback without excessive workload. Each student (including the GAI peer) writes a text and receives two pieces of feedback. Below is a detailed description of the implementation process for integrating GAI into peer feedback in the classroom (Figure 1).

Selecting the GAI Platform

There are numerous generative AI platforms available, each with varying levels of customization and capabilities. Some AI tools may be better suited for specific types of feedback, such as grammar or stylistic suggestions, while others may focus on overall content and argumentation quality. It is essential to choose a platform that aligns with the academic goals of the course and the level of writing expected from students. The AI platform should also be user-friendly, with an interface that allows students to easily access feedback and provide evaluations.

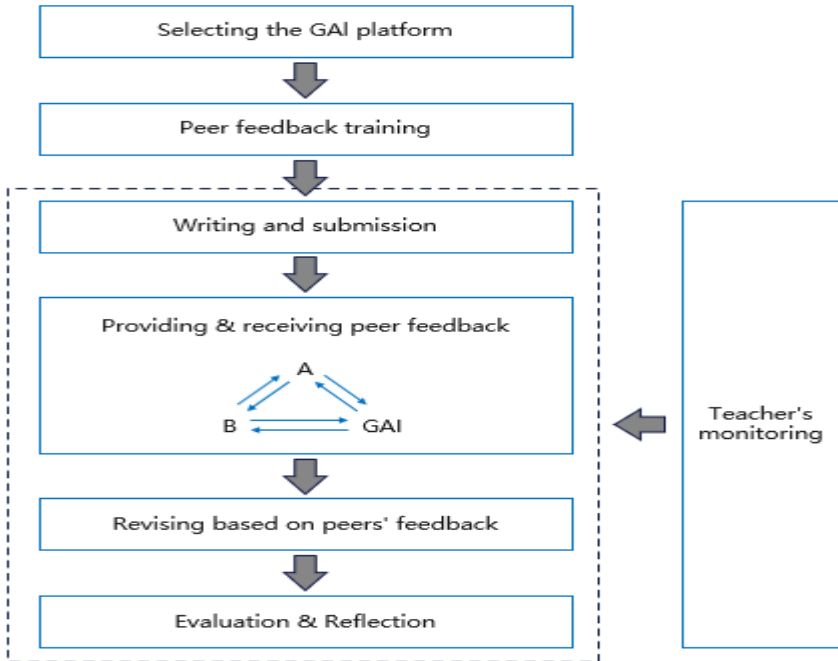


Figure 1 The implementation process of GAI integration in peer feedback

Peer Feedback Training

Peer feedback training is an indispensable process conducted at the beginning of the semester. Based on the feedback training approaches suggested by previous studies (Berg, 1999; Hu, 2005; Lee, 2017), the training mainly follows four steps: awareness-raising, demonstrating, exploration and reflection.

At the beginning of the semester, the teacher used awareness-raising activities to establish a positive attitude toward GAI-integrated peer feedback. Through the discussion of the concerns about peer feedback, the teacher shares the basic requirements of successful peer feedback, such as a collaborative stance of interaction and active participation. Additionally, the teacher needs to help students treat GAI as a collaborative companion instead of a flawless authority. There might be problems with AI-generated text, so students should read the GAI peer's

draft carefully and critically. Similarly, students can accept, partially accept, or even reject AI suggestions if they feel the suggestions do not align with their writing intentions. Both student peer and GAI peer's feedback are valuable and should be viewed with an open mind.

By demonstrating how GAI provides feedback on aspects like grammar and argumentation and contrasting it with human peer feedback, the teacher leads a discussion on how each type contributes to improving writing quality. Different from the traditional peer feedback training process, the training of GAI-integrated peer feedback includes the demonstration of the input directions into the GAI. First, the GAI's role as a college student in an EFL writing class and a peer in a feedback group should be clearly defined. Second, the GAI should be provided with a clear and specific writing prompt, which is the same as the one provided to other students, to generate a writing draft. Third, clear criteria for evaluating peers' drafts should be provided to the GAI. The criteria should be the same as what is provided to other students, and the teacher also encourages students to tell their unique learning goals to the GAI peer. For instance, "Please focus extra attention on vocabulary usage and suggest alternative words where appropriate." These procedures allow the GAI to function as a peer aligned with the learning objectives, providing feedback that is both criteria-based and tailored.

After the demonstration stage, students are allowed to explore the feedback process by themselves. They can review drafts written by a human and a GAI peer following the same criteria. In addition, they can also compare human and GAI feedback, and revise accordingly. Afterwards, students reflect on the feedback they received from both GAI and their human peers, considering how each affected their revision. This peer feedback training prepares students to engage effectively with both types of feedback, treating the GAI and human peers equally as supportive peers.

Writing, Feedback, Revision and Evaluation

The writing, feedback, revision, and evaluation process is designed to foster collaborative learning and critical thinking by engaging students and GAI in a peer feedback cycle.

Step 1: Writing and submission

Each student writes a draft in response to the assigned prompt and submits it for feedback within the group. This creates a shared basis for review and allows each peer, including the GAI, to engage with the same task.

Step 2: Providing peer feedback

After students share their drafts with each other, they begin to review the two peers' drafts and provide feedback based on the same criteria. Students input the criteria given by the teacher or upload the criteria file to the GAI directly and tell the GAI peer to give feedback accordingly. Unlike human peer feedback which needs to wait for a while, the GAI peer delivers feedback immediately after students input their directions, allowing students to access the feedback instantly. If the initial feedback from the GAI peer is unsatisfactory, students can adjust their directions, specifying the type of feedback they need, until they receive feedback that meets their expectations.

Step 3: Revision based on feedback

Each student receives feedback from the two peers and revises their drafts accordingly. In the training session, students are encouraged to be critical when dealing with feedback from both human and GAI peers. They also instruct the GAI peer to apply a critical approach when revising its text, accepting or rejecting feedback as needed and explaining the reason behind these choices. During the revision process, if any feedback is unclear or requires further clarification, students can request additional details from the GAI peer. This may involve asking questions such as, "Can you explain why this sentence needs rephrasing?" This allows students to seek further explanations on specific feedback points to make the revision more effective.

Step 4: Evaluation and reflection

Following the revision stage, students evaluate the feedback they received from both their human peer and the GAI peer. This step, aimed at providing "meta feedback," involves evaluating how well the feedback aligned with the writing criteria and whether it was clear, relevant and practical, and thus enhances the overall writing quality.

After the evaluation, students reflect on the effectiveness of their feedback contributions. They consider whether their feedback helped improve peers' drafts and how well they followed the feedback guidelines. Additionally, they think about strategies to improve the quality of their feedback in the future.

Teacher's Ongoing Monitoring

To ensure the effectiveness of the integration of GAI in peer feedback, instructors need to regularly monitor students' progress and assess the quality of the feedback and revisions. This can be done through several methods, such as observing how students engage with the feedback and gathering GAI feedback and the revised drafts. Instructors should also provide additional guidance if students are struggling to interpret or apply feedback, ensuring that both GAI and human peer feedback contribute to students' writing development. Instructors can also create opportunities for students to share their experiences with AI feedback and discuss how to use GAI more effectively in peer feedback.

The implementation process of GAI integration in peer feedback ensures alignment with course goals, prepares students to engage critically with feedback, and fosters active learning through structured steps. Immediate GAI feedback complements human input, while evaluation and reflection deepen understanding of feedback quality. Teacher monitoring ensures adaptability and addresses challenges, creating a balanced system that supports writing development and critical thinking. These steps create a balanced, efficient system that supports writing development and critical thinking.

Discussion and Implications

Advantages of the GAI Integration Peer Feedback

Integrating GAI into peer feedback brings several unique advantages that enhance the overall learning experience. This new approach addresses some of the common challenges in traditional peer feedback and offers new opportunities for personalized and dynamic interactions. The following sections explore the key advantages of GAI-integrated peer feedback.

Creating a less-pressured learning environment

In the GAI-integrated peer feedback, students experience reduced pressure when providing and receiving feedback. When students provide feedback to a GAI peer, they may feel freer to express critical points or suggestions without worrying about hurting social relationships. In cultures where “face” or maintaining social harmony is highly valued, such as among Chinese university students, critiques are sometimes to be held back to avoid potential conflict. With the GAI peer, students are more likely to be liberated from these social pressures, enabling them to be more honest and straightforward in providing feedback.

When students act as feedback recipients, they sometimes feel uncomfortable about classmates’ critical suggestions, and may feel offended by peers’ overly direct tone, even when classmates do not intend to cause offense. This can lead to defensiveness or reluctance to revise. In contrast, feedback from a GAI peer is automatically generated and relatively neutral, helping students focus more on the feedback itself without being affected by personal emotions.

Providing dynamic and customizable feedback

GAI offers feedback instantly, which differs from the traditional human peer feedback period. Besides, GAI feedback is easily customizable. Students can refine their feedback preferences at any point, asking the GAI to focus on particular writing aspects, such as vocabulary usage, grammar, or coherence. This customization gives students a targeted learning experience by focusing on their specific areas of need.

Moreover, if the initial feedback from GAI does not meet expectations or is not clear enough, students can request further clarification from the AI. For instance, if a student requires a more thorough explanation of a particular grammatical error, they can input a follow-up question and receive an explanation, which can assist their comprehension and revision. The immediate and customizable feature of GAI allows the peer feedback process to be dynamic and interactive, which means students can seek help whenever they need to improve their understanding of feedback and writing quality.

Fostering collaboration between humans and GAI

The integration of peer feedback and AI fosters greater collaboration between humans and GAI. In this new setup, students are encouraged to view AI as a collaborative companion rather than an all-knowing authority, which reshapes their interaction with technology in the learning process. Traditionally, students might feel intimidated by GAI's advanced abilities or assume that AI-generated feedback is flawless, potentially leading them to follow suggestions without question. However, considering GAI as a peer helps students to engage more critically with its feedback and evaluate it as the feedback from a human peer. This shift in perception of AI-integrated feedback allows students to treat AI suggestions with a balanced perspective. Moreover, through the practice of AI-integrated peer feedback, students acknowledge both the strengths and limitations of AI feedback. As they provide directions to GAI, explaining what type of feedback they need, both students and AI participate in a mutual learning process, where both human and AI peers benefit from each interaction. Through revision based on human peer feedback, GAI also produces better text that meets certain requirements. This activity thus creates a collaborative relationship where students see themselves as contributors who play an active role in shaping and improving the feedback process.

Implications

The integration of Generative AI offers a unique opportunity for enhancing students' engagement and effectiveness in peer feedback. However, its success depends on careful implementation, thoughtful training, and continuous teacher involvement. Below are the key implications for using GAI effectively in peer feedback.

Training for effective GAI-integrated peer feedback

Training is essential for guiding students to engage effectively in GAI-integrated peer feedback. Many students may lack prior peer feedback experience or feel unfamiliar and even apprehensive about the GAI-integrated peer feedback. The training session can break the ice by helping students develop a positive attitude towards peer feedback and equipping them with the skills needed to engage critically with feedback, both as feedback providers and recipients. This includes teaching students how to prompt the AI with precise instructions and use task-

specific criteria to elicit meaningful feedback. Meanwhile, students need guidance on exploring the advantages and limitations of GAI and human peers, combining the feedback with their own needs to make full use of the two sources of feedback. Training should also focus on fostering critical thinking skills, enabling students to evaluate both human and AI feedback effectively. Moreover, students should be guided in providing constructive feedback to AI-generated drafts. Activities such as identifying strengths and weaknesses in GAI texts and explaining their reasoning help students internalize evaluation criteria, which can also improve their ability to revise their work.

Enhancing teachers' AI competency

For GAI integration peer feedback to be successful, teachers must develop strong GAI competency. This involves building a human-centered mindset, understanding how GAI functions, its strengths and limitations, and its role in the classroom. “The human-centered mindset defines the values and critical attitudes teachers need to develop towards human-AI interactions (AI competency framework for teachers)”. Teachers should cultivate critical views to evaluate the benefits and risks of applying GAI in the classroom while ensuring human agency.

Besides, teachers should familiarize themselves with different GAI tools and their features to select proper AI tools that are in accord with their teaching goals. Additionally, teachers need to learn how to guide students in using GAI effectively, including providing clear prompts, evaluating GAI-generated feedback, integrating it into their revisions, and evaluating the drafts generated by GAI. Teachers should also be able to distinguish and solve problems students may encounter throughout the peer feedback process, such as inappropriate AI responses or overly general feedback. By enhancing AI competency, teachers can build a bridge between technology and learning. Their expertise ensures that GAI is used in a way that enhances peer feedback engagement and improves students' writing qualities.

Redefining GAI as a collaborative peer

Reframing GAI as a collaborative companion rather than a tool is vital for fostering meaningful interaction between students and AI and thus enhancing the effectiveness of peer feedback. This approach shifts the

focus from passively receiving AI feedback to engaging in an active, reciprocal process of collaboration. This aligns with UNESCO's 2024 *AI competency framework for students*, which emphasizes the importance of guiding students to engage as active co-creators of AI and keep critical thinking. Students should be encouraged to view GAI as a peer within the feedback group, working together to achieve shared writing goals. By treating GAI as a peer, students are empowered to critically assess its feedback rather than blindly following suggestions. This shift helps them recognize that AI, like human peers, can make mistakes and requires guidance to improve its output.

By providing clear directions to GAI and evaluating its feedback, students take ownership of the learning process and enhance their evaluative and revision skills. Moreover, collaboration with GAI offers unique opportunities for students to witness the immediate impact of their feedback on GAI-generated revisions. This mutual exchange of feedback transforms peer review into a dynamic process, where both human and AI peers contribute to improving the quality of texts. Treating GAI as a virtual peer and study companion rather than merely a feedback generator supports the primary goal of writing instruction—enhancing students' writing abilities rather than simply teaching them to use AI tools.

Conclusion

This paper constructs a framework for applying GAI as a collaborative companion in peer feedback in EFL writing. Different from the studies that teach students how to use AI as a tool to get feedback, this study emphasizes that GAI serves as a means to achieve the ultimate goal of writing improvement, encompassing both feedback and feedforward, which is essential to the writing classroom. To achieve this goal, GAI in this study serves as a digital peer who acts as both feedback provider and recipient and empowers the ability to analyze and evaluate by providing clear criteria and directions. This interactive process fosters a collaborative learning environment, where students and GAI engage as equal peers, supporting each other's growth as writers. This study also emphasizes the significance of peer feedback training, teachers' AI

literacy and the role of GAI as a collaborative peer. Students who participate in this innovative peer feedback activity are expected to develop AI competencies and collaborative skills, and become more independent learners. Future research could explore the long-term impacts of AI-integrated peer feedback on students' engagement and writing development to reveal how sustained use of AI tools influences learning outcomes and helps refine their effective integration into writing instruction.

Authors

Xiaolin Wang, PhD., is a lecturer at the College of Foreign Languages, Northeast Forestry University, China. Her research interests include foreign language education, language assessment and EFL writing.

Wenxia Zhang, Ph.D., is a professor of Applied Linguistics at the Department of Foreign Languages and Literatures, Tsinghua University, China. Her main research interests include language testing and assessment, EFL writing and automated writing evaluation.

References

- Alkaiissi, H., & McFarlane, S. I. (2023). Artificial hallucinations in ChatGPT: implications in scientific writing. *Cureus*, *15*(2).
<https://doi.org/10.7759/cureus.35179>
- Banihashem, S. K., Kerman, N. T., Noroozi, O., Moon, J., & Drachsler, H. (2024). Feedback sources in essay writing: peer-generated or AI-generated feedback? *International Journal of Educational Technology in Higher Education*, *21*(1), 23.
<https://doi.org/10.1186/s41239-024-00455-4>
- Barrett, A., & Pack, A. (2023). Not quite eye to AI: student and teacher perspectives on the use of generative artificial intelligence in the writing process. *International Journal of Educational Technology in Higher Education*, *20*(1), 59.
<https://doi.org/10.1186/s41239-023-00427-0>
- Berg, E. C. (1999). The effects of trained peer response on ESL students' revision types and writing quality. *Journal of Second*

- Language Writing*, 8(3), 215–241. [https://doi.org/10.1016/s1060-3743\(99\)80115-5](https://doi.org/10.1016/s1060-3743(99)80115-5)
- Breuch, L. A. K. (2004). *Virtual peer review: Teaching and learning about writing in online environments*. Albany: State University of New York Press. <https://doi.org/10.1080/10572250701588681>
- Carson, J. G., & Nelson, G. L. (1996). Chinese students' perceptions of ESL peer response group interaction. *Journal of Second Language Writing*, 5(1), 1–19. [https://doi.org/10.1016/s1060-3743\(96\)90012-0](https://doi.org/10.1016/s1060-3743(96)90012-0)
- Cho, K., Cho, M. H., & Hacker, D. J. (2010). Self-monitoring support for learning to write. *Interactive Learning Environments*, 18(2), 101–113. <https://doi.org/10.1080/10494820802292386>
- Choudhuri, R., Liu, D., Steinmacher, I., Gerosa, M., & Sarma, A. (2023, December). How far are we? The triumphs and trials of generative AI in learning software engineering. *Proceedings of the International Conference on Software Engineering* (pp. 1–13). <https://doi.org/10.1145/3597503.3639201>
- Crampton, C. D. (2001). The mutual knowledge problem and its consequences for dispersed collaboration. *Organization Science*, 12(3), 346–371. <https://doi.org/10.1287/orsc.12.3.346.10098>
- Cummings, R. E., Monroe, S. M., & Watkins, M. (2024). Generative AI in first-year writing: An early analysis of affordances, limitations, and a framework for the future. *Computers and Composition*, 71, 102827. <https://doi.org/10.1016/j.compcom.2024.102827>
- Escalante, J., Pack, A., & Barrett, A. (2023). AI-generated feedback on writing: insights into efficacy and ENL student preference. *International Journal of Educational Technology in Higher Education*, 20(1), 57. <https://doi.org/10.1016/j.compcom.2024.102827>
- Evmenova, A. S., Regan, K., Mergen, R., & Hrisseh, R. (2024). Improving writing feedback for struggling writers: Generative AI to the rescue?. *TechTrends*, 1-13. <https://doi.org/10.1007/s11528-024-00965-y>
- Fengchun, M., & Wayne, H. (2023). *Guidance for generative AI in education and research*. UNESCO Publishing. <https://doi.org/10.54675/EWZM9535>

- Hu, G. (2005). Using peer review with Chinese ESL student writers. *Language Teaching Research*, 9(3), 321-342. <https://doi.org/10.1191/1362168805lr169oa>
- Hu, G., & Lam, S. T. E. (2010). Issues of cultural appropriateness and pedagogical efficacy: Exploring peer review in a second language writing class. *Instructional Science*, 38(4), 371–394. <https://doi.org/10.1007/s11251-008-9086-1>
- Hyland, F. (2000). ESL writers and feedback: Giving more autonomy to students. *Language Teaching Research*, 4(1), 33–54. <https://doi.org/10.1177/136216880000400103>
- Jauhiainen, J. S., & Garagorry Guerra, A. (2024). Generative AI in education: ChatGPT-4 in evaluating students' written responses. *Innovations in Education and Teaching International*, 1-15. <https://doi.org/10.1080/14703297.2024.2422337>
- Kim, J., Yu, S., Detrick, R., & Li, N. (2024). Exploring students' perspectives on Generative AI-assisted academic writing. *Education and Information Technologies*, 1-36. <https://doi.org/10.1007/s10639-024-12878-7>
- Lam, R. (2010). A peer review training workshop: Coaching students to give and evaluate peer feedback. *TESL Canada Journal*, 27(2), 114. <https://doi.org/10.18806/tesl.v27i2.1052>
- Lee, I. (1997). ESL learners' performance in error correction in writing. *System*, 25, 465-477. [https://doi.org/10.1016/s0346-251x\(97\)00045-6](https://doi.org/10.1016/s0346-251x(97)00045-6)
- Lee, I. (2016). Teacher education on feedback in EFL writing: Issues, challenges, and future directions. *TESOL Quarterly*, 50(2), 518-527. <https://doi.org/10.1002/tesq.303>
- Lee, I. (2017). *Classroom writing assessment and feedback in L2 school context*. Singapore: Springer Nature Singapore Pte Ltd.
- Liu, J., and J. Hansen (2002). *Peer response in second language writing classrooms*. Ann Arbor: University of Michigan Press.
- Liu, N. F., & Carless, D. (2006). Peer feedback: The learning element of peer assessment. *Teaching in Higher education*, 11(3), 279–290. <https://doi.org/10.1080/13562510600680582>

- Lundstrom, K., & Baker, W. (2009). To give is better than to receive: The benefits of peer review to the reviewer's own writing. *Journal of Second Language Writing*, 18(1), 30–43. <https://doi.org/10.1016/j.jslw.2008.06.002>
- McConlogue, T. (2015). Making judgements: investigating the process of composing and receiving peer feedback. *Studies in Higher Education*, 40(9), 1495–1506. <https://doi.org/10.1080/03075079.2013.868878>
- Mendonca, C., & Johnson, K. (1994). Peer review negotiations: revision activities in ESL writing instruction. *TESOL Quarterly*, 28, 745–769. <https://doi.org/10.2307/3587558>
- Min, H. T. (2005). Training students to become successful peer reviewers. *System*, 33(2), 293–308. <https://doi.org/10.1016/j.system.2004.11.003>
- Min, H. T. (2008). Reviewer stances and writer perceptions in EFL peer review training. *English for Specific Purposes*, 27(3), 285–305. <https://doi.org/10.1016/j.esp.2008.02.002>
- Min, H. T., & Chiu, Y. M. (2021). The relative effects of giving versus receiving comments on students' revision in an EFL writing class. *English Teaching & Learning*, 1-28. <https://doi.org/10.1007/s42321-021-00094-2>
- Nelson, G. L., & Carson, J. G. (1998). ESL students' perceptions of effectiveness in peer response groups. *Journal of Second Language Writing*, 7, 113–131. [https://doi.org/10.1016/s1060-3743\(98\)90010-8](https://doi.org/10.1016/s1060-3743(98)90010-8)
- Panadero, E. (2016). Is it safe? Social, interpersonal, and human effects of peer assessment: A review and future directions. In G. T. L. Brown & L. R. Harris (Eds.). *Handbook of social and human conditions in assessment* (pp. 247-266). New York: Routledge.
- Parker, J. L., Becker, K., & Carroca, C. (2023). ChatGPT for automated writing evaluation in scholarly writing instruction. *Journal of Nursing Education*, 62(12), 721-727. <https://doi.org/10.3928/01484834-20231006-02>
- Pope, N. (2001). An examination of the use of peer rating for formative assessment in the context of the theory of consumption values.

- Assessment & Evaluation in Higher Education*, 26(3), 235–246.
<https://doi.org/10.1080/02602930120052396>
- Rollinson, P. (2005). Using peer feedback in the ESL writing class. *ELT Journal*, 59(1), 23-30. <https://doi.org/10.1093/elt/cci003>
- Steiss, J., Tate, T., Graham, S., Cruz, J., Hebert, M., Wang, J., ... & Olson, C. B. (2024). Comparing the quality of human and ChatGPT feedback of students' writing. *Learning and Instruction*, 91, 101894.
<https://doi.org/10.1016/j.learninstruc.2024.101894>
- Tlili, A., Shehata, B., Adarkwah, M. A., Bozkurt, A., Hickey, D. T., Huang, R., & Agyemang, B. (2023). What if the devil is my guardian angel: ChatGPT as a case study of using Chatbots in education. *Smart Learning Environments*, 10(15), 1–24.
<https://doi.org/10.1186/s40561-023-00237-x>
- Trautmann, N. M. (2006). Is it better to give or to receive? Insights into collaborative learning through web-mediated peer feedback. Ph.D. dissertation. Cornell University.
- Tsui, A. B. M., & Ng, M. (2000). Do secondary L2 writers benefit from peer comments? *Journal of Second Language Writing*, 9(2), 147–170. [https://doi.org/10.1016/s1060-3743\(00\)00022-9](https://doi.org/10.1016/s1060-3743(00)00022-9)
- Villamil, O. S., & De Guerrero, M. C. M. (2019). Socio-cultural theory: A framework for understanding the socio-cognitive dimensions of peer feedback. In K. Hyland, & F. Hyland (Eds.). *Feedback in second language writing: Contexts and issues (2nd edition)* (pp. 64–98). New York: Cambridge University Press.
- Washington, J. (2023). The impact of generative artificial intelligence on writer's self-efficacy: a critical literature review. *Available at SSRN 4538043*. <https://doi.org/10.2139/ssrn.4538043>
- Wei, S & Li, L. (2023). Artificial Intelligence-Assisted Second Language Writing Feedback: A Case Study of ChatGPT. *Foreign Languages in China*. 20(03),33-40.
<https://doi.org/10.13564/j.cnki.issn.1672-9382.2023.03.007>
- Yu, S. (2014). Understanding Chinese EFL students' participation in group peer feedback of L2 writing: A sociocultural and activity theory perspective. Unpublished doctoral dissertation, the Chinese University of Hong Kong, Hong Kong, China.

- Yu, S., & Hu, G. (2017). Understanding university students' peer feedback practices in EFL writing: Insights from a case study. *Assessing Writing*, 33, 25–35.
<https://doi.org/10.1016/j.asw.2017.03.004>
- Yu, S., & Lee, I. (2016). Exploring Chinese students' strategy use in a cooperative peer feedback writing group. *System*, 58, 1–11.
<https://doi.org/10.1016/j.system.2016.02.005>
- Zamel, V. (1983). The composing processes of advanced ESL students: Six case studies. *TESOL Quarterly*, 17(2), 165–187.
<https://doi.org/10.2307/3586647>