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Using teacher-supported peer feedback to develop student feedback literacy in L2 writing: An instructional model

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Abstract

To realize the potential of feedback, students need to possess feedback literacy. Frequently implemented in writing classrooms, peer feedback activities carry unique potential for developing student feedback literacy. This paper proposes an instructional model of teacher-supported peer feedback in relation to the enhancement of student feedback literacy from a self-regulatory perspective. The paper conceptualizes student feedback literacy as learners' capabilities to carry out core activities in feedback processes, including seeking, generating, processing, and using feedback during self-regulation. It outlines pertinent teacher support before, during, and after peer feedback activities to facilitate student writers' seeking, generating, processing, and using of feedback during their behavioral self-regulation of writing encompassing self-observation, self-judgement, and self-reaction. The instructional model highlights teacher support to foster an active learner role in feedback processes by giving students opportunities to conduct several rounds of feedback calibration by themselves before seeking teacher feedback. Future studies may investigate the implementation and effectiveness of the instructional model.

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Introduction

Feedback carries great potential to facilitate student learning. To realize such a potential, students need to have feedback literacy, which enables them to play an active role in feedback processes by seeking, generating, processing, and using feedback to enhance their learning (Malecka et al., 2020; Molloy et al., 2020; Nicol, 2020; Sutton, 2012). Various pedagogical interventions have been proposed or implemented to develop students' feedback literacy, including designing an appropriate learning environment (e.g., learning-oriented assessment task design), self- and peer assessment, exemplar analysis, workshops, reflective journals, and so on (Carless, 2022; Carless & Boud, 2018; Carless & Winstone, 2020; Deneen & Hoo, 2021; Fernández-Toro & Duensing, 2020; Han & Xu, 2019b; Hoo et al., 2021; Little et al., 2023; Ma et al., 2021; Man et al., 2022; Wood, 2022).

Among the different types of interventions, peer feedback carries unique opportunities to develop student feedback literacy, particularly learners' ability to generate internal feedback (Nicol et al., 2014). In L2 writing, peer feedback has often been implemented in classrooms, benefiting students linguistically, cognitively, and affectively (Chang, 2016; Yu & Lee, 2016). However, it remains unclear how peer feedback can be utilized to enhance student writers' feedback literacy in a systematic way. Given the important role of feedback in the writing process (Hyland & Hyland, 2019), it is necessary to equip students with appropriate feedback literacy so that they can involve themselves fruitfully in feedback processes for writing improvement. From a self-regulatory perspective (Zimmerman, 1989, 2000), this paper proposes an instructional model of teacher-supported peer feedback to enhance student feedback literacy in the context of L2 writing classrooms. Despite guidelines for implementing peer feedback in writing classrooms in general (Hansen & Liu, 2005; Rollinson, 2005), much needs to be known about how peer feedback can be implemented with a specific focus on the development of student feedback literacy from a self-regulatory perspective, given that student feedback literacy facilitates self-regulation (Winstone & Carless, 2020). This paper fills the gap and aims to provide a framework for using teacher-supported peer feedback for the enhancement of student feedback literacy based on theoretical discussions and empirical investigations of student feedback literacy, learner self-regulation, and internal feedback.

Student Feedback Literacy

The concept of student feedback literacy has gained increasing attention in research on feedback. This concept emerges in accordance with the new paradigm of feedback, which views feedback as processes in which learners actively obtain, understand, and use feedback rather than treating it as information that is transmitted to them (Winstone et al., 2021). Consistent with this learning-centric view of feedback (Carless & Boud, 2018), student feedback literacy emphasizes students' active role in feedback processes. Based on Sutton's (2012) initial conceptualization of student feedback literacy, Carless and Boud (2018) defined it as "the understandings, capacities, and dispositions needed to make sense of information and use it to enhance work or learning strategies" (p.1316) and outlined its four components, including appreciating feedback, making judgements, managing affect, and taking action. Molloy et al.'s (2020) empirical research identified seven components of student feedback literacy, including (1) committing to feedback as improvement, (2) appreciating feedback as an active process, (3) eliciting information to improve learning, (4) processing feedback information, (5) acknowledging and working with emotions, (6) acknowledging feedback as a reciprocal process, and (7) enacting outcomes of processing of feedback information. Four of the seven components are more related to dispositions learners need to possess in feedback processes (see (1), (2), (5) & (6)) and the other three components are related to students' capacities to participate in core activities in feedback processes such as eliciting, processing, and enacting feedback (see (3), (4), and (7)). From an internal feedback perspective, Nicol (2020) argues that student feedback literacy should also involve "students' capacity for internal feedback

generation through providing opportunities for them to capitalise on the natural information comparisons they are already making" (p.17), pointing out that previous conceptualizations of feedback literacy tend to focus on how students make sense of information from external sources but not students' own capacity to generate feedback for themselves. In short, student feedback literacy has been conceptualized as both the capacities to engage in feedback-related activities such as seeking, generating, processing, and using feedback and the dispositions to engage in feedback processes (e.g., an appreciative attitude towards feedback and ability to manage one's emotions in response to feedback).

There has also been an increasing attention to student feedback literacy in L2 writing. Student feedback literacy has been explored in such contexts as engagement with teacher feedback, participation in peer feedback situations, or the context of academic writing (Han & Xu, 2019a; Han & Xu, 2019b; Li & Han, 2022; Yu & Liu, 2021). Focusing on engagement with teacher feedback, student feedback literacy has been defined as the cognitive readiness (e.g., linguistic knowledge and disciplinary knowledge) and socio-affective readiness (e.g., proactivity and appreciation of teacher feedback) that prepare students for engaging with written corrective feedback or teacher feedback on disciplinary writing (Han & Xu, 2019a; Li & Han, 2022). Student feedback literacy in peer feedback situations involves learners' capacities and willingness to engage in peer feedback activities, which is a complex construct that encompasses cognitive readiness (i.e., cognitive capability and knowledge repertoire) and socio-affective readiness (i.e., self-related affect, interpersonal affect, feedback-related affect, and emotion regulation capabilities) (Han & Xu, 2019b). In the context of academic writing, a framework for enhancing student feedback literacy has been proposed, conceptualizing such literacy as including the three dimensions of understanding (i.e., understanding feedback), regulation (i.e., regulating emotions), and evaluation (i.e., evaluating and using feedback) (Yu & Liu, 2021). It seems that research on student feedback literacy in L2 writing has mainly examined two broad categories of learner factors influencing students' engagement in teacher feedback or peer feedback situations (i.e., cognitive readiness and socio-affective readiness).

The literature review above shows that theoretical discussion and empirical investigation of student feedback literacy identified student capacities related to four key specific activities that students undertake in feedback processes (i.e., seeking, generating, processing, and using feedback). From a self-regulatory perspective (Zimmerman, 1989, 2000), these feedback-related activities are indispensable to the three sub-processes of behavioral self-regulation. This paper views student feedback literacy from a self-regulatory perspective. The three sub-processes of self-regulated learning and the link between these sub-processes and feedback-related activities will be explained in the following.

A Self-regulatory Perspective on Student Feedback Literacy

Self-regulation refers to self-generated thoughts, feelings, and actions that are oriented to the attainment of personal goals (Zimmerman, 2000). From a social cognitive perspective, Zimmerman's (1989) triadic analysis of self-regulated learning emphasizes the interaction between personal, behavioral and environmental levels of self-regulated learning. Covert self-regulation (i.e., the personal form of self-regulation) involves monitoring and adjusting cognitive and affective states; behavioral self-regulation involves self-observing and strategically adjusting performance processes while environmental self-regulation involves observing and adjusting environmental conditions or outcomes (Zimmerman, 2000). The self-regulatory perspective taken in this paper focuses particularly on the behavioral form of self-regulation.

The behavioral form of self-regulation encompasses self-observation (i.e., systematically monitoring one's own performance), self-judgement (i.e., using criteria to assess a situation or problem), and self-reaction (i.e., behavioral, personal or environmental self-reactions to one's performance) (Clark & Zimmer, 2014; Zimmerman, 1989). The three sub-processes of self-regulation are closely related to the four core feedback-related activities mentioned earlier because these sub-processes inevitably involve learners in carrying out the key activities in feedback processes. During self-observation, learners may adopt strategies such as making records of what is observed to keep track of their performance (Zimmerman, 2000). When learners observe (or monitor) their performance, they need to generate self-feedback on whether a target behavior has occurred or not and then self-record the results (Harris et al., 2011) so that self-observation provides information on how students are progressing towards their goals (Clark & Zimmer, 2014).

During self-judgement, students compare self-observed performance with a standard or goal to generate self-evaluation (Zimmerman, 1989, 2000). Their performance can be compared with one's prior experience, another person's performance, or an absolute standard of performance (Zimmerman, 2002). Based on such comparison, students produce self-evaluation regarding the adequacy of their performance. In addition, self-evaluation is not necessarily solitary. It also involves self-directed feedback-seeking and calibration of internal and external sources of feedback (Yan & Brown, 2017). In other words, to make appropriate self-evaluation of their performance, learners need to take part in core activities in feedback processes such as seeking feedback from external sources, processing such feedback, and integrating internal and external sources of feedback.

During self-reaction, learners respond to self-observation and self-judgement about their behavior and the impact of the behavior on their immediate environment (Clark & Zimmerman, 2014). Such responses can be behavioral self-reactions "by which students seek to optimize their specific learning responses", personal self-reactions "by which students seek to enhance their personal responses during learning", or

environmental self-reactions "by which students seek to improve the learning environment" (Zimmerman, 1989, p.334). For example, learners may modify their behavior based on self-observation or self-judgement (behavioral self-reaction), increase their sense of self-efficacy to accomplish the task (personal self-reaction), or seek to improve the learning environment (environmental self-reaction). The example related to behavioral modification based on self-evaluation (behavioral self-reaction) reflects one of the core feedback activities, that is, using feedback.

Self-regulation of writing refers to "self-initiated thoughts, feelings, and actions that writers use to obtain various literary goals, including improving their writing skills as well as enhancing the quality of the text they create" (Zimmerman & Risemberg, 1997, p.76). The activity of writing also encompasses the three sub-processes of self-regulation mentioned above, with these sub-processes affording writers opportunities to generate, seek, process and use feedback. For example, writers self-monitor (or self-observe) their writing process by keeping a record of the number of pages written each day in accordance with daily output goals (Zimmerman & Risemberg, 1997) or by self-recording the number of desired genre elements (Harris et al., 2011). While self-monitoring their writing progress, writers provide self-feedback on whether a target behavior has occurred or not (Harris et al., 2011). Writers also self-evaluate their writing performance based on standards of personal satisfaction regarding their writing (Harris et al., 2011; Zimmerman & Risemberg, 1997). As a result, they generate feedback on potential problems of their writing, which require revision. Notably, student writers may seek external feedback on problematic areas (e.g., aspects of writing that they are not satisfied with or that they have difficulties with) and process such feedback to facilitate their self-evaluation (Yan & Brown, 2017). Writers revise their texts depending on the self-evaluation process (Harris et al., 2011). In other words, writers react to the results of self-evaluation and make changes to their writing to meet the requirements of their writing standards. This means that they use feedback generated in the self-judgement stage to improve the quality of their writing as a form of self-reaction.

As can be seen, the three sub-processes of self-regulation (i.e., self-observation, self-judgement, and self-reaction) involve learners in carrying out core activities in feedback processes, including generating, seeking, processing, and using feedback. For this paper, student feedback literacy is defined as students' capacities to carry out core activities in feedback processes during self-regulation. In particular, this paper focuses on the student writers' ability to generate, seek, process, and use feedback during writing. Although favorable learner dispositions are also an important part of student feedback literacy (Carless & Boud, 2018; Han & Xu, 2019a, 2019b; Li & Han, 2021; Molloy et al., 2020), this paper focuses particularly on the behavioral dimension of student feedback literacy.

Developing Student Feedback Literacy

Student feedback literacy is dynamic and can be developed over time (Malecka et al., 2020). Conceptual literature has proposed methods to develop such literacy, including designing an appropriate learning environment (e.g., access to resources and feedback conversations), use of exemplars, and peer feedback (Carless, 2022; Carless & Boud, 2018; Carless & Winstone, 2020). Empirical studies have experimented with these different approaches. For example, Winstone et al. (2019) developed a toolkit of resources for enhancing student feedback literacy, including a feedback glossary, feedback guide, feedback workshop and feedback portfolio. Students in their study perceived that the intervention was beneficial and quantitative results suggested an increase in student feedback literacy.

Exemplar analysis has been investigated as one approach to enhance student feedback literacy. In Fernández-Toro and Duensing's (2020) study, student participants were required to mark two exemplars, provide comments on them, and discuss mark distribution in a tutor-moderated online forum. It was found that the intervention enhanced the four components of student feedback literacy (Carless & Boud, 2018) to different degrees.

Peer- and self- evaluation has also been implemented to promote student feedback literacy. In Hoo et al.'s (2021) study, students peer- and self-evaluated their teamwork competencies after each of the three team activities in a cross-cultural management course. Based on peer ratings, self- and peer comments, the students wrote reflective journals on their teamwork competencies. These reflective journals demonstrated the development of all the seven components of student feedback literacy as identified by Molloy et al. (2020). Through peer- and self-evaluation, students play the role of active givers and recipients of feedback, and these activities strongly align with the elements of student feedback literacy. To ensure that peer- and self-feedback was productive and appropriate, teacher feedback scaffolded both peer- and self-evaluation.

In Deneen and Hoo's (2021) study, a similar procedure to the one in Hoo et al.'s (2021) (i.e., peer- and self-evaluation followed by reflective journals) was adopted. They found that such an intervention promoted student feedback literacy as defined by Molloy et al. (2020). Teacher feedback was provided on students' engagement with self- and peer feedback in their reflections. Such feedback was not only specific to students' reflection of critical incidents and their engagement with peer- and self-feedback, but also created a productive student-teacher partnership to scaffold the feedback processes.

In L2 writing, peer reviews have been utilized to develop student feedback literacy. For example, Han and Xu (2019b) conceptualized student feedback literacy in peer feedback situations as the capacities and willingness to engage in peer feedback activities and investigated the influence of teacher-supported peer feedback (i.e., teacher feedback on peer feedback) on such literacy in the context of academic writing.

They found that teacher feedback on peer feedback developed students' epistemological and practical knowledge about, attitude towards, and self-efficacy beliefs in peer feedback, albeit at different paces and to different degrees due to learner factors such as language ability, beliefs, and motivation.

Man et al. (2022) utilized three integral components of peer review training in English writing, including briefing, modelling, and evaluating, to develop student feedback literacy in peer feedback situations. They found that the participants came to appreciate the role of peer feedback, knew more about peer review, became proactive in the feedback process, learned from giving peer feedback, and managed emotions related to peer feedback.

In Wood's (2022) study, technology-mediated dialogic peer feedback was employed to promote student feedback literacy and feedback uptake in an academic writing course. Such peer feedback enhanced the cognitive, evaluative, and socio-affective processes involved in the development of feedback literacy and uptake. Teacher supported the peer feedback activity in the following ways: conducting peer feedback training that familiarized students with the assessment criteria, giving them opportunities to practice applying criteria to examples of student work, and choosing an appropriate technological tool (i.e., Google Docs) to facilitate the generation of dialogic peer feedback.

As can be seen from the review of the limited studies on fostering student feedback literacy, peer feedback activities constitute one of the major approaches to the development of student feedback literacy and such activities need to be supported by teachers to ensure the effectiveness. Teacher support can be in the form of peer feedback training concerning the understanding of assessment criteria, peer feedback provision, and revision in response to peer feedback (Man et al., 2022; Wood, 2022), teacher feedback on students' peer feedback provision or self-reflection (i.e., meta-feedback) (Deneen & Hoo, 2021; Han & Xu, 2019b; Hoo et al., 2021) and use of appropriate technology for the generation of dialogic peer feedback (Wood, 2022). Previous research shows that various components of student feedback literacy can be developed through peer feedback (e.g., all seven elements of student feedback literacy in studies conducted by Deneen & Hoo, 2021 and Hoo et al., 2021). However, much needs to be known about how peer feedback can be implemented systematically from a self-regulatory perspective by focusing specifically on promoting learners' capacities to generate, seek, process and use feedback. As mentioned earlier, the three sub-processes of self-regulation (Zimmerman, 1989, 2005) involve learners in engaging in the four core activities in feedback processes. Given that peer feedback is frequently implemented in L2 writing classrooms (Yu & Lee, 2016), this paper investigates how the three subprocesses of behavioral self-regulation (Zimmerman, 1989, 2000) can be incorporated into peer feedback activities with teacher support to give students opportunities to practice systematically how to generate, seek, process, and use feedback to facilitate self-regulation. This is because practice is essential to the

enhancement of student feedback literacy (Malecka et al., 2020). Zimmerman's (1998, 2000) model of behavioral self-regulation was chosen because this form of self-regulated learning, which encompasses the three sub-processes of self-regulation (i.e., self-observation, self-judgement, and self-reaction), provide ample opportunities for students to engage in core activities in feedback processes. The teacher-supported peer feedback activity as proposed in the paper can hopefully both develop students' feedback literacy and enhance their self-regulated learning at the behavioral level, given that the ability to generate, seek, process, and use feedback can help learners refine their self-judgement and take appropriate actions to optimize the three sub-processes of self-regulated learning, which enhance self-regulation.

Teacher-supported Peer Feedback: The Instructional Model

This section presents the instructional model of using teacher-supported peer feedback to develop student feedback literacy. Table 1 (see the Appendix) shows how the three sub-processes of behavioral self-regulation can be embedded in the different stages of peer feedback (i.e., before, during, and after peer feedback) to offer students opportunities to practice generating, seeking, processing, and using feedback in relation to the development of student feedback literacy. For each stage of peer feedback, the relevant sub-process of behavioral self-regulation, targeted component of student feedback literacy and teacher support will be explained.

Before Peer Feedback

Before the implementation of peer feedback, students need to undergo peer feedback training. Previous research shows that peer feedback training enables students to have a good understanding of the assessment criteria and to provide effective comments for peers, so such training is essential in using peer feedback interventions to enhance student feedback literacy (Man et al., 2022; Wood, 2022). Very often exemplar analysis is utilized to familiarize students with the assessment criteria (To et al., 2021). In particular, exemplars of contrasting quality can be used to deepen students' understanding of the assessment criteria (Lin-Siegler et al., 2015). Students can compare and contrast the two exemplars of differing quality and subsequently create assessment criteria, followed by teacher explanation. The "inductive" approach of constructing assessment criteria derives from the finding of the meta-analytic review on learning through case comparisons, that is, presenting principles (i.e., assessment criteria exemplified by both good and bad writing) after case comparisons may better promote learning the principles (Alfieri et al., 2013). This "inductive" approach can also provide an opportunity for students to practicing comparing work of different qualities, an activity which is central to the generation of internal feedback during the self-judgement stage of self-regulation (see the 2nd component in "Targeted component of student feedback literacy" in the "During peer feedback" stage in Table 1).

In addition to acquiring a better understanding of criteria, students also need to learn how to provide effective comments for their peers. This is because quality peer

feedback can help student writers calibrate their internal feedback (see the 3rd component in "Targeted component of student feedback literacy" in the "During peer feedback" stage in Table 1), given that self-judgement involves a process of continuous calibration through interaction with different feedback sources (Yan & Carless, 2021). Moreover, peer feedback training regarding the provision of effective peer comments can help students develop their capacity to provide feedback for others. However, this capacity is placed within brackets (see the 1st element in "Targeted component of student feedback literacy" in "Before peer feedback" stage in Table 1), as this paper emphasizes the capacity to generate feedback for oneself through teacher-supported peer feedback. To help students learn how to provide effective peer comments, the four-step procedure outlined in Min (2005) can be modelled by teachers, followed by opportunities for students to apply this procedure to examples of student writing and teacher feedback on students' feedback provision.

Before the peer feedback activity, students also need to self-observe (or self-monitor) the writing process by observing their own writing performance and providing self-feedback on whether a target behavior has occurred or not (Harris et al., 2011). To facilitate self-monitoring, teachers can design appropriate self-recording forms for students to use (see the 2nd component in "Teacher support" in the "Before peer feedback" stage), given that self-recording (e.g., keeping track of what is observed in written form) is a good strategy for self-observation (Zimmerman, 2000). Based on the learning goals of writing class, which are closely related to the assessment criteria, the self-recording form can contain questions related to genre elements (e.g., Have I included all the parts of a secondary research paper as discussed in class?), idea development (e.g., Have I included empirical evidence for each of the key points?) and/or writing style (e.g., Have I used any informal and emotional language?). As self-observation does not usually involve external reinforcement (Harris et al., 2011), teachers do not need to interfere too much and can allow students to observe their writing performance, generate and record self-feedback in the self-recording form.

During Peer Feedback

During peer feedback, students undergo several rounds of feedback generation and calibration. First, based on what is recorded in the self-recording form (see the 2nd component in the "Targeted component of student feedback literacy" in the "Before peer feedback" stage), students generate initial self-evaluation of their own writing (see the 1st element in the "Targeted component of student feedback literacy" in the "During peer feedback" stage). Teachers can support this by including one question about students' initial self-evaluation in the self-recording forms, which also contain students' self-feedback on their performance during writing (see the 1st element in "Teacher support" in the "During peer feedback" stage).

Second, students will be supported to generate internal feedback based on a comparison between their own work and their peers' work as well as to calibrate such internal feedback with initial self-evaluation. As argued by Nicol (2019, 2021), learners

construct internal feedback naturally through comparing their work with different types of reference information (e.g., assessment criteria, teacher comments, peer comments, or peers' work). Here internal feedback refers to "the new knowledge that students generate when they compare their current knowledge and competence against some reference information" (Nicol, 2020, p. 2). Peer feedback provides inherent opportunities for the generation of internal feedback in that learners inevitably conduct natural comparisons between their own and peers' work when they review the latter's work (Nicol et al., 2014; Nicol, 2019). From a self-regulatory perspective (Zimmerman, 1989, 2000), this means that students perform self-evaluation according to another person's performance rather than absolute standards. To facilitate the construction of internal feedback, teachers need to make the results of comparison explicit through writing, discussion, action, and so on (Nicol, 2020). After students finish reviewing peers' writing and giving written peer comments based on the assessment criteria, teachers may provide a self-reflection form to help them articulate their internal feedback (see component (2b) in "Teacher support" in the "During peer feedback" stage). Prompts can be used in the form to elicit internal feedback. Examples of questions may include "What are the differences between your essay and your peers'?", "What did you learn from these differences?", and "Name two things you would do now to improve your own essay?" (Nicol & McCallum, 2021, p.7). Importantly, teachers need to group students appropriately and include a high-quality paper for learners to review in addition to peers' texts (see component (2a) in "Teacher support" in the "During peer feedback" stage). Feedback trios are recommended. Through reviewing a range of peers' work, students can be exposed to different perspectives and identify different approaches they can take, and at the same time, they can also be exposed to peer comments from multiple perspectives (Chang, 2016; Nicol & McCallum, 2021; Winstone & Carless, 2020). Although learners may learn different things from comparing their work with peer texts of differing quality, teachers should include at least one high quality paper (e.g., excellent work written by former students), which serves as the benchmark work for comparison (Nicol & McCallum, 2021). Considering that self-judgement needs to be continuously calibrated based on its interaction with different feedback sources (Yan & Carless, 2021), teachers can support this calibration process by including in the self-reflection form one question asking students to compare their initial self-evaluation with internal feedback to refine their self-judgement (see component (2b) in "Teacher support" in the "During peer feedback" stage). Here the calibration of internal feedback and initial self-evaluation involves a comparison process, which is critical in problem-solving, judgement, and decision-making (Goldstone et al., 2010). Such calibration may lead to refined self-judgement, which should be made explicit to learners to raise their awareness of the importance of feedback calibration.

Third, students may continue to calibrate self-evaluation made so far with peer comments received. Although the internal feedback generated by students may overlap with peer comments received (Nicol & McCallum, 2021), it is still likely that students can learn different things from reviewing peers' writing and receiving peer

comments (Cho & Cho, 2011; Nicol et al., 2014). Peer comments need to be processed so that learners may have a proper understanding of them. After processing, learners may find that peer comments evaluate areas not covered by calibrated self-evaluation generated so far (see the 2nd component in "Targeted component of student feedback literacy" in the "During peer feedback" stage). Learners may also find that peer comments cover certain areas already evaluated by themselves, but these comments are not consistent with the self-evaluation made so far. In both cases, calibration is needed. Here the refinement/calibration of self-evaluation entails a comparison between self-evaluation made so far (see the 2nd component in the "Targeted component of student feedback literacy") and peer comments, which generates fine-tuned self-judgement. To facilitate students' processing of peer comments as well as calibration of peer comments and the self-evaluation made so far, teachers may consider creating opportunities for dialogic peer feedback after students' provision of written peer comments (see the 3rd component in "Teacher Support" in the "During feedback" stage). This is because dialogic peer feedback contributes to student writers' processing of peer comments (Zhu & Carless, 2018) and may enhance the comparison process involved in calibrating peer comments with self-evaluation made so far. Teachers can organize face-to-face meetings for peer groups so that students can discuss with their peers the meaning of the latter's comments for the processing of feedback messages and can resolve different opinions regarding a particular area of their writing for feedback calibration. To address time and space constraints of dialogic peer feedback (Zhu & Carless, 2018), teachers can utilize technology (e.g., Google Docs) to support interactive feedback exchanges (Alharbi, 2020; Wood, 2022).

Fourth, if learners still feel uncertain about the calibrated self-evaluation constructed through the first three steps during peer feedback, they may seek teacher feedback on their self-evaluation. However, it is possible that the calibrated self-evaluation can already serve as a basis for learner self-reaction in the "After peer feedback" stage. According to Nicol and McCallum (2021), the internal feedback generated by comparing one's own writing and peer's writing alone makes peer and teacher comments on the same work unnecessary and such internal feedback includes feedback teachers cannot provide (e.g., feedback about the different approaches students could take for essay writing). Despite these findings, it is likely that learners would still like to obtain teachers' opinions on their work to further calibrate their self-judgement. In this case, teachers can support students' seeking, processing, and calibrating of feedback by implementing dialogic teacher feedback (see component 4 in "Teacher support" in the "During feedback" stage). In particular, teachers can encourage students' seeking of teacher feedback by prompting the latter to consider the focus (e.g., focus on different aspects of writing such as content or organization) and level of feedback (e.g., task-level feedback or process-level feedback) (Hattie & Timperley, 2007) they would like to seek. Similar to dialogic peer feedback, the interactive exchanges between teacher and students are expected to facilitate the processing of teacher feedback and calibration of self-evaluation made so far and teacher comments. It has to be noted that feedback seeking can occur in all stages of

peer feedback (e.g., seeking feedback on one's understanding of assessment criteria before peer feedback; seeking feedback on one's revision strategies after peer feedback), but it is only included formally in the self-judgement stage in the instructional model (see "During peer feedback" stage) to highlight its importance to the refinement (or calibration) of self-judgement.

After Peer Feedback

During the "After peer feedback" stage, learners self-react to self judgement constructed through rounds of calibration in the "During peer feedback" stage. Learners may enact behavioral self-reaction by revising in response to self-evaluation. As novice writers may encounter difficulties with revising their texts despite noticing problems (Harris et al., 2011), which means that their self-evaluation may contain a detection of writing problems, but not solutions to them, teachers may provide relevant revision strategies to facilitate students' use of self-generated feedback and their revision process (see the 1st element in "Teacher support" in the "After peer feedback" stage). In addition, learners may enact personal or environmental self-reactions (Zimmerman, 1989, 2000). Particularly worth noting is students' personal reactions in the form of self-efficacy beliefs to accomplish the task (Clark & Zimmerman, 2014). Learners' negative self-evaluation may trigger a decrease in their confidence and willingness to complete their writing tasks, making it less likely for them to self-regulate their writing properly and engage actively in relevant core activities in feedback processes. Teachers thus need to pay close attention to student writers' self-efficacy beliefs, which may be an important factor to consider when fostering student feedback literacy. As feedback (i.e., verbal persuasion) is a persuasive source of self-efficacy information, teachers may encourage positive and realistic self-efficacy beliefs by providing learners with credible feedback on the strengths of their work and acknowledging that areas for improvement are within their reach (Schunk &Pajares, 2002; Waddington, 2023) (see the 2nd element in "Teacher support" in the "After peer feedback" stage).

Concluding Remarks

This paper proposes an instructional model of teacher-supported peer feedback to develop student feedback literacy from a self-regulatory perspective (Zimmerman, 1989, 2000). Embedding the three sub-processes of behavioral self-regulation in different stages of peer feedback (i.e., before, during, and after peer feedback), this model illustrates how teacher support can be provided in each stage to scaffold the development of targeted components of student feedback literacy to facilitate self-regulation. Previous research on using teacher-supported peer feedback to promote student feedback literacy involves teacher support in the form of teacher feedback on peer feedback (Deneen & Hoo, 2021; Han & Xu, 2019b; Hoo et al., 2021), but this type of support may reinforce student reliance on teacher authority (Han & Xu, 2019b). Different from previous research, this model highlights teacher support to foster an active learner role in the feedback processes by giving students opportunities to

conduct several rounds of feedback calibration by themselves before seeking teacher feedback.

As teacher support is needed in each stage of peer feedback, the issue of teacher workload needs to be considered. Teacher workload is partly addressed in that the model emphasizes students' self-generation and calibration of feedback and their seeking of relevant teacher feedback afterwards. It is thus not necessary for teachers to provide feedback on every aspect of student writing, only the areas that students are uncertain about after self-evaluation. In this way, teachers can spend more time on designing appropriate self-recording and self-reflection forms based on lesson objectives, which are essential to the generation and calibration of self-judgement. In addition, given that the development of student feedback literacy is a continuous and long-term process (Yan & Carless, 2021), repeated opportunities need to be given to students to engage in teacher-supported peer feedback as described in the article. If such peer feedback is built into the curriculum, teachers can gradually reduce the steps in certain stages of peer feedback. For example, with the development of students' self-evaluative capacities, the step related to seeking, processing, and calibrating teacher feedback with self-evaluation can be omitted (see the 4th component in "Targeted component of student feedback literacy" in the "During peer feedback" stage). Or with students' increasing knowledge of revision strategies, teacher provision of such strategies can also be omitted (see the 1st component in "Teacher support" in the "After peer feedback" stage). Teachers thus need to pay close attention to students' development trajectory concerning their ability to generate, seek, process, and use feedback to determine which steps in the model can be reduced.

The proposed model needs to be tested in different contexts to ascertain its effectiveness. Researchers and teachers can examine the potential of the instructional model in developing student feedback literacy in their own contexts. Modifications can be made to the model to make it contextually appropriate.

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Appendix

Table 1

A Self-regulatory Perspective on Enhancing Student Feedback Literacy through Teacher-supported Peer Feedback

Stages of peer feedback	Sub-processes of self-regulation	Targeted components of student feedback literacy	Teacher support
Before peer feedback		(1) (Generating feedback for others)	(1) Peer feedback training familiarizing students with assessment criteria and feedback provision
	Self-observation	(2) Generating self-feedback during writing	(2) Designing and providing appropriate self-recording forms
During peer feedback	Self-judgement	(1) Generating initial self-evaluation after writing	(1) Including one question about students' initial self-evaluation in the self-recording forms
		(2) Generating internal feedback and calibrating internal feedback with initial self-evaluation to refine self-judgement	(2a) Grouping students appropriately and including one high quality paper for review
			(2b) Designing and providing a reflection form to make explicit the results of inner feedback processes as well as calibration of internal feedback and initial self-evaluation
		(3) Processing peer comments, and calibrating self-evaluation made so far with peer comments for refinement	(3) Creating opportunities for dialogic peer feedback to facilitate student writers' processing of peer feedback and calibration of peer comments with self-evaluation made so far
		(4) If necessary, seeking and processing external feedback for further calibration	(4) Creating opportunities for dialogic feedback with the teacher for students to seek, process, and calibrate teacher feedback with self-evaluation made so far
After peer feedback	Self-reaction to self-judgement	(1) Acting on calibrated self-evaluation	(1) Providing appropriate revision strategies for using feedback
			(2) Encouraging positive and realistic student self-efficacy beliefs about performing writing tasks by providing feedback on the strengths of student work and acknowledging that improvement needed is within student reach