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Empowering agency through learner-orchestrated self-generated feedback

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ABSTRACT

Recent scholarship emphasises the capacity to self-generate feedback to develop learner agency and avoid bottlenecks as students wait for feedback. Technology can help by mediating access to various level-appropriate resources such as peers' work-in-progress, uptake strategies and teacher feedback. These can be used as 'comparators' for self-generated feedback. This cumulative longitudinal study investigated learner orchestration of self-generated feedback within an 'open access' Google Drive/Classroom mediated feedback environment, inductively analysing reflective writing ($N=40$), and interviews ($N=30$) from several research writing cohorts at a South Korean university from 2018 to 2022. Findings evidence that participants generated feedback from comparisons with peers' work, uptake strategies and teacher feedback. This helped them better understand tasks, calibrate evaluative judgement, and improve work. Comparisons with exemplars/peers' work supported global-level insights while peer feedback highlighted aspects outside of conscious awareness evidencing synergy between methods. Peer/teacher feedback replaced the need for teacher instructions for comparison processes and insights for avoiding psychological risks of self-generated feedback were also gleaned. The results are original and significant in illustrating hitherto unexplored benefits of open access to peers' work-in-progress and teacher feedback, how students exercise agency in orchestrating learning, exemplifying teacher set-up, and elucidating the evolving concept of teacher feedback literacy.

Introduction

Without agentic learner action on feedback information, simply receiving it is often of little educational value. Consequently, feedback is increasingly viewed as an iterative and dialogic meaning-making process, through which learners 'make sense of information' from various sources and use it to enhance their work or learning strategies' (Carless and Boud 2018, 1316). In this 'new paradigm' approach (Winstone and Carless 2019), students are positioned as proactive agents who are to be supported in developing feedback literacy (Carless and Boud 2018; Molloy, Boud, and Henderson 2020). This implies a focus on 'enabling uptake' of feedback primarily from others (Carless and Boud 2018). This dependence on others' feedback has led scholars to propose that there should be more emphasis on learners generating and enacting feedback

independently within the concept of feedback literacy (Leenknecht and Carless 2023; Nicol and Kushwah 2023).

Various extant feedback models and theories aim to improve learning through assessment, with feedback viewed as the primary mechanism (Lipnevich and Panadero 2021). However, beyond this, assessment also has the potential to foster learners' transformational relationships with knowledge, peers and teachers. To achieve this, learners need support in developing reflective agency (Nieminen and Yang 2023), through leveraging opportunities to reflect and make decisions about how they manage or orchestrate their learning from feedback processes (Carless 2023). However, practitioners may wonder if such goals can be achieved given contextual constraints on time and resources.

In this paper, we explore workload-sustainable methods to solve the issue of over-dependence on others' feedback. Conditions for individuals to initiate and direct (orchestrate), their own learning from a combination of self and peer-generated feedback, with the longer-term goal of developing learner agency and transformation through assessment are suggested (Nieminen and Yang 2023). We also offer an example of how teachers might approach supporting the practice, while contributing to understanding the nascent concept of teacher feedback literacy.

Rising to the challenge of feedback in modern higher education

Recent contributions to the 'new paradigm' of feedback emphasise the importance of the human development of subjects and reconceptualise learners as equal partners in the feedback process (Nash and Winstone 2017), and as key agents in their own learning from feedback processes (Wood 2023). Such agency may include seeking, eliciting, or requesting feedback (Malecka, Boud, and Carless 2022), discussing, clarifying, or questioning feedback with peers (Wood 2022) or seeking discussion with teachers to help make informed agentic decisions about using feedback (Wood 2023). Encouraging students to take an agentic orientation to learning from feedback is imperative given that low uptake of teacher feedback wastes a great deal of lecturers' time, and student learning potential in higher education (Price, Handley, and Millar 2011; Winstone et al. 2020). However, providing high-quality timely feedback information is increasingly challenging within the modern higher education context of increasing class sizes, conservative workload allocation models, and expectations on staff. Thus, there exists legitimate concern that encouraging learners to be more agentic and proactive in seeking and dialogically understanding feedback information risks imposing an unsustainable burden on educators.

From enabling proactive engagement with feedback to scaffolding self-generated feedback

A crucial change in perspective for sustainable formative assessment in higher education is the understanding that there should be greater emphasis on learners self-assessing their work and generating the feedback they need independently rather than solely relying on external feedback. Self-generated (Ajjawi, Tai, and Dawson 2023) or 'inner feedback' (Nicol 2021) involves learners gathering 'co-regulating information' from diverse sources like teacher and peer comments, peers' work, exemplars, rubrics, and discussions, and comparing this to their own knowledge or work (Nicol and Kushwah 2023).

In this paper, we argue that it may be particularly powerful to position and deploy self-generated feedback as an integral part of formative assessment, timed within a formative assessment sequence. This is because peer feedback, self-assessment (i.e. self-feedback), or teacher feedback may provide scaffolding for evaluative judgment (Tai et al. 2018), and thus act as a catalyst for self-generated feedback processes. Providing support for such processes, as well as opportunities for self-generated feedback and reflection designed into the curriculum, could

empower learners to exercise more control and autonomy in the learning process and help avoid bottlenecks in the learning process as students wait for feedback from others. Wider deployment could also provide additional support for learners while reducing educators' workloads.

To date, there appears to be a lack of critical discussion in the literature around how self-generated feedback should be deployed to maximise learner agency and empowerment. For example, a key aspect of Nicol's 'inner feedback' model (2021), which ostensibly focuses on learner agency, is to '*have*' students generate their own feedback, (Nicol and Kushwah 2023). It is also claimed that the success of inner feedback hinges on structured and comprehensive guidance from instructors (ibid) on what to notice during comparison exercises. In this paper, we argue that teacher direction in the initial stages should be viewed as scaffolding for broader student-initiated and directed learning processes. This scaffolding can be progressively removed as learners develop the capacity to independently orchestrate their own learning from self-generated feedback. We also contend that when combined holistically with self-assessment, peer or teacher feedback, teacher direction of self-generated feedback becomes unnecessary, or even counterproductive, as learners will formulate goals and methods of reaching them based on their understanding of their needs and available resources.

Students already learn from self-generated feedback

Framing students as agentic while overly relying on teacher comments or direction in self-generated feedback, may also overlook the reality of how many students already learn without teacher intervention (as illustrated in Figure 2). This also raises a question: does agency emerge when students rely solely on teacher comments and direction, when students are offered support and opportunities to govern their own learning or does it also emerge naturally? Recent evidence supports the view that feedback processes are, or could more frequently be with scaffolding, a learner-initiated and directed process. For instance, using Esterhazy's 'feedback encounters framework' (Esterhazy 2018), Jensen, Bearman, and Boud (2023), found that only 31% of 81 encounters coded from student data involved typical or 'formal' feedback design elements such as teacher feedback. In contrast, 50% were 'elicited' by learners, including help-seeking and self-generated feedback through comparisons with exemplars, rubrics, or published resources (To, Panadero, and Carless 2022). Elicited feedback encounters were also considered higher in learner control and relevance than 'formal feedback' opportunities, which were considered less aligned with learner needs. These findings suggest that practitioners should aim to build on natural learning tendencies to explicitly scaffold learner autonomy in feedback, enabling them to become empowered, self-reflective agents, with assessment processes a catalyst (Nieminen and Yang 2023).

The need for external calibration of self-generated feedback

In discussing 'elicited feedback encounters' Jensen, Bearman, and Boud (2023) note a tendency for learners to 'limit their scope', meaning that potential weaknesses outside of a learner's consciousness awareness might be missed or ignored (Panadero et al. 2019). Similarly, studies have reported that instances of self-assessment without opportunities to compare (or calibrate) with expert feedback were considered less useful (Yan, Wang, Boud, and Loa, 2023). Other studies have noted lower effect sizes for self-assessment exercises in which feedback was not made explicit through discussion or other means. This is likely due to the lack of opportunities in non-explicit cases for students to collaboratively examine their assumptions to attempt to overcome potential biases (Yan et al. 2023). Consequently, self-generated feedback judgments may need 'calibration' (see Yan and Carless 2022) to counteract a natural tendency to reject external information that contradicts our views of our ability and performance (Dunning, Heath, and Suls 2004; Panadero et al. 2019). Calibration may also prevent learners from internalising mistakes

from exemplars they may mistakenly assume to be flawless and support the assimilation of knowledge gleaned through comparison or discussion that learners may be insecure about.

According to existing literature, learners can calibrate their understanding of quality, and uncover biases or blind spots through 'interaction with different feedback sources' (Yan and Carless 2022, 1124). For instance, by discussing with peers and the teacher (Wood 2022, 2023), engaging in peer feedback (Tai et al. 2018) consulting external resources (Panadero et al. 2019) or appraising professional artefacts (Quinlan and Pitt 2021). However, in addition to open access to peers' draft work, this article is also, to our knowledge, the first in the literature to explore the potential of providing open access to peers' work-in-progress and associated draft teacher feedback. Doing so may represent a powerful, workload-sustainable calibration method that utilises easily accessible existing information. This also overcomes limitations in the literature around self-generated/inner feedback in which the need for scaffolding or calibration has not yet been adequately explored.

The role of technology in providing 'open access' to comparators

To date, the literature on self-assessment, exemplars or inner feedback has underemphasised the potential importance of socio-material factors such as context, technology, time, space, power, institutional processes, or available resources (Tai et al. 2021). This is important because factors such as ease of access, convenience, and perceived usefulness of technologically mediated learning/feedback activities entangle with learners' agency to engage with these diverse opportunities (Wood 2024). Conversely, inconvenience or a lack of perceived usefulness can discourage feedback access (Winstone et al. 2020). Evidence suggests that technology can, using existing virtual learning environments, open access to a wider range of level-appropriate comparators as students compare their work and understanding with 'any other information…in the learning environment that will help them achieve…goals' (Nicol and Selvaretnam 2022, 2). Peers' drafts and teacher feedback can be valuable sources of co-regulating information, aiding learners in calibrating quality judgements of their own and others' work, potentially enhancing their academic and evaluative judgment skills (Tai et al. 2018; Pitt and Carless 2022). Effective use of appropriate technology can also help learners overcome some of the emotional, temporal, and spatial obstacles to engaging with feedback or collaborative learning (Wood 2021; 2023) which may also apply to technology-mediated opportunities for self-generated feedback from peers' work or teacher feedback.

Providing opportunities for learners to govern their learning in this way enables learners to position themselves as the key agents within their own learning processes while helping shift the balance of agency from teacher to learner. This positioning can be reinforced through opportunities for technology-mediated dialogic peer or teacher feedback, in which learners have been reported to take agentic control over their dialogic meaning-making processes, including decisions to question, challenge or reject feedback (Wood 2023). Accordingly, supporting learner agency also includes affording learners the freedom not to engage in self-generated feedback activities. This provides space for learners to make cost-value analysis judgements (Leenknecht and Carless 2023) and exercise and develop their reflective agency (Nieminen and Yang 2023).

Current knowledge, the literature gap and aims

Extant empirical literature has examined the benefits of feedback generated from exemplar use (To, Panadero, and Carless 2022), teacher-directed peer review (Nicol and McCallum 2022), use of rubrics, (Lipnevich et al. 2014) and resource-based comparison activities (Nicol and Kushwah 2023). However, these studies have also depended on teacher direction, despite the ostensible aim of supporting learner agency (e.g. Nicol and Kushwah 2023) and the agentic role that

learners already play in managing learning from such processes (see Jensen, Bearman, and Boud 2023). Moreover, to date, to our knowledge, no studies have provided environments where learners could orchestrate their learning from open access to peers' work' and teacher feedback and qualitatively explored how, whether or why learners use such opportunities to generate feedback and improve work, dispositions, knowledge, or skills.

Accordingly, this paper is guided by the following research questions:

RQ1: How do learners account for the experience of orchestrating learning from self-generating feedback within an 'open access' feedback environment?

RQ2: How do the findings develop academic understanding of self-generated feedback?

Methodology

Context and participants

The study adopted a cumulative, longitudinal qualitative, progressively focused, approach to examining students' reported learning strategies within a technology-mediated 'open access' feedback environment. The naturalistic context was elective credit-bearing advanced undergraduate research writing course within the faculty of liberal education, taught by the first author biannually from 2018-2022 at a South Korean university. The participants, aged 18-25, varied in gender, discipline, and year group. Most were South Korean, often with overseas or international school experience, and a few were international students. English proficiency was equivalent to the International English Language Testing System (IELTS) grade of 7.5.

Ethical approval was sought from a UK university ethics board and a South Korean institutional review board. Included cohorts were taught in person (2018), online during (2021), and in person after (2022) the COVID-19 lockdowns that affected the university from January 2020 to Spring 2022. All participants granted informed consent to share their reflective writing/surveys ($N=40$) and participate in interviews ($N=30$) and had the opportunity to nominate pseudonyms. Class sizes ranged from 11 to 15 students, over 16 weeks and 45 contact hours.

Set-up and procedure

Each cohort wrote a 1,200-word argumentative, research-based essay on an agreed topic/discipline of choice (see example). As the course aimed to prepare learners to thrive academically within overseas postgraduate English-speaking academic environments, assessment criteria focused 90% on task fulfilment, critical analysis, coherence and cohesion and academic conventions, with only 10% language and grammar. To scaffold students' engagement in feedback processes (see Figure 1), based on suggestions for priming feedback receptivity (Wood 2021), students were introduced to concepts related to feedback literacy and uptake, such as growth mindset (Wood 2021), feedback as dialogic co-constructed meaning-making (Wood 2023), the zone of proximal development (Vygotsky 1978) generating feedback from peer or resource comparisons (Nicol 2021) and the concept of learner agency (Wood 2024).

Learners were asked to discuss these concepts in groups (during class) and in forums to consider how learning from feedback occurs (see Figure 2). Feedback uptake-oriented learner-initiated dialogues about how to understand and use peer and teacher feedback and external resources (exemplars, published resources, peers' work/teacher feedback etc.) were framed as sources of co-regulation of zones of proximal development (Wood 2021).

Socio-material and relational factors were considered important for helping students and teachers develop trust and for feedback literacies to flourish for a given set of learning circumstances (Gravett and Carless 2023). To scaffold understanding of standards and evaluative

Set up of open access feedback environment

Discuss concepts related to feedback uptake & literacy

(groups discussion of feedback experiences & reactions/growth mindset/grit/zone of proximal development/feedback as co-constructed dialogue/role of agency (from 2021)/conceptualise how learning from feedback or comparisons with exemplars occurs (from 2020 co-construct Google Jamboard diagram) - follow up individual forum question – in class warm up discussion next class

Understanding standards/criteria/building evaluative judgement
Students co-construct marking criteria

Teacher points out difference with formal criteria

Students apply criteria to exemplars at different grade levels on Google Docs & discuss in groups/class

Students propose assignment topics & negotiate with teacher (open access)

Peer feedback draft submitted (open access)

Students compare own draft with new exemplar in class task following Nicol (2022 only)

Groups or 3-4 peers provided feedback & discuss in person/Google docs

(from 2021 some choose to provide initial peer screencast feedback)

Teacher feedback draft (open access)

Teacher provides screencast feedback

Students improve work & ask questions via Google Docs for 9 days (see Wood, 2023)

Good examples of students' essay structure/critical thinking highlighted by teacher

Features of exemplars pointed out by teacher in feedback

Final submission and summative screencast feedback

Figure 1. The set-up procedure for feedback practices used in the class.

judgement, (Tai et al. 2018), students were introduced to several high-quality exemplars from previous students and co-constructed assessment criteria for them. Students compared their collaboratively developed criteria with existing ones, discussing, and highlighting understanding gaps. Students then practiced commenting and applying criteria to examples using Google Docs, serving as training for subsequent peer feedback activities. A discussion of exemplar performance aligned to each criterion in the rubric ensued.

←   Reflection on the mean...   ⋮

2. When I have to do some work, I often refer to the works others have already done. There I drag some structures / contents which I think is good (of course being careful not to plagiarize), and along with those references, I add some new contents of mine to improve the work. This is my personal strategy of processing / using feedback (often on self-generated feedback); I first find out / collect some exemplary works of others, refer to things which I think is good, reflecting those on my work, and adding contents of mine to make it as my own work.I think this behavior of reference gives me a clear view of how to make my work much more perfect.

3. I think so far I haven't been so agentic at learning. Fortunately I think I've often done some good self-generated feedback (comparing my works with others, for instance), but I guess I wasn't quite a good listener to others' feedback. I haven't actively asked for feedback so far, and even when I got some feedback I've just remained 'understanding' what it means, not going beyond to actually 'utilize' it on my own works.
Therefore I must create a lot of chances to get feedback from the others, and also consider on how to keep using those feedback on my later chances - like writing extra draft and so on.

Figure 2. A student discusses an existing self-generated feedback strategy in a reflection task.

After the first draft deadline, earlier cohorts, (2018-Spring 2022), were given a week to exchange/discuss peer feedback in groups of three or more, using Google Doc dialogues, and/or in-person or online meetings (during Covid). However, in the final cohort (Winter 2022), before peer feedback, students participated in a teacher-directed in-class comparison task (see Nicol 2021) followed by group discussion and a week for group dialogic on/offline peer feedback. Finally, teacher screencast feedback was provided with opportunities to clarify/question/reject feedback through Google Docs (see Wood 2023).

By final submission, all cohorts had participated in dialogic peer and teacher feedback and had digital access (through Google Classroom) to peers' developing work and teacher feedback, rubrics and several high-quality marked exemplars. Timed alongside submissions, students were offered several opportunities to metacognitively reflect on their learning strategies in forums, and where permission was granted, these were also used in data collection.

Data collection and analysis

A longitudinal cumulative, sequentially focused approach to data collection was taken to reduce bias and enhance researcher reflectivity and the rigour of the research process (Cohen, Manion, and Morrison 2018). Participants' lived experiences, meaning making, learning and feedback enactment strategies, were inductively analysed through reflective thematic analysis

guided by Braun and Clarke (2022). For each cohort, data from several instances of reflective writing and surveys were reviewed for meaning related to how students orchestrated their learning within the open feedback environment. Participants were asked further questions through Google Docs or in-person/Zoom interviews to deepen understanding of accounts and provide multiple points of comparison. In the subsequent steps, the first author reviewed the data and reflected on and noted potential themes, manually coded the data, and generated initial themes refining them through several iterations. Recursive 'critical friend' discussions with the second author focused on improving rigour and examining assumptions led to agreement on the final themes and their significance. Aligning with Jensen, Bearman, and Boud (2023) if participants believed that learning, uptake or enactment of feedback occurred through self-generated feedback or peer feedback activities, for the purposes of this study, it is assumed that it happened.

Results

Four themes on the benefits and nature of self-generated feedback and a fifth contributing insight into how self-generated feedback practices can be supported by teachers were developed (see Table 1 below).

Theme 1: making comparisons with peers' developing work and the importance of relationality

The most prevalent and overarching theme in the data represented how learners used peers' developing work to generate feedback through a comparison process, and applied it to improving their own drafts:

> Through others writing, I could recognise common mistakes… When I look at someone's draft that is a bit better than me, I can also compare with mine and try to get some idea to improve my work. (Nahyun Interview)

> By seeing each other's work and reflecting into my work and revising it…this is part of the feedback. (Kevin interview)

Students appeared to be aware that this expanded the availability of useful comparators as suggested in Wood (2021):

> It's similar to giving us an exemplar essay. (Grace interview)

Significantly, there was evidence that this helped not only the most proactive and agentic students, but also those who were struggling:

> it was convenient for getting to know what I have to do, because sometimes I just slip away in the classes but after I check [peers' work] its clear what I should do, and that helped me a lot…seeing others' work…I fixed many times after submitting and seeing others' work. (Kevin interview)

The data also indicated that relationality may be particularly important when it comes to activating interest in learning through comparisons as some participants expressed a preference for learning from peers' work as opposed to exemplars from strangers:

> I mostly viewed other students' essays. Honestly, I didn't view example essays as much as you expected. They felt less engaging to me because they come from total strangers. (Yejoon reflection)

Table 1. Overarching themes and key aspects.

Overarching themes	Key Aspects
Theme 1: Making comparisons with peers' developing work and the importance of relationality	- Identifying similarities and differences between own and peer work; common mistakes and areas to emulate for improving work. - Aiding weaker learners in understanding task and revising work - Peers' work potentially more engaging as exemplar for comparisons than strangers' work if teacher points out quality indicators.
Theme 2: Modelling peers' feedback uptake strategies and process	- Observing and learning from different approaches to receiving and implementing feedback. - Adapting and developing personal strategies for feedback uptake based on peer models. - Understanding and emulating the decision-making process involved in utilising feedback effectively.
Theme 3: Complementary benefits of peer feedback & self-generated feedback from comparisons	- **Comparisons:** Offer insight into task expectations, structure, logic, citations, coherence, and cohesion. - **Peer feedback:** Provides audience perspective, suggests ways forward, aids evaluative judgement, increases awareness of issues outside of conscious awareness. - **Combined benefits:** peer or teacher feedback helped identify problems while comparisons helped exemplify ways to apply feedback. Feedback acted as a proxy for teacher instructions on what to notice from comparison processes.
Theme 4: Learning from peers' teacher feedback	- Using peers' formative/summative feedback to understand quality, markers' thought processes, common mistakes, improve work and to calibrate their own peer feedback - Providing insight to improve future performance - Learning vicariously through comparing peers' work, teacher feedback and iterative responses to feedback - Recognizing the value of diverse feedback sources
Theme 5: Appreciating and utilising self-generated feedback opportunities as an emergent and cumulative skill	- Realisation of the value of generating feedback, or the ability to generate feedback from comparisons came late for some. - Guided comparisons in class perceived as less useful than self-orchestrated comparisons at home. - Some expressed need to calibrate self-generated feedback with peers through discussion

I didn't do comparisons and the outcome was bad – so after feedback I learned that Daria had a good essay and compared my work with hers. (Yeji interview)

Themze 2: modelling peers' feedback uptake strategies and process

To date, most of the academic literature on the use of exemplars (To, Panadero, and Carless 2022) and inner/self-generated feedback (Nicol and McCallum 2022) focuses on comparisons with external resources such as written work and how this influences final outputs. However, a significant and original theme in the data highlighted how learners benefit not only from comparisons with peers' work, but also from opportunities to compare and model peers' dialogic feedback clarification, engagement, and meaning-making processes:

I like seeing peers' work because we're discussing and giving each other feedback every week so I can see how other students integrate feedback versus how I do it. (Grace interview)

I checked their drafts, saw their feedback process and improvements in later drafts…in the end, I learned, saw others improve, and was able to apply this improvement to myself. (Juno survey)

Significantly, this approach not only assisted more agentic and focused students but also appeared to encourage students who were less receptive/feedback literate to reflect, adjust their attitudes and develop more effective strategies for using feedback as a resource for learning:

After seeing others getting much better after using peer feedback…Judy actively used peer feedback by asking us questions, and she really redrafted well…I thought, if I also, utilise peer feedback, I can get better. (Holly interview)

Theme 3. The benefits of peer feedback and comparisons are complementary

The data was also useful in answering a call for qualitative insight (To, Panadero, and Carless 2022) to fill gaps in knowledge regarding how students organise their learning and benefit from diverse sources of feedback information. In this theme, participants talked about how dialogic peer feedback, and making comparisons with exemplars or peers' work helped them in different but complementary ways. Learners explained that making comparisons helped them with 'global aspects' of their writing:

> Comparisons gave the big picture, and peer feedback gave details, for example, when I read Daria's – I learned logic, structure, connecting words, the big picture. In peer feedback, it was like, 'what do you mean by this word'? (JH interview)

> Comparisons are about structure and language while writing the essay, peer feedback is more about how clear your ideas are for other people to understand, they help different aspects, both are useful depending on if you want to improve technical skills or ability to explain yourself. (Daria interview)

On the other hand, peer feedback helped highlight issues participants were unaware of, bringing them into conscious awareness:

> Unnoticed problems were revealed through peer feedback. After peers pointed out unclear parts, I changed the order of the information and tried to provide clearer explanations. (Donggu reflection)

> Continuously reading and fixing my own article, I couldn't find my own strengths and weaknesses and feedback from peers helped me realise (Sohee reflection)

These data also demonstrate the need for external perspectives on learners' work and illustrate what can be lost if opportunities for highlighting blind spots through peer feedback are not provided. External perspectives from peers may also help solve specific issues identified through self-generated feedback enhancing its usefulness:

> Explicit comparison (in class) was very helpful to work on finding weaknesses of my first draft. It showed me a final destination…But, I couldn't solve this problem and I found a way through peer feedback. (Jeong Hyeon reflection)

Similarly, throughout the cohorts, peer feedback was thought to provide a readers' perspective in a way that self-generated feedback could not:

> …It enabled me to equip myself with the perspective of the reader: 'Oh that's how they think, that's how my sentence looks' (Grace interview)

Conversely, some participants also reported that resources for making comparisons to self-generate feedback were more useful when they could draw on exemplars/peers' work to fix specific issues highlighted in feedback:

> Examples were more useful after I got teacher feedback, as there was the answer to the teacher's question in the examples. James told me to refine my intro and cohesion, and I could directly refer to the examples with good intro/outro and clear structure. (Minje, reflection)

One student detailed how teacher feedback provided the impetus for self-orchestrated learning through comparison processes:

> Most teacher feedback was about structure. I wanted to see how other essays had done it well. I highlighted the topic + concluding sentences/major transitions and I circled general phrasing…then I went through my essay trying to find where these parts were missing, improving my work. (Yuna reflection)

Overall, these data suggest that formative peer and teacher feedback can highlight areas for improvement which facilitates highly relevant goal setting for self-generated feedback. In contrast to this, teacher-directed comparison activities (see Nicol 2021) may be less relevant or useful to learners.

Theme 4. Learning from peers' teacher feedback

In the fourth theme, there was ample evidence for the conceptual claim that students use and benefit a great deal from access to the teacher feedback of their peers. First, students reported that peers' teacher feedback aided understanding standards and taking subsequent action to improve:

> I checked how you mark others and that also let me know what a good essay is. (Kevin interview)

> It's really useful for me to look at others' work, others' feedback…I think that's the most useful thing. I try to think like you, I want to know what think about this essay. (Judy interview)

There was also evidence that students consciously used peers' teacher feedback to calibrate their understanding of the quality of peers' work and improve the quality of self-generated feedback:

> I wasn't sure my peer feedback was valid but by looking at your feedback for Daria and Emily, I could compare, so I could do self-feedback better. (SN reflective survey)

One participant also explained how using other students' teacher feedback revealed her own biases or lack of conscious awareness of problems:

> …reading teacher feedback on other students' essays I thought were well written, allowed me to gain a deeper understanding of the possible mistakes that I could not spot through my own teacher feedback. (Seoyoung reflection)

Participants also reported that comparisons with peers' draft teacher feedback could be more useful than their own peer and teacher feedback:

> Comparing with other students' essays and their essay feedback was the biggest help than any other feedback I got. (Sorry to peers and James)…I watched Daria's essay feedback and I could avoid the mistakes that she made. (JH reflection)

> I also watched a lot of teacher feedback videos for students, positive and negative, and saw where other students had gone wrong or needed to improve. I was able to learn from their mistakes as well and incorporate some of their learning points into my own. (Juno interview)

Participants also reported using peers' summative teacher feedback to help them improve evaluative judgement:

> I kept thinking that even if I got a lower grade than them when I was reading those other good essays…I can do better than that if I do it next time. (Hayley interview)

> Comparing my work with peers who got better feedback and grade, I could understand what to work on. (Jenny reflection)

Evidence also suggests that the open-access environment helped learners engage in more longitudinal and holistic calibration processes:

> other students'…concerns or mistakes are very similar to mine. Therefore, by finding similar problems, glimpsing into corresponding feedback from peers or professors, and checking revised versions of their essays, I could get more fruitful information from them. (Songhee, interview)

Theme 5: Appreciating self-generated feedback opportunities is an emergent and cumulative skill

The final theme advances knowledge of how teachers should understand and support self-generated feedback practices. Evidence for this was found only in final cohort data, who were introduced to the claim that self-generated feedback can rival or surpass the quality of teacher feedback (see Nicol and McCallum 2022). The data suggest that learners may have been

psychologically harmed from exposure to this claim at a time when the requisite literacies for fully benefitting from self-generated feedback were still developing:

> I'm not used to doing comparisons. I guess I needed (a lot of) time to understand it was helpful. The comparison that actually helped me was the one with Daria's work. (E reflection)

> I think making comparisons (in class) was fruitful, it allowed me to feel something was off, but unfortunately, I'm not quick-witted and absorbent enough to be able to point out all I should in one session. Making comparisons at home by myself actually helped fill the rest of it. I guess that's just how I am. Slow-witted. (J reflection)

Evidence from this theme implies that overselling the potential benefits from initial in-class comparison activities might have harmed learners' self-esteem and self-efficacy (Panadero, Brown, and Strijbos 2016) as some learners felt unable to meet expectations and blamed their own inadequacies. There was also evidence that to counter this problem, group scaffolding of the comparison process through in-class activities was helpful as calibration for less confident students:

> I got more help through discussing the example essay with peers and getting to know different viewpoints from other groups. Through discussions, I got to know how others would read essays and how my introduction paragraph should be revised. (E interview)

> It made me focus more on the example essays. It was also valuable to hear what others think about the examples. (Yejoon, reflection)

Thus, the data suggest, that similarly to peer or teacher feedback, self-generated feedback can also benefit from collaborative, dialogic sense-making (Wood 2022) as learners may lack the confidence to rely solely on their own judgement at early stages.

There was also evidence in a subtheme of the data that learners might struggle to comprehend the divide between legitimate self-generated feedback from comparisons and plagiarism:

> It's going to sound stupid but comparing was a complicated action at first. I'm not used to comparing my work to others (mainly because I'm afraid of plagiarism, and because I thought I did not need to look at others to succeed, which isn't really smart). It took a while to understand the value of comparing. (T reflection)

This data helps provide insight into the kinds of discussions that might help scaffold self-generated feedback.

Discussion and implications

Students use peers' work and uptake process to generate product and process feedback

The data from themes one, two, and three offer initial evidence that comparing peers' work in 'open access' feedback environments enhances learners' written outputs as well as their metacognition, reflective processes (Carless 2023), and reflective agency (Nieminen and Yang 2023). This may be especially significant because improved feedback literacies and agency can have lasting impacts beyond a specific module (Panadero et al. 2019).

It is also noteworthy that benefits were reported by less and more confident learners alike, and that weaker learners (as judged by comments made and first-author knowledge of context) reported finding the opportunity to compare with peers' work particularly useful for keeping up. Accounts suggest that learners were able to generate individualised learning objectives for their self-orchestrated learning from reviewing peers' work, through metacognitive reflection. This finding aligns with studies suggesting that lower-level learners particularly benefit from formative learning opportunities in feedback-rich environments (Pitt, Bearman, and Esterhazy 2020) and represents a new and significant direction for research on self-generated feedback.

Theme three also demonstrates that learners benefit from self-generated feedback and peer feedback in different but synergistic ways. Comparisons with peers' work or exemplars clarified

global or higher-level aspects, while peer feedback offered insights into local, lower-level aspects and those beyond conscious awareness, providing valuable audience perspective. This finding implies that self-generated feedback from comparisons should be considered a learner-orchestrated, recursive, and iterative process that complements and synergises with other formative assessment opportunities and increases their usefulness, rather than being a one-off in-class activity or substitute for peer or teacher feedback.

Students orchestrate their learning and generate feedback without instructions, supporting implementation of formative feedback

It is also highly significant for the literature in this area that participants perceived learning occurred from generating feedback from comparisons with peers' work and exemplars with, or without teacher instructions. The data suggest that teacher feedback, peer feedback or peers' teacher feedback help identify areas of improvement and then exemplars or peers' work help learners improve final drafts. This finding is significant in indicating that these sources can substitute for teacher instructions in resource comparison activities. It is also noteworthy that exemplars and peers' work can be used to help learners implement formative feedback which helps overcome a primary barrier to feedback uptake (Winstone et al. 2017).

Deploying self-generated feedback within a sequence of formative assessment activities also aligns learning from comparisons with the broader assessment for learning literature, providing a clear 'landing space' for self-generated feedback in final submissions. Using comparisons formatively, alongside peer and teacher feedback, also resolves the apparent paradox of promoting learners' agency by prescriptively guiding learners' self-generated feedback processes (Nicol and Kushwah 2023), which the data indicate, may be counterproductive when self-generated feedback is incorporated as one of several synergistic formative assessment strategies.

The self-generated feedback learning processes reported in the data appeared high in learner control, relevance, and generative of opportunities for reflective agency development (Nieminen and Yang 2023). This suggests that provision of longer-term support for developing skills for learner-orchestrated self-generated feedback activities could be more sustainable and transformative (Nieminen and Yang 2023) than focusing on one off teacher-directed activities. The potential for impact extending beyond a specific module or program is clear.

The data also suggest that some learners were more inclined to compare with unmarked peers' work than highly graded exemplars suggesting that the agency to engage in self-generated feedback processes may be entangled with factors such as peer relationships (Gravett 2022; Wood 2024). This has implications for the design and implementation of self-generated feedback practices and how they are understood as emergent, relational, situated and in many cases, technologically mediated. Conversely, given the importance of relationality in encouraging engagement in feedback practices (see Wood 2022, 2023, 2024), it is also important to consider how likely designs that disregard it (e.g. feedback from AI or impersonal texts) are to engage learners and embed sustainably in different contexts.

Students calibrate evaluative judgement from peers' teacher feedback

The data also evidence that given the opportunity, students view and use peers' teacher feedback to better comprehend standards, develop and calibrate evaluative judgement (Tai et al. 2018), generate feedback and use it to improve work and set goals. Doing so helps learners understand the gap between current and target achievement (Sadler 1989) as well as 'where to next'.

Viewing others' teacher feedback, particularly on work individuals have peer reviewed appears to represent a workload-sustainable and cost-effective method of providing calibration

opportunities for self-generated feedback and evaluative judgement. This finding makes an original contribution and may be highly significant to practice. As there was no requirement to use peers' teacher feedback in this study, evidence of learners doing so also provides insight into the perceived benefits in terms of learners' cost-value calculations (Leenknecht and Carless 2023).

Inner feedback is an emergent and cumulatively developed literacy

Some final cohort participants reported they had learned less, and with less confidence than suggested by the literature (see Nicol and McCallum 2022). Language used by participants such as 'stupid' and 'slow-witted', after exposure to the teacher-led in-class comparison task, indicates potential damage to self-esteem and efficacy as learners blamed their own shortcomings for not finding the activity as helpful as the literature claimed.

These findings imply that learners may need careful, sequenced support and consideration of the emergent social and material nature of the evolving literacies required to engage effectively in such practices (Gravett and Carless 2023). Discussing individuals' feedback histories, academic cultures, and clarifying what constitutes plagiarism and collusion may expedite the emergence of such literacies.

These results also align with Pandero et al.'s (2019) work on self-assessment, emphasising the need for structured scaffolding from simple to complex, multiple practice opportunities, tailored interventions for varied skill levels, and a focus on skill and process development over product. This may help prevent shaming students still learning to leverage, or effectively engage with self-generated feedback, potentially also helping avoid known risks of self-assessment to long-term agency and self-efficacy (Panadero et al. 2019). These findings are significant in highlighting the need for caution, sensitivity, expectation management and risk awareness in implementing self-generated feedback as a formative assessment tool. This perspective, absent from recent literature on self-generated and inner feedback, presents a valuable direction for the field.

Generalisation and individual and contextual factors

The study demonstrates that self-generated feedback literacies and engagement processes are complex, situated, emergent, cumulative, and likely influenced by socio-material (Gravett and Carless 2023) and ecological factors (see Chong 2021). Therefore, replicating the results with different courses, students and contexts requires caution and sensitivity, potentially necessitating redesign of assessment tasks.

Future research could explore optimal scaffolding methods for student-orchestrated learning from self-generated feedback in different contexts and consider the ideal balance between teacher direction and learner orchestration for diverse groups. Quantitative research could identify factors associated with higher levels of agency to generate feedback independently and the proportion of learners engaging with the practice, while qualitative research might examine reasons for engagement or non-engagement.

Conclusion

This study employed a cumulative longitudinal approach to explore gaps in understanding how students orchestrate their learning from self-generated feedback in a technology-mediated open access feedback environment. Contrary to claims in the literature, the data evidence that with front-loaded support learners can independently orchestrate their learning and generate relevant, personalised insights to enhance their work and feedback literacies from open access to exemplars, peers' work-in-progress and teacher feedback, without teacher intervention.

The study also provides, to our knowledge, the first evidence of effective learning from peers' teacher feedback and the findings demonstrate how when combined with formative peer and teacher feedback, self-generated feedback from comparisons can be particularly beneficial when implementing feedback. This addresses a major barrier to feedback uptake of knowing how to use feedback (Winstone et al. 2017) and potentially eliminates the need for teacher direction, which may result in self-generated feedback less relevant to individuals' needs at particular stages in assignment development.

Accordingly, we propose embedding support for learner-orchestrated self-generated feedback through exposure to exemplars, peers' work-in-progress, peers' teacher feedback or other resources within a sequence of holistic sustainable formative assessment activities. Our analysis also suggests that caution, sensitivity, and awareness of the agency and literacies to engage (Gravett and Carless 2023) and the ability to effectively scaffold such activities are needed. Reflecting changes in the understanding of feedback literacy as including the ability to generate and use feedback (Leenknecht and Carless 2023), we propose that the concept of teacher feedback literacy (Carless and Winstone 2023) should also include the skills, knowledge and understanding required to support learners in orchestrating their learning from self-generated feedback and in reflectively using assessment processes for self-formation and agency development. One of the key contributions of this paper is in helping exemplify and explore how such support, which could be deployed at the programme level, might be structured.

Overall, the results of this study indicate that the ability to orchestrate learning through self-generated feedback should be supported early in students' university careers (or before) and that scaffolding and multiple hitherto under-exploited resources such as peers' work-in-progress and teacher feedback can be employed, to maximise the benefits and minimise the potential negative impacts of this powerful, workload-sustainable method of learning.

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Disclosure statement

Ethical standards statement

This paper expands on work from the first author's doctoral thesis and data collection was covered by ethical approval from University College London: UCL-IOE: Z6364106/2017/12/62 and an Institutional Review Board at Seoul National University: approval: 2101/002-003).

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