



Kent Academic Repository

Balloo, Kieran and Pitt, Edd (2024) *Designing opportunities for students to proactively seek out and generate feedback*. In: Evans, Carol and Wareing, Michael, eds. *Research Handbook on Innovations in Assessment and Feedback in Higher Education*. Elgar Handbooks in Education . Elgar, Cheltenham, UK. ISBN 978-1-80088-155-5

Downloaded from

<https://kar.kent.ac.uk/108032/> The University of Kent's Academic Repository KAR

The version of record is available from

<https://www.e-elgar.com/shop/gbp/research-handbook-on-innovations-in-assessment-and-feedback-in-h>

This document version

Author's Accepted Manuscript

DOI for this version

Licence for this version

CC BY-NC-ND (Attribution-NonCommercial-NoDerivatives)

Additional information

Versions of research works

Versions of Record

If this version is the version of record, it is the same as the published version available on the publisher's web site. Cite as the published version.

Author Accepted Manuscripts

If this document is identified as the Author Accepted Manuscript it is the version after peer review but before type setting, copy editing or publisher branding. Cite as Surname, Initial. (Year) 'Title of article'. To be published in **Title of Journal** , Volume and issue numbers [peer-reviewed accepted version]. Available at: DOI or URL (Accessed: date).

Enquiries

If you have questions about this document contact ResearchSupport@kent.ac.uk. Please include the URL of the record in KAR. If you believe that your, or a third party's rights have been compromised through this document please see our [Take Down policy](https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies) (available from <https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies>).

Designing opportunities for students to proactively seek out and generate feedback

Kieran Balloo^{1,2} and Edd Pitt³

¹ UniSQCollege, University of Southern Queensland, Australia

² Surrey Institute of Education, University of Surrey, UK

³ Centre for the Study of Higher Education, University of Kent, UK

Author Note

Kieran Balloo  <https://orcid.org/0000-0002-1745-4653>

Edd Pitt  <https://orcid.org/0000-0002-7475-0299>

Kieran Balloo, UniSQ College, University of Southern Queensland, Springfield, Queensland, 4300, Australia. Email: kieran.balloo@usq.edu.au

This is a draft chapter. The final version is available in Research handbook on innovations in assessment and feedback in higher education edited by Carol Evans and Michael Waring, published in 2024, Edward Elgar Publishing Ltd.

<https://doi.org/10.4337/9781800881600.00015>

It is deposited under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

Abstract

Barriers to students' active use of feedback are well established in the literature. Therefore, in this chapter we provide practical research-informed recommendations for how educators might create and embed opportunities for students to proactively seek out and generate feedback. Informed by sociomaterial theories, which acknowledge the social and material contexts in which learning takes place, we firstly focus on different sources of feedback information, including: the 'self' and 'disciplinary colleagues', who can provide evaluative and directive feedback information; and 'knowledge/service users or audiences' and 'objects', that can provide consequential feedback information (i.e. responses to an action that tell the learner about the effectiveness of that action). We then examine how these sources may be incorporated across different timescales, from the short-term everyday 'rhythms' of a discipline, to 'cycles' of feedback loops and longer-term 'spirals' of learning. We ultimately aim to illuminate ways of fostering greater student responsibility in feedback processes.

Key words: sociomateriality; taxonomy of signature feedback practices; internal feedback; consequential feedback; proactive recipience; self-regulation

Introduction

There are many reported barriers to students actively engaging with feedback practices (Winstone, Nash, Rowntree, et al., 2017). Therefore, for feedback to have the greatest effect on students' learning, educators need to design feedback processes that create opportunities for students to take action, and proactively seek out and generate feedback for themselves as self-regulated learners (Nicol, 2021; Winstone & Carless, 2019). Indeed, an important goal of feedback should be to engage students in self- and co-regulatory processes

(Lipnevich & Panadero, 2021; Nicol, 2021; Panadero & Lipnevich, 2022; Zimmerman, 2002). That is, students should share responsibility for feedback and agentially engage (Evans, 2022) with processes as *proactive recipients* (Winstone, Nash, Parker, et al., 2017). Consequently, contemporary perspectives of feedback have shifted the focus away from what the educator does to what the learner does in feedback processes (Boud & Molloy, 2013; Carless, 2015), with feedback defined “as processes where the learner makes sense of performance-relevant information to promote their learning” (Henderson et al., 2019, p. 17). Given increased emphasis on the importance of student understanding of feedback, the dilemma facing educators is how to implement or operationalise this with their students. Carless and Winstone (2023) suggested that educators need to develop “knowledge, expertise, and dispositions to design feedback processes in ways which enable student uptake of feedback” (Carless & Winstone, 2023, p. 153).

To begin to seek ways of operationalising student engagement in the feedback process, it is useful to sub-divide the term *feedback* into *feedback information* and *feedback processes* (Winstone et al., 2022). Feedback information involves the different types and sources of information about a learner’s performance that they can make use of to take action, whereas feedback processes involve the actual actions carried out by the learners to make sense of and use that information (Winstone et al., 2022). One way this can be conceptually conceived of is for educators to reflect on the different sources of feedback information that students may seek, encounter or draw upon, alongside the feedback processes that facilitate the enactment of this information. Quinlan and Pitt’s (2021) recent taxonomy of signature feedback practices highlights some of the most salient *sources* in which students may obtain feedback information, along with the different *timings* in which feedback processes may take place. In this chapter, we draw on and evolve this taxonomy by discussing recent literature to emphasise some of the considerations that educators can make when designing feedback

processes. Our central argument is that educator design has not always afforded proactive recipience to be fostered, so what we are proposing is a pedagogical shift in the way feedback is designed into the process.

Taxonomy of Signature Feedback Practices

As we have suggested, the assessment and feedback field needs to go beyond thinking about educators as feedback providers and students as feedback receivers (Winstone, Pitt, et al., 2021). Emphasising students' central role as active agents in the feedback process, Nicol (2021) theorised that a student interprets feedback information, engages in conscious internal comparative processes, and articulates relationships to their own learning as part of a self-regulatory process. Nicol's reconceptualisation brings feedback information from other sources, objects, and the learning environment into the feedback equation. To make effective use of these constructs, educators need to therefore create opportunities for students to be able to experience different forms of feedback from a variety of sources that are specifically tied to their discipline. To this end, Quinlan and Pitt (2021) extended Nicol's conceptualisation, highlighting four main sources of feedback information (*the self, disciplinary colleagues, knowledge/service users or audiences, and objects*) and noted how they can occur during three different timings (*rhythms, cycles, and spirals*). Quinlan and Pitt (2021) build on Gravett's (2022) contention that sociomaterial theories should be used to understand how feedback processes are enacted. Considering the role of the human and non-human acknowledges the complexity of feedback practices; they involve multiple actors, which means there is no one approach that fits all (Tai et al., 2021).

A further complexity within Quinlan and Pitt's (2021) reconceptualisation of feedback is the type of feedback students may come to encounter. Traditionally, the literature has pointed to educators and peers primarily offering evaluative feedback, which is characterised as judgements, criticisms, and suggestions for enhancement (Quinlan & Pitt,

2021). However, an equally important yet untapped source of feedback information is what they called “consequential feedback”. Consequential feedback can be social or material, and is described as “information about the effect of the learner’s performance or action” (Pitt & Carless, 2022, p. 818). That is, responses to a performance or action that tell the learner something about how well that performance or action has worked. Quinlan and Pitt’s (2021) taxonomy argues that knowledge or service users can offer consequential feedback through, for example, their body language or reactions to a students’ work, whether that is a written product, from an interaction with a customer, or another authentic disciplinary product. Objects that students have created, such as a projectile or a software code can either work as planned or not. Although those objects cannot speak or write evaluatively, their effectiveness provides consequential information that offers performance feedback. Likewise, students can perform an action on an object, such as adding a chemical to a solution or shaking the solution. The solution’s reaction presents consequential feedback information.

Yet, the educator still plays a role in these feedback processes. Learners may not pick up on the right cues that they need for a specific situation, so they need to be trained to self-regulate and recognise what feedback is, in order to understand how to use it and generate further feedback for themselves (Nicol, 2021). Indeed, learners with poorer self-regulation skills may be both more dependent on feedback and less likely to understand how to use it effectively (Çakir et al., 2016). Similar arguments have also been made in relation to students who are perennial lower achievers (Pitt et al., 2020). To address this, the educator can scaffold feedback processes by creating multiple formative opportunities for students to learn how to accurately interpret the feedback information. Consequential feedback, perhaps even more strongly than evaluative feedback, is tied to disciplinary practices; Quinlan and Pitt (2021) introduced this in the context of proposing greater attention to “signature” assessment and feedback practices that reflect the unique “structures, practices, and characteristic habits

of mind, heart and hands of a particular profession or discipline” (Quinlan & Pitt, 2021, p. 192), following Shulman’s (2005) notion of “signature pedagogies”. Consequential feedback information is embedded in authentic disciplinary assessments, yet it is our contention that the way educators focus students’ attention on it, or how students process it, has not been adequately studied within the field.

The recommendations we make in this chapter draw on examples of empirical research that we have applied to the taxonomy with the aim of moving the field towards understanding where opportunities exist for improving feedback practices and learning for students. Our contention is that the starting point is students understanding their roles in leading the feedback process earlier in their learning. Table 1 provides examples of ways to operationalise the main sources of feedback information at the different timescales in which feedback processes typically occur. The roles have been shared between students and teachers, on the basis that responsibilities for feedback should be shared equally (Nash & Winstone, 2017). Therefore, the focus is on the opportunities that the teacher creates in the learning environment and what the student then needs to do to be a proactive recipient of feedback (Winstone, Nash, Parker, et al., 2017). These sources and timings will be discussed further in the following sections.

[Insert Table 1 about here.]

Sources of Feedback Information

As highlighted in Quinlan and Pitt’s (2021) taxonomy discussed above, sources of feedback information can include the self, disciplinary colleagues, knowledge/service users or audiences, and objects. The first two of these sources are described as offering evaluative feedback, whereas the latter two offer consequential feedback (or a combination of evaluative and consequential feedback). Since evaluative feedback information can include “suggestions

for enhancement” (Pitt & Carless, 2022, p. 818), it may also be useful to specifically consider how to maximise opportunities for these sources to lead to directive (future-oriented) feedback. We will now consider each of these sources with reference to relevant examples of practice in the literature, along with recommendations based on these studies.

Self

A learner-focused view of feedback processes (Carless, 2015; Winstone & Carless, 2019) points towards students themselves acting as a rich source of feedback information. Key to this is students developing the self-regulatory capacity for judging the quality of their own work and that of others, known as ‘evaluative judgement’ (Panadero, Broadbent, Boud and Lodge, 2019; Tai et al., 2018). Evaluative judgement can be supported by embedding opportunities for self-assessment and self-feedback (i.e. internal feedback) within the curriculum (Panadero, Lipnevich, et al., 2019). More broadly, Nicol (2021) suggests that ‘internal feedback’ is a process of comparison for learners: “[it] is the new knowledge that students generate when they compare their current knowledge and competence against some reference information” (Nicol, 2021, p. 757). Thus, it is Nicol’s contention that individuals will always need to generate internal feedback in order to know what to do with any feedback information that they receive from their external environment. This feedback is then filtered through their internal mental environment of prior knowledge, beliefs and dispositions. Internal feedback is therefore a fundamental aspect of both self-regulation and co-regulation processes, since the social and material environments scaffold the generation of internal feedback (Nicol, 2021; Zimmerman, 2002). As a result, Quinlan and Pitt’s (2021) model highlights ‘the self’ as a source that is also linked to all other external sources of feedback information.

Whilst internal feedback is viewed as occurring naturally in students, in order to make the most of comparison processes, Nicol (2021) recommends that educators design written

reflective tasks to help students identify comparators for their work, making these processes more explicit and beneficial. Such tasks scaffold the generation of internal feedback, encouraging students to set internal goals for how to complete the tasks and make continual adjustments as part of the self-regulation process (Nicol, 2021). In Nicol and McCallum (2022), students were asked to complete three peer reviews of other students' essays. After each peer review, they completed a self-review of their own essay by comparing it to a peer essay as a means of generating internal feedback. The self-reviews involved them answering reflective questions, including what they could do to improve their own essay. One of these peer essays was a high-quality essay completed by a student from the previous year, because this gave students a notion of the expected standards (Sadler, 2010). Nicol and McCallum's findings indicate that by making multiple sequential comparisons of their drafts with other work, students were able to build up valuable internal feedback information about how to improve their work. Furthermore, they found that 70% of students made improvements from draft to redraft when they only compared their own essay to a peer's essay and then did a self-review. In a similar study on two-stage exams, in which students answered a question individually then as part of a group, Nicol and Selvaretnam (2022) made internal feedback processes explicit by asking students to answer reflective questions after both the individual and group stages of the exams.

There is also scope for activating students' internal feedback processes through fostering ipsative feedback processes (Malecka & Boud, 2021). This involves students making comparisons between consecutive pieces of work (with similar learning outcomes), to help them to set goals and self-identify their progress: "Students' own work, therefore, becomes a referent to generate comparison which can focus on the similarities, differences, strengths and weaknesses of consecutive tasks" (Malecka & Boud, 2021, p. 7). Thus, there needs to be a coherent assessment design in place whereby each piece of work is aligned.

Constructive alignment of teaching activities, assessments, and learning outcomes (Biggs & Tang, 2011) is obviously an important factor here: “When processing such feedback information, learners can develop an ability to notice and recognise patterns, principles and relationships in their work, increasing the likelihood of learning transfer” (Malecka & Boud, 2021, p. 7). Supporting Nicol’s (2021) propositions, Malecka et al. (2022) found that participating in ipsative feedback episodes through an ongoing e-portfolio of five tasks led some students to report feeling clearer about how to compare their performance between current and past work and subsequently generate internal feedback.

Although these initial processes of designing tasks that enable comparison processes may be led by the teacher, feedback is generated by the student. Internal feedback may therefore arguably reduce student dependence on the educator, because the students can use a range of comparators to generate internal feedback:

The basic idea is that educators have their students complete some work, then compare that work against one or, better still, more comparators (e.g. exemplars, a rubric, the work of peers, a video) and make the results explicit in some way. (Nicol, 2021, p. 267)

Therefore, educators should create opportunities for frequent ‘comparator-rich’ activities allowing for multiple comparisons to be made. This can be beneficial regardless of whether such multiple comparisons are made sequentially or simultaneously (Nicol, 2021; Nicol & McCallum, 2022). The key for educators is how such activities are planned progressively to support student development – greater teacher scaffolding will be necessary initially to “explain relational structures and their significance and model relevant language” (Malecka et al., 2022, p. 812), then this support should gradually be removed. Goal setting and reflective tasks may also help students to identify comparators on their own, determine how they will be used, evaluate their effectiveness, then seek out new ones, as self-regulated

learners. If based within a formative framework, early comparisons can be based upon tasks and activities within the early part of a student's experience, when the stakes are lower and educators privilege learning-by-doing.

Disciplinary Colleagues

Peers

Peer feedback can be defined as “a dialogic interaction between the provider and the receiver about the quality of the work being assessed” (Zhu & Carless, 2018, p. 884).

Benefits are often seen for both providers and receivers (Zhu & Carless, 2018). However, not all students trust their own and others' abilities to provide 'good' feedback (Evans, 2015).

Therefore, this process should be scaffolded with training for student feedback providers (Harland et al., 2017; Reddy et al., 2021). Previous peer feedback research has reported that students who generate feedback benefit more than students who receive it (Nicol et al., 2014).

Therefore, Huisman et al. (2018) recommended that it may be best to initially involve students in the provision of peer feedback information only. Indeed, students have also been found to report the perception that providing peer feedback enhanced their metacognitive processes (i.e. their capacity for planning and evaluating their own work) more than receiving it (Mercader et al., 2020). Similarly, in Malecka et al. (2022) study of an ipsative feedback design, peers shared their work as exemplars, then students used them without peer interaction purely with the aim of generating internal feedback to improve their own work.

This was seen to be particularly effective for helping them to structure their writing, although some concerns were expressed about their peers' competence compared to that of the teacher.

However, students have been found to perceive peer feedback as being more valuable if written feedback information is augmented with peer dialogue to explain the written guidance (Schillings et al., 2021). As with teacher feedback, oral peer feedback allows students to explain the reasons behind their judgements and suggest areas in need of revision (van den

Berg et al., 2006). These dialogues may also be more productive if the peers know each other as it can build trust and engagement, as well as make it easier to manage the affective nature of feedback received (van Heerden & Bharuthram, 2021; Wood, 2022). Although, this may increase the risk of students avoiding critical, but essential, feedback out of fear of upsetting their peers (Cartney, 2010), since a lack of familiarity can be perceived by students as being beneficial for objectivity when giving and receiving peer feedback (van Heerden & Bharuthram, 2021). Feedback can be made more valuable for the receiver if discussions between peers are not just about the content, but also about “what feedback means and how it can be enacted” (Wood, 2022, p. 337). In doing so, peer groups can negotiate goals and make evaluative judgements that serve to co-regulate their own and each other’s learning (Panadero, Broadbent, et al., 2019; Wood, 2022). Finally, working with students to design peer feedback practices may help educators to understand student preferences, and help students to understand the value of such a process. Thus, the main role of the teacher in peer feedback practices is to scaffold and mediate processes (Cartney, 2010).

Educators

As discussed, educators play an important role in feedback processes by creating opportunities for students to take a more central responsibility. However, with written feedback comments provided by educators still being the main source of feedback information on summative assessments in higher education (Agricola et al., 2020), there is a danger of continuing to reinforce a transmission conception of feedback. On the other hand, written feedback can take many forms and there is still scope for teachers using it to enhance student self-regulation. In focusing on in-text comments (i.e. annotations on students’ work) and rubric-referenced feedback, Nordrum et al. (2013) highlighted that each form of feedback information served a different purpose; rubrics provided more of an overview of student achievement, whereas in-text comments focused on correcting individual errors. Other

research suggests that rubric-referenced feedback can be developmental and help students see how criteria are achieved when used formatively to support students' self-regulation (Panadero & Jonsson, 2020). These rubrics can either be designed by the lecturer or co-constructed with students to enhance their engagement with, and awareness of, the specific criteria and quality standards (Bacchus et al., 2020; Fraile et al., 2017).

In contrast to rubrics, in-text comments have been found to be more evaluative and focused on the task (Arts et al., 2016; Dirkx et al., 2021). Indeed, in coding a sample of in-text comments on summative student essays, Derham et al. (2021) found that the majority of these annotations were related to task performance, with only 1% of the comments deemed to be promoting self-regulation. With this preponderance for task-focused written feedback information on summative work, improvement may be limited, meaning that a large amount of energy may be expended by the marker for little reward. This type of feedback information therefore still appears to be focused on 'telling', so students may maintain a lot of dependence on the educator in order to know what to do next (Boud & Molloy, 2013; Carless, 2019b). As a result of this finding, Derham et al. (2021) recommended that in-text feedback comments should provide a balance of both evaluative and directive guidance across a piece of work, enabling students to both understand their performance on that specific task, and also think about how to improve future tasks. This approach to writing in-text comments can include, for example, the use of personal pronouns to promote the relational aspect of feedback, and positive and directive language to foster students' engagement with their feedback (Derham et al., 2022). In a comparable example, Padgett et al. (2021) found that the use of certain emoticons in online written feedback information could increase students' perceptions of social presence (i.e. intimacy and immediacy) between the student and instructor. Therefore, written feedback from teachers still has the potential to be a much more effective form of feedback information for students to draw on.

Despite the domination of written feedback practices, this is not the only form of information commonly used by teachers in higher education. An important form of feedback for supporting relationships is feedback talk, which is “part of the contingent, episodic and dialogic interaction between students and educators in the classroom” (Heron et al., 2021, p. 1). This is differentiated from verbal feedback, which is the spoken delivery of summative feedback information, because feedback talk can “take place in moment-by-moment exchanges in the classroom” (Heron et al., 2021, p. 1). Heron et al.’s (2021) coding of feedback talk revealed that educators use a number of linguistic and rhetorical indicators, including rhetorical moves that might normally be traditionally considered as teaching, and aspects that can support relationships between students and educators (such as praising, affirming and consolidating). Heron et al. argue that their framework should be used by educators to enable them to reflect on their own feedback talk practices as a means of harnessing the most effective aspects that occur during day-to-day discourse in the classroom. Feedback talk can provide students with opportunities for both evaluative feedback (based upon their responses to, for example, questioning within class time) and consequential feedback (such as in the educators’ or peers’ body language or changes in intonation during dialogic interactions). The potential power of feedback talk is that it can afford educators the opportunities to initiate dialogue surrounding students’ knowledge and understanding within the discipline. Over time, the increase in instances of feedback talk can make dialogic interactions part of the learning environment and a valuable source of feedback for students to proactively engage with.

Knowledge/Service Users or Audiences

Within many disciplines, audiences or users of a particular service can provide learners with consequential and evaluative feedback information (Quinlan & Pitt, 2021). In, for example, a clinical setting, evaluative and directive feedback can be provided to trainees

through debriefing from clinical skills educators and mentors (Burns, 2015; Panzieri & Derham, 2020). Although patients might be the most meaningful source of (evaluative) feedback in such a setting, Dawson et al. (2021) noted that they might be hesitant to provide medical professionals with direct feedback on their practice. Therefore, Bell et al. (2014) recommended the use of role plays between healthcare students and professional improvisational actors who assume the role of a patient. The advantage of such an approach is that the actors also took part in debriefs facilitated by educators to offer evaluative feedback. In other role-playing scenarios where professional actors are not available, students may also be able to take on the role of the patient to offer their peers evaluative and directive feedback information. In both cases, students are assuming the role of feedback giver, so should be generating internal feedback. It is worth noting that even in cases where evaluative and directive feedback information is not forthcoming (such as the above example provided by Dawson et al. [2021]), it is possible that service users can provide consequential feedback through other verbal and non-verbal cues. In such a setting, this could involve, for example, their responses to treatment plans suggested by the medical student.

In the creative arts, a public audience can offer consequential feedback by their reactions during performances. Even in the absence of a public audience for work-in-progress, peers may need to assume this role (Quinlan & Pitt, 2021), and can also offer evaluative and directive feedback information by directly commenting on and critiquing students' performances (Pitt & Carless, 2022). This could also be done in a more active way using, for example, Augusto Boal's forum-theatre participatory drama technique whereby students assume the roles of participating audience members to 'step in' to a performance to review the scenario, and then propose a different interpretation for the actors to respond to in the moment (Boal, 1979; Sappa & Barabasch, 2020). However, although consequential feedback can be a useful source, Pitt and Carless (2022) note that it takes time for learners to

recognise such responses as being feedback, and then know how to take action. Carless (2020) suggests that over time, students may learn how to internalise their educators' expectations. Therefore, although peers might need to initially role play the part of an audience member or user (Quinlan & Pitt, 2021), it may be possible for students to eventually develop an understanding of how to anticipate how a (hypothetical) audience or user might interpret or use their work: "Because users are not normally present in the classroom, they may be invoked in the imagination" (Quinlan & Pitt, 2021, p. 199). In this sense, learners are drawing on internal feedback to develop their evaluative judgement.

Objects

Non-human actors can also be valuable sources of feedback information, although they can only offer consequential feedback (Quinlan & Pitt, 2021). For example, "the red squiggly line underneath a misspelling in a word processor" (Winstone et al., 2022, p. 224) provides learners with consequential feedback because it tells them that an error has been made. However, "the red squiggly line" in isolation only tells the learner that they have spelled the word incorrectly, not how to correct the error. Thus, technology may offer rich potential for generating consequential feedback, but the challenge for educators is in how to scaffold such information to help learners convert it into directive feedback information to take action on: "educators [should] design assessment tasks which are sequenced to allow for sense-making and gestation, [and] enable meaningful feedback exchanges between participants and manifestations of real-world aspects of the discipline" (Pitt & Carless, 2022, p. 819).

In the clinical context, simulation-based education provides a safe learning environment for students to practise their clinical skills with mannequins and equipment in a simulated real-life setting (Weller et al., 2012). Simulations can involve human actors playing the role of a patient and/or non-human actors (i.e. objects) chosen to simulate real-life, which

can offer consequential feedback. For example, students can interact with a monitor that displays vital signs and a mannequin that “blinks, breathes, and has a heartbeat, pulse, and respiratory sounds” (Lateef, 2010, p. 350). In post-simulation training sessions, Paloncy (2020) took advantage of the computerised feedback afforded by a high-fidelity emergency cardiovascular simulation that is not available with the more commonly used low-tech *Resusci Anne*, which does not measure the actual volume of the mannequin’s lungs. This consequential feedback was likely a key element in achieving the profound skill increases Paloncy reported with her experimental group. This form of feedback information may be exploited further to aid students’ self-regulatory capacities by providing a space for them to explicitly plan their actions, monitor the effects of their actions, then reflect and make changes based on the consequential feedback. For example, in a simulation environment, students might note that the vital signs of their ‘patient’ changed as a direct result of something they did, and explicitly reflect on how they used this source of consequential feedback to take further action to help the ‘patient’. Using artefacts for consequential feedback is not simply a ‘one-hit’ activity though; it is an iterative process of “evaluation and refinement” (Swanson & Clarke-Midura, 2021, p. 121). Therefore, the human–material interaction could in fact be seen as a dialogue with an inanimate object to generate consequential feedback with associated opportunities to enact. Thus, enactment opportunities need to be built into the curriculum so that this can come to fruition.

More generally across domains, learning management systems (LMSs) might provide a space to facilitate students’ engagement with feedback (Winstone, Bourne, et al., 2021). For example, feedback portfolios built into LMSs (e.g. Winstone, 2019) may encourage students to think beyond the task at hand to consider how the feedback can apply to future work (Balloo & Vashakidze, 2020). The use of such technology can also draw on automated analytics to visualise the feedback process (Winstone, 2019), which can provide students with

consequential feedback information. These digital tools can be used to encourage dialogues between educator and students, but if they are only used for this reason, this type of scaffolding still forms a crutch for students and dependence on the educator. It may therefore be more valuable in the long-term if such dialogues focus on training students to understand how to identify the consequential feedback information themselves. As Pitt and Carless (2022) noted, it takes time for learners to see consequential feedback information as being feedback, so scaffolding should be focused here. Students can then use the tools to focus on generating internal feedback through making comparisons between multiple pieces of their own work in an ipsative fashion. In this sense, the learning environment is co-regulating students' learning by scaffolding comparison processes (Nicol, 2021).

Timing of Feedback Processes

Each of the sources of feedback information we have discussed can of course be generated and experienced across different timescales. Feedback processes can occur during the short-term everyday rhythms of learning within a particular discipline, during the learning cycles of different tasks that build on each other, and during spirals of iterative cycles that promote more longer-term learning (Quinlan & Pitt, 2021). We will now consider how processes following each of these timings can be scaffolded by educators.

Cycles

We begin by discussing feedback cycles, because this is often linked to the formal assessment and evaluation procedures in which most feedback practice in higher education is traditionally associated. In many cases, summative assessments occur at the end of a module or course, meaning that feedback information is provided on assessments with no opportunity for students to act on it. Therefore, this feedback information has limited utility with no real opportunity to close the feedback loop (Boud & Molloy, 2013). With a single-loop feedback process, students act on feedback information to close a loop that relates to a particular task

or assignment (Carless, 2019b). This might be enabled with the use of single drafts or formative submissions that allow students to make adjustments and revisions to their final submissions (Otnes & Solheim, 2019). Students might then reflect on how they have used this information to close the feedback loop in their next piece of work (Carless et al., 2020). In short-term tasks, a single-loop may be all that is needed (Mercader et al., 2020). Alternatively, follow-up tasks may be designed to encourage students to use feedback from earlier assignments by providing a landing space for feedback (Winstone & Carless, 2019). However, when solely used in this way, the feedback cycle emphasises the transmission notion that others have the responsibility to provide (timely) feedback guidance to students, whereas the aim of what we should be doing is getting students to be able to develop these skills for themselves. Indeed, we should not simply assume that students will use externally generated feedback from earlier assignments, since students have reported difficulties understanding how to apply feedback across tasks that they perceive as being quite different (Balloo & Vashakidze, 2020). Instead, designing curricula to include multiple consecutive tasks that require similar knowledge may better enable ipsative feedback processes and the development of self-regulation and evaluative judgement (Malecka & Boud, 2021): “Ipsative design encourages [the processes of monitoring and evaluating progress through goal-setting] to happen regularly as there is a particular emphasis on recursive cycles of comparison” (Malecka et al., 2022, p. 811). A learning-focused approach to feedback means that students should learn how to agentically and legitimately decide for themselves when and whether to enact feedback.

Into the medium- and longer-term, double-loop learning means providing opportunities for cycles of feedback opportunities in which students can learn how to change their strategies for future tasks (Carless, 2019b). Mercader et al. (2020) compared a double-loop activity with a single-loop activity. The double-loop activity involved students giving

and receiving peer feedback at multiple stages of a group project, whereas the single-loop activity involved only one opportunity for peer feedback. Mercader et al. found that participants felt they were better able to contrast new knowledge of their subject area with their previous knowledge when involved in double-loop learning. Another way to facilitate cycles of feedback processes is to encourage students to keep records of their closing of feedback loops on their LMSs (Carless & Boud, 2018). With feedback cycles, assessment can be the prism by which educators create the opportunities to motivate students to engage with their feedback. It is important for educators to leverage the situation and use that to promote more proactive reciprocity.

Rhythms

One of the advantages of feedback information linked to the everyday rhythms of learning is that it means feedback can be disentangled from assessment processes, which ensures it can be timely and not just tied to the evaluation aspect of assessment (Winstone & Boud, 2022). This helps to train students on how to develop their own internal feedback throughout their learning rather than assuming it only comes from others. Indeed, Panziera and Derham (2020) found that student nurses felt that formal feedback from mentors was constrained by having to occur at specific timepoints when there were assessments. Non-mentors, on the other hand, could deliver more timely feedback as it occurred during conversations as part of observations on their daily practice, instead of being linked to clinical grading. An important implication of this might be to emphasise the relational aspect of feedback and ensure that dialogue and trust are central to day-to-day interactions. This enables students to feel more comfortable seeking out further feedback information from colleagues and peers in their disciplinary/classroom context.

Thinking about feedback as a relational practice means it should be viewed as an alliance or partnership between students and teachers (Matthews et al., 2021; Telio et al.,

2015). Based on the notion of the *therapeutic alliance* formed between therapists and clients, Telio et al. (2015) proposed the need for an *educational alliance* between feedback providers and receivers:

building a strong alliance means conveying interest in the identity of the trainee and the teaching encounter. In fact, it is in the context of strong alliances that one can engage in ‘negative’ feedback with effective impact because this difficult feedback is likely to be received with the understanding that it is to help the trainee improve rather than an attack on or denigration of the individual. (Telio et al., 2016, p. 940)

Therefore, by building trust and interest into student and staff interactions, the feedback can become part of everyday practices rather than something primarily linked to (summative) assessment and evaluation.

Spirals

A loop implies an end-point, whereas a spiral implies something more ongoing and developmental. Feedback spirals involve students making sense of inputs from a range of sources over an extended period of time in order to improve work and enhance learning strategies. (Carless, 2019b, p. 712)

Sustainability of feedback practices is an important concern. To reduce dependence on teaching staff, students need to learn how to seek out new sources of feedback information and continually modify their approaches based on new information. Spirals involve a series of cycles that lead to longer-term changes (Carless, 2019b). This moves feedback beyond being linked to a discreet set of activities to thinking about how students could modify their overall approaches to learning (Carless, 2019b). In this sense, spirals might involve ongoing revisiting of feedback where loops are not necessarily closed (Carless, 2019a, 2019b).

However, care needs to be taken; this can be unproductive where assessments are not aligned, as discussed above regarding ipsative feedback processes (Malecka & Boud, 2021). Carless

(2019b) advises that curricula should be designed in spiral sequences to actively engage students in their feedback and focus on longer-term development. For example, spiral learning could aid the generation of internal feedback and self-regulation by providing students with a space for setting goals to use different comparators, monitor their effectiveness, then collate reflections on the different comparators they have used.

Feedback portfolios may encourage spiral learning and be useful where the design of the curriculum allows it, such as with a constructively aligned curriculum (Biggs & Tang, 2011). This is because portfolio tools allow students to monitor their performance change and development over longer periods of time (Winstone, Nash, Parker, et al., 2017), and they can be especially powerful within professional practice contexts. Within the clinical education context, Dahllöf et al. (2004) devised a logbook for students to complete, which included self-evaluations and reflections for self-generating feedback and setting goals. In using the logbook to track their own development, fourth-year dental students during a one-year course on paediatric dentistry demonstrated increased independence from teachers with fewer students preferring detailed instructions at the end of the course (41%) than at the start (63%). Similarly, Embo et al. (2010) developed an instrument to encourage midwifery students to become more self-directed in their feedback seeking behaviours. This tool provided students with a space for collating written and oral feedback information from supervisors/tutors about each of their competencies and reflections on these. Students were responsible for obtaining feedback information for all competencies, which were linked to specific learning outcomes, so they could self-assess and self-monitor their progress towards each outcome. The key aspects of these approaches are that they encouraged students to set goals, then gather and focus on directive feedback information for their continual improvement, so they could monitor how they were going to achieve their goals as self-regulated learners.

With the sequential closing of loops, scaffolding using the tools identified above may encourage double-loop learning and foster longer-term spirals. The tracking of performance change may also facilitate ipsative feedback processes (Malecka & Boud, 2021). However, these tools' largest scope is in their potential to promote ongoing reflection and engagement with feedback if used appropriately (Winstone, Nash, Parker, et al., 2017). By supporting students to reinterpret external feedback information in their own words (Balloo & Vashakidze, 2020), the feedback hopefully becomes disentangled from the individual tasks and assessments, which could move its impact away from simply closing feedback loops towards promoting longer-term spirals. Thus, the best use of such tools may be to integrate them into students' curricula at a programmatic level, particularly since some students have reported a lack of motivation for continuing to use feedback portfolios if they are not an integral part of their study routine (Balloo & Vashakidze, 2020). However, a fundamental aspect of such tools is that they are student-led and reduce dependence on the educator, so students should be trained on how to record feedback sources and track their own performance for themselves. Of course it should be noted that placing the responsibility of feedback seeking, generating and enacting with students means that they also get to make decisions about which tools and approaches work for them; some students may find other ways to internalise standards and generate internal feedback, so feedback interventions could act as distractions for these students. Therefore, integration of these initiatives may benefit from being done in partnership with students, as was done with the feedback portfolio implemented by Winstone (2019).

Conclusion

The art of curriculum design goes beyond content delivery to creating opportunities for knowledge accumulation, application, and feedback enactment based upon evaluative, directive and consequential feedback. The signature feedback taxonomy proposed by Quinlan

and Pitt (2021) has provided us with a conceptual framework in which to illuminate how educators can seek to foster greater student responsibility in feedback processes. The four sources of feedback contained within this taxonomy have demonstrated how educators play a fundamental role in creating opportunities for students to be placed at the centre of feedback processes. Such opportunities should train students to identify, seek, generate, and enact feedback. We have also proposed examples of how educators might operationalise each of these sources of feedback information within the different timings of processes discussed (Table 1). Furthermore, the more nuanced distinction between evaluative and consequential feedback we have put forward in this chapter is perhaps the most exciting and potentially transformative recent development within our evolving understanding of higher education feedback processes. How these two types of feedback information interact with the sources and timings proposed by Quinlan and Pitt offer the greatest potential sites for more empirical research. It would also be interesting to look at exploiting the power of consequential feedback information further by designing activities that purposely focus on generating this type of feedback. Within our chapter we have identified many synergies between the taxonomy and the existing research base. Much of this literature has spawned from our collective shift towards seeing feedback as a shared venture with increasing focus upon proactive mindsets. That said, the future of this research needs to become more nuanced towards how such a taxonomy and its constructs exist or co-exist within different disciplinary domains. It is then when we can begin to understand how students are inducted into the disciplinary field to develop their knowledge and understanding, and how these experiences are underpinned by educators' pedagogical approaches and feedback processes.

Suggested Readings

Gravett, K. (2022). Feedback literacies as sociomaterial practice. *Critical Studies in Education*, 63(2), 261–274. <https://doi.org/10.1080/17508487.2020.1747099>

Gravett problematises some of the contemporary perspectives of feedback that adopt a purely humanist conception by arguing that such positions do not consider the wider context in which learning takes place. As a result, Gravett draws on a sociomaterial perspective to argue that understanding students' active engagement with feedback should consider the roles of both human (social) and non-human (material) actors. In this sense, material artefacts – which in the context of feedback could include, for example, feedback forms and cover sheets – are not neutral in students' learning. Gravett suggests that there is a need to challenge the notion that feedback is a purely dialogic event, since sociomaterial factors may impact on human–human interactions.

Quinlan, K. M., & Pitt, E. (2021). Towards signature assessment and feedback practices: a taxonomy of discipline-specific elements of assessment for learning. *Assessment in Education: Principles, Policy & Practice*, 28(2), 191–207. <https://doi.org/10.1080/0969594X.2021.1930447>

Quinlan and Pitt present a taxonomy of signature assessment and feedback practices that we have drawn on in this chapter. The authors employ sociomaterial theories to describe some of the sources of feedback information (the self, disciplinary colleagues, knowledge/service users or audiences, and objects) and the different timings of feedback processes, from the short-term to long-term (rhythms, cycles, and spirals). The authors also discuss how human (social) actors can generate evaluative feedback, and both human and non-human (material) actors can generate consequential feedback. The authors particularly focus on the latter type of feedback information, as it is largely underexplored in the literature, but has significant

scope for helping students to generate internal feedback information without the need for external feedback information to be provided by the teacher.

Nicol, D. (2021). The power of internal feedback: exploiting natural comparison processes.

Assessment & Evaluation in Higher Education, 46(5), 756–778.

<https://doi.org/10.1080/02602938.2020.1823314>

Nicol emphasises that students play an active role in the feedback process by engaging in conscious comparative processes to generate internal feedback. Nicol explains that students draw on external information (e.g. the teacher's task instructions) then compare their work against this information to generate internal feedback information. This process involves both self-regulation and co-regulation with other people and the learning environment. Nicol contends that these natural comparison processes can also be exploited by designing written reflective tasks that help students to identify and seek out new comparators. The idea is that teachers create opportunities for students to generate feedback for themselves.

Winstone, N. E., & Boud, D. (2022). The need to disentangle assessment and feedback in

higher education. *Studies in Higher Education*, 47(3), 656–667.

<https://doi.org/10.1080/03075079.2020.1779687>

Winstone and Boud raise six issues believed to be caused by feedback being solely tied to assessment and evaluation activities: students focus on grades instead of their future development; teachers focus feedback comments on justifying the grade instead of the student's future development; feedback information is provided too late to be useful; feedback is not focused on in course design processes; accountability for feedback processes impedes its quality; and anonymous marking negatively impacts on feedback quality. The

authors recommend that the learning function of feedback can be preserved by using strategies to disentangle feedback from assessment.

References

- Agricola, B. T., Prins, F. J., & Sluijsmans, D. M. A. (2020). Impact of feedback request forms and verbal feedback on higher education students' feedback perception, self-efficacy, and motivation. *Assessment in Education: Principles, Policy & Practice*, 27(1), 6–25. <https://doi.org/10.1080/0969594X.2019.1688764>
- Arts, J. G., Jaspers, M., & Joosten-ten Brinke, D. (2016). A case study on written comments as a form of feedback in teacher education: so much to gain. *European Journal of Teacher Education*, 39(2), 159–173. <https://doi.org/10.1080/02619768.2015.1116513>
- Bacchus, R., Colvin, E., Knight, E. B., & Ritter, L. (2020). When rubrics aren't enough: Exploring exemplars and student rubric co-construction. *Journal of Curriculum and Pedagogy*, 17(1), 48–61. <https://doi.org/10.1080/15505170.2019.1627617>
- Baloo, K., & Vashakidze, A. (2020). Facilitating students' proactive recipience of feedback with feedback portfolios. In K. Gravett, N. Yakovchuk, & I. M. Kinchin (Eds.), *Enhancing student-centred teaching in higher education: The landscape of student-staff research partnerships* (pp. 255–272). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-35396-4_16
- Bell, S. K., Pascucci, R., Fancy, K., Coleman, K., Zurakowski, D., & Meyer, E. C. (2014). The educational value of improvisational actors to teach communication and relational skills: Perspectives of interprofessional learners, faculty, and actors. *Patient Education and Counseling*, 96(3), 381–388. <https://doi.org/10.1016/j.pec.2014.07.001>
- Biggs, J., & Tang, C. (2011). *Teaching for quality learning at university* (4th Ed.). Society for Research into Higher Education & Open University Press.
- Boal, A. (1979). *Theatre of the oppressed*. Pluto Press.
- Boud, D., & Molloy, E. (2013). Rethinking models of feedback for learning: the challenge of design. *Assessment & Evaluation in Higher Education*, 38(6), 698–712.

<https://doi.org/10.1080/02602938.2012.691462>

- Burns, C. L. (2015). Using debriefing and feedback in simulation to improve participant performance: an educator's perspective. *International Journal of Medical Education*, 6, 118–120. <https://doi.org/10.5116/ijme.55fb.3d3a>
- Çakir, R., Korkmaz, Ö., Bacanak, A., & Arslan, Ö. (2016). An exploration of the relationship between students' preferences for formative feedback and self-regulated learning skills. *Malaysian Online Journal of Educational Sciences*, 4(4), 14–30. <https://files.eric.ed.gov/fulltext/EJ1116318.pdf>
- Carless, D. (2015). *Excellence in university assessment: Learning from award-winning practice*. Routledge.
- Carless, D. (2019a). Learners' feedback literacy and the longer term: Developing capacity for impact. In M. Henderson, R. Ajjawi, D. Boud, & E. Molloy (Eds.), *The impact of feedback in higher education* (pp. 51–65). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-25112-3_4
- Carless, D. (2019b). Feedback loops and the longer-term: towards feedback spirals. *Assessment & Evaluation in Higher Education*, 44(5), 705–714. <https://doi.org/10.1080/02602938.2018.1531108>
- Carless, D. (2020). Longitudinal perspectives on students' experiences of feedback: a need for teacher–student partnerships. *Higher Education Research & Development*, 39(3), 425–438. <https://doi.org/10.1080/07294360.2019.1684455>
- Carless, D., & Boud, D. (2018). The development of student feedback literacy: enabling uptake of feedback. *Assessment & Evaluation in Higher Education*, 43(8), 1315–1325. <https://doi.org/10.1080/02602938.2018.1463354>
- Carless, D., To, J., Kwan, C., & Kwok, J. (2020). Disciplinary perspectives on feedback processes: towards signature feedback practices. *Teaching in Higher Education*, 1–15.

<https://doi.org/10.1080/13562517.2020.1863355>

Carless, D., & Winstone, N. (2023). Teacher feedback literacy and its interplay with student feedback literacy. *Teaching in Higher Education*, 28(1), 150–163.

<https://doi.org/10.1080/13562517.2020.1782372>

Cartney, P. (2010). Exploring the use of peer assessment as a vehicle for closing the gap between feedback given and feedback used. *Assessment & Evaluation in Higher Education*, 35(5), 551–564. <https://doi.org/10.1080/02602931003632381>

Dahllöf, G., Tsilingaridis, G., & Hindbeck, H. (2004). A logbook for continuous self-assessment during 1 year in paediatric dentistry. *European Journal of Paediatric Dentistry*, 5, 163–169.

Dawson, P., Carless, D., & Lee, P. P. W. (2021). Authentic feedback: supporting learners to engage in disciplinary feedback practices. *Assessment & Evaluation in Higher Education*, 46(2), 286–296. <https://doi.org/10.1080/02602938.2020.1769022>

Derham, C., Balloo, K., & Winstone, N. (2022). The focus, function and framing of feedback information: linguistic and content analysis of in-text feedback comments. *Assessment & Evaluation in Higher Education*, 47(6), 896–909.

<https://doi.org/10.1080/02602938.2021.1969335>

Dirkx, K., Joosten-ten Brinke, D., Arts, J., & van Diggelen, M. (2021). In-text and rubric-referenced feedback: Differences in focus, level, and function. *Active Learning in Higher Education*, 22(3), 189–201. <https://doi.org/10.1177/1469787419855208>

Embo, M. P. C., Driessen, E. W., Valcke, M., & Van der Vleuten, C. P. M. (2010). Assessment and feedback to facilitate self-directed learning in clinical practice of Midwifery students. *Medical Teacher*, 32(7), e263–e269.

<https://doi.org/10.3109/0142159X.2010.490281>

Evans, C. (2015). Students' perspectives on the role of peer feedback in supporting learning.

Journal of Cognitive Education and Psychology, 14(1), 110–125.

<https://doi.org/10.1891/1945-8959.14.1.110>

Evans, C. (2022). *The EAT Framework: Implementing effective assessment feedback practices in higher education*.

https://inclusiveheorg.files.wordpress.com/2022/09/2022_eat-framework_220922.pdf

Fraile, J., Panadero, E., & Pardo, R. (2017). Co-creating rubrics: The effects on self-regulated learning, self-efficacy and performance of establishing assessment criteria with students. *Studies in Educational Evaluation*, 53, 69–76.

<https://doi.org/10.1016/j.stueduc.2017.03.003>

Gravett, K. (2022). Feedback literacies as sociomaterial practice. *Critical Studies in Education*, 63(2), 261–274. <https://doi.org/10.1080/17508487.2020.1747099>

Harland, T., Wald, N., & Randhawa, H. (2017). Student peer review: enhancing formative feedback with a rebuttal. *Assessment & Evaluation in Higher Education*, 42(5), 801–811. <https://doi.org/10.1080/02602938.2016.1194368>

Henderson, Michael, Ajjawi, R., Boud, D., & Molloy, E. (2019). Identifying feedback that has impact. In Michael Henderson, R. Ajjawi, D. Boud, & E. Molloy (Eds.), *The impact of feedback in higher education* (pp. 15–34). Palgrave Macmillan.

https://doi.org/10.1007/978-3-030-25112-3_2

Heron, M., Medland, E., Winstone, N. E., & Pitt, E. (2021). Developing the relational in teacher feedback literacy: exploring feedback talk. *Assessment and Evaluation in Higher Education*, 1–14. <https://doi.org/10.1080/02602938.2021.1932735>

Huisman, B., Saab, N., van Driel, J., & van den Broek, P. (2018). Peer feedback on academic writing: undergraduate students' peer feedback role, peer feedback perceptions and essay performance. *Assessment & Evaluation in Higher Education*, 43(6), 955–968.

<https://doi.org/10.1080/02602938.2018.1424318>

- Lateef, F. (2010). Simulation-based learning: Just like the real thing. *Journal of Emergencies, Trauma, and Shock*, 3(4), 348–352. <https://doi.org/10.4103/0974-2700.70743>
- Lipnevich, A. A., & Panadero, E. (2021). A review of feedback models and theories: Descriptions, definitions, and conclusions. *Frontiers in Education*, 6(720195), 1–29. <https://doi.org/10.3389/feduc.2021.720195>
- Malecka, B., Ajjawi, R., Boud, D., & Tai, J. (2022). An empirical study of student action from ipsative design of feedback processes. *Assessment & Evaluation in Higher Education*, 47(5), 801–815. <https://doi.org/10.1080/02602938.2021.1968338>
- Malecka, B., & Boud, D. (2021). Fostering student motivation and engagement with feedback through ipsative processes. *Teaching in Higher Education*, 1–16. <https://doi.org/10.1080/13562517.2021.1928061>
- Matthews, K. E., Tai, J., Enright, E., Carless, D., Rafferty, C., & Winstone, N. (2021). Transgressing the boundaries of ‘students as partners’ and ‘feedback’ discourse communities to advance democratic education. *Teaching in Higher Education*, 1–15. <https://doi.org/10.1080/13562517.2021.1903854>
- Mercader, C., Ion, G., & Díaz-Vicario, A. (2020). Factors influencing students’ peer feedback uptake: instructional design matters. *Assessment & Evaluation in Higher Education*, 45(8), 1169–1180. <https://doi.org/10.1080/02602938.2020.1726283>
- Nash, R. A., & Winstone, N. E. (2017). Responsibility-sharing in the giving and receiving of assessment feedback. *Frontiers in Psychology*, 8(1519). <https://doi.org/10.3389/fpsyg.2017.01519>
- Nicol, D. (2021). The power of internal feedback: exploiting natural comparison processes. *Assessment & Evaluation in Higher Education*, 46(5), 756–778. <https://doi.org/10.1080/02602938.2020.1823314>
- Nicol, D., & McCallum, S. (2022). Making internal feedback explicit: exploiting the multiple

- comparisons that occur during peer review. *Assessment & Evaluation in Higher Education*, 47(3), 424–443. <https://doi.org/10.1080/02602938.2021.1924620>
- Nicol, D., & Selvaretnam, G. (2022). Making internal feedback explicit: harnessing the comparisons students make during two-stage exams. *Assessment & Evaluation in Higher Education*, 47(4), 507–522. <https://doi.org/10.1080/02602938.2021.1934653>
- Nicol, D., Thomson, A., & Breslin, C. (2014). Rethinking feedback practices in higher education: a peer review perspective. *Assessment & Evaluation in Higher Education*, 39(1), 102–122. <https://doi.org/10.1080/02602938.2013.795518>
- Nordrum, L., Evans, K., & Gustafsson, M. (2013). Comparing student learning experiences of in-text commentary and rubric-articulated feedback: strategies for formative assessment. *Assessment & Evaluation in Higher Education*, 38(8), 919–940. <https://doi.org/10.1080/02602938.2012.758229>
- Otnes, H., & Solheim, R. (2019). Acts of responding. Teachers’ written comments and students’ text revisions. *Assessment in Education: Principles, Policy & Practice*, 26(6), 700–720. <https://doi.org/10.1080/0969594X.2019.1595524>
- Padgett, C., Moffitt, R. L., & Grieve, R. (2021). More than words: Using digital cues to enhance student perceptions of online assignment feedback. *The Internet and Higher Education*, 49(100789), 1–10. <https://doi.org/10.1016/j.iheduc.2020.100789>
- Paloncy, K. A. (2020). Postdebriefing supervised practice improves clinical performance during simulation-based cardiopulmonary resuscitation encounter. *Athletic Training Education Journal*, 15(2), 85–92. <https://doi.org/10.4085/1947-380X-19-064>
- Panadero, E., Broadbent, J., Boud, D., & Lodge, J. M. (2019). Using formative assessment to influence self- and co-regulated learning: the role of evaluative judgement. *European Journal of Psychology of Education*, 34(3), 535–557. <https://doi.org/10.1007/s10212-018-0407-8>

- Panadero, E., & Jonsson, A. (2013). The use of scoring rubrics for formative assessment purposes revisited: A review. *Educational Research Review*, 9, 129–144.
<https://doi.org/10.1016/j.edurev.2013.01.002>
- Panadero, E., & Lipnevich, A. A. (2022). A review of feedback models and typologies: Towards an integrative model of feedback elements. *Educational Research Review*, 35(100416), 1–22. <https://doi.org/10.1016/j.edurev.2021.100416>
- Panadero, E., Lipnevich, A., & Broadbent, J. (2019). Turning self-assessment into self-feedback. In *The impact of feedback in higher education: Improving assessment outcomes for learners* (pp. 147–163). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-25112-3_9
- Panzieri, J., & Derham, C. (2020). Student nurses' experiences of receiving verbal feedback within the clinical learning environment: To what extent does this promote sustainable feedback practices? In K. Gravett, N. Yakovchuk, & I. M. Kinchin (Eds.), *Enhancing student-centred teaching in higher education: The landscape of student-staff research partnerships* (pp. 237–253). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-35396-4_15
- Pitt, E., Bearman, M., & Esterhazy, R. (2020). The conundrum of low achievement and feedback for learning. *Assessment & Evaluation in Higher Education*, 45(2), 239–250. <https://doi.org/10.1080/02602938.2019.1630363>
- Pitt, E., & Carless, D. (2022). Signature feedback practices in the creative arts: integrating feedback within the curriculum. *Assessment & Evaluation in Higher Education*, 47(6), 817–829. <https://doi.org/10.1080/02602938.2021.1980769>
- Quinlan, K. M., & Pitt, E. (2021). Towards signature assessment and feedback practices: a taxonomy of discipline-specific elements of assessment for learning. *Assessment in Education: Principles, Policy & Practice*, 28(2), 191–207.

<https://doi.org/10.1080/0969594X.2021.1930447>

Reddy, K., Harland, T., Wass, R., & Wald, N. (2021). Student peer review as a process of knowledge creation through dialogue. *Higher Education Research & Development*, 40(4), 825–837. <https://doi.org/10.1080/07294360.2020.1781797>

Sadler, D. R. (2010). Beyond feedback: Developing student capability in complex appraisal. *Assessment & Evaluation in Higher Education*, 35(5), 535–550.

<https://doi.org/10.1080/02602930903541015>

Sappa, V., & Barabasch, A. (2020). Forum-theatre technique to foster creative and active problem solving: A resilience-building intervention among in-service teachers. *Journal of Adult and Continuing Education*, 26(1), 43–60.

<https://doi.org/10.1177/1477971419842884>

Schillings, M., Roebertsen, H., Savelberg, H., van Dijk, A., & Dolmans, D. (2021).

Improving the understanding of written peer feedback through face-to-face peer dialogue: students' perspective. *Higher Education Research & Development*, 40(5), 1100–1116. <https://doi.org/10.1080/07294360.2020.1798889>

Shulman, L. S. (2005). Signature pedagogies in the professions. *Daedalus*, 134(3), 52–59.

<https://doi.org/10.1162/0011526054622015>

Swanson, H., & Clarke-Midura, J. (2021). Integrating formative assessment and feedback into scientific theory-building practices and instruction. *Assessment in Education: Principles, Policy & Practice*, 28(2), 118–134.

<https://doi.org/10.1080/0969594X.2021.1929830>

Tai, J., Ajjawi, R., Boud, D., Dawson, P., & Panadero, E. (2018). Developing evaluative judgement: enabling students to make decisions about the quality of work. *Higher Education*, 76(3), 467–481. <https://doi.org/10.1007/s10734-017-0220-3>

Tai, J., Bearman, M., Gravett, K., & Molloy, E. (2021). Exploring the notion of teacher

- feedback literacies through the theory of practice architectures. *Assessment & Evaluation in Higher Education*, 1–13. <https://doi.org/10.1080/02602938.2021.1948967>
- Telio, S., Ajjawi, R., & Regehr, G. (2015). The “Educational Alliance” as a framework for reconceptualizing feedback in medical education. *Academic Medicine*, 90(5), 609–614. <https://doi.org/10.1097/ACM.0000000000000560>
- Telio, S., Regehr, G., & Ajjawi, R. (2016). Feedback and the educational alliance: examining credibility judgements and their consequences. *Medical Education*, 50(9), 933–942. <https://doi.org/10.1111/medu.13063>
- van den Berg, I., Admiraal, W., & Pilot, A. (2006). Peer assessment in university teaching: evaluating seven course designs. *Assessment & Evaluation in Higher Education*, 31(1), 19–36. <https://doi.org/10.1080/02602930500262346>
- van Heerden, M., & Bharuthram, S. (2021). Knowing me, knowing you: the effects of peer familiarity on receiving peer feedback for undergraduate student writers. *Assessment & Evaluation in Higher Education*, 46(8), 1191–1201. <https://doi.org/10.1080/02602938.2020.1863910>
- Weller, J. M., Nestel, D., Marshall, S. D., Brooks, P. M., & Conn, J. J. (2012). Simulation in clinical teaching and learning. *Medical Journal of Australia*, 196(9), 594–594. <https://doi.org/10.5694/mja10.11474>
- Winstone, N. E. (2019). Facilitating students’ use of feedback: Capturing and tracking impact using digital tools. In M. Henderson, R. Ajjawi, D. Boud, & E. Molloy (Eds.), *The impact of feedback in higher education* (pp. 225–242). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-25112-3_13
- Winstone, N. E., & Boud, D. (2022). The need to disentangle assessment and feedback in higher education. *Studies in Higher Education*, 47(3), 656–667. <https://doi.org/10.1080/03075079.2020.1779687>

- Winstone, N. E., Boud, D., Dawson, P., & Heron, M. (2022). From feedback-as-information to feedback-as-process: a linguistic analysis of the feedback literature. *Assessment & Evaluation in Higher Education*, 47(2), 213–230.
<https://doi.org/10.1080/02602938.2021.1902467>
- Winstone, N. E., Bourne, J., Medland, E., Niculescu, I., & Rees, R. (2021). “Check the grade, log out”: students’ engagement with feedback in learning management systems. *Assessment & Evaluation in Higher Education*, 46(4), 631–643.
<https://doi.org/10.1080/02602938.2020.1787331>
- Winstone, N. E., & Carless, D. (2019). *Designing effective feedback processes in higher education: A learning-focused approach*. Routledge.
- Winstone, N. E., Nash, R. A., Parker, M., & Rowntree, J. (2017). Supporting learners’ agentic engagement with feedback: A systematic review and a taxonomy of recipience processes. *Educational Psychologist*, 52(1), 17–37.
<https://doi.org/10.1080/00461520.2016.1207538>
- Winstone, N. E., Nash, R. A., Rowntree, J., & Parker, M. (2017). ‘It’d be useful, but I wouldn’t use it’: barriers to university students’ feedback seeking and recipience. *Studies in Higher Education*, 42(11), 2026–2041.
<https://doi.org/10.1080/03075079.2015.1130032>
- Winstone, N. E., Pitt, E., & Nash, R. (2021). Educators’ perceptions of responsibility-sharing in feedback processes. *Assessment & Evaluation in Higher Education*, 46(1), 118–131.
<https://doi.org/10.1080/02602938.2020.1748569>
- Wood, J. (2022). Making peer feedback work: the contribution of technology-mediated dialogic peer feedback to feedback uptake and literacy. *Assessment & Evaluation in Higher Education*, 47(3), 327–346. <https://doi.org/10.1080/02602938.2021.1914544>
- Zhu, Q., & Carless, D. (2018). Dialogue within peer feedback processes: clarification and

negotiation of meaning. *Higher Education Research & Development*, 37(4), 883–897.

<https://doi.org/10.1080/07294360.2018.1446417>

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into Practice*, 41(2), 64–70. https://doi.org/10.1207/s15430421tip4102_2

Table 1. Approaches to operationalising sources of feedback information during different timescales of feedback processes

Sources of feedback information	Responsibility sharing	Timing of feedback processes		
		Rhythms	Cycles	Spirals
Self	Teacher's role:	Disentangling feedback from its assessment function to focus on the feedback information that can be generated from a range of comparators in students' disciplinary/classroom context	Creating ongoing ipsative opportunities for students to self-review their draft work against comparators	Encouraging students to set goals for using different comparators, monitor their effectiveness across multiple assessments, then collate reflections on the effectiveness of feedback information generated
	Student's role:	Identifying further comparators in their disciplinary/classroom context	Self-reviewing their draft work against comparators before submitting final versions	Tracking the impact of different comparators on performance over time and making ongoing adjustments to strategies based on this
Disciplinary colleagues	Teacher's role:	Working in partnership with students to form alliances built on trust	Creating ongoing ipsative opportunities for students to provide and receive peer feedback information	Ensuring that feedback information on summative work prepares students for self-regulation, instead of being purely evaluative
	Student's role:	Seeking out further feedback information from trusted colleagues and peers	Initiating further peer review processes by providing feedback to peers and requesting feedback from them	Co-creating formative tasks to aid with internalising of criteria and quality standards as part of self-regulation
Knowledge/service users or audiences	Teacher's role:	Encouraging students to frequently discuss ideas and concepts with their peers about how an audience or user might respond to their work	Building in opportunities for peers to role play an audience member or user and model how they would respond to the student's draft/work-in-progress	Supporting students' development of evaluative judgement, so they can learn to imagine and anticipate how an audience or user might respond to their work

	Student's role:	Being open and honest with peers about how they think an audience or user might respond to their work	Playing the role of an audience member or user by giving honest feedback on how they might respond to the student's draft/work-in-progress	Evaluating their own performance from the perspective of an audience member or user
Objects	Teacher's role:	Facilitating discussions about the material objects that make up the student's discipline, and how these objects can provide them with valuable feedback information	Providing a space in the learning management system for students to keep records of their closing of feedback loops	Making use of sophisticated digital tools, such as feedback portfolios, to provide automated analytics that can visualise students' ongoing development
	Student's role:	Initiating discussions about the material objects that make up their discipline, and how these can provide them with valuable feedback information	Making use of the learning management system for keeping records of their closing of feedback loops, so they can revisit such information for future tasks	Engaging with sophisticated digital tools and responding to the automated analytics to form strategies for completing future tasks