

# Chapter 19

## 3D Feedback: A Three-Dimensional Feedback Approach That Makes Students Feel, Think, and Act Big

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### ABSTRACT

*Feedback is a vital component of formative assessment processes. Criteria for providing effective feedback practices have been reinforced in governments' recent educational documents. The development of engaging feedback approaches that foster students' progress and maximize their motivation has gained increased popularity in both research and practice. This chapter aims to present a three-dimensional approach to providing feedback (3D feedback) that supports student engagement with feedback comprehensively—emotionally, cognitively, and behaviorally. Within this frame, an inclusive account of key indicators/activities reflecting the three dimensions of engagement with feedback is provided, along with their pedagogical implications. This is potentially useful to educators who are interested in adopting feedback interactions that are meaningful and stimulating to students, with clear purposes. The chapter also proposes guidelines for high-quality, engaging, and formative feedback, drawing on best practice principles and research findings.*

### INTRODUCTION

Learning is not a straightforward process because knowledge and understanding are constructed and reconstructed in a continual and progressive manner while being shaped through learning experiences (e.g., meaning-making, dialogue, and learning by doing), both within and between individuals (Dun-

DOI: 10.4018/979-8-3693-0880-6.ch019

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worth & Sanchez, 2016). A common practice that acts as a catalyst to drive this process of knowledge construction and reconstruction is ongoing formative assessment, also known as assessment for learning. It is the condition through which teachers elicit, analyze, and respond to the formative data they had obtained about their students' understanding (Strijbos et al., 2021) to identify the specific learning misconceptions, gaps, or struggles that need to be addressed while deciding on the next learning path for the students (Carless, 2019). Such responsive interventions are undertaken through diverse activities and strategies that often take place at the beginning, middle, or end of a lesson (Elsayed & Cakir, 2023).

The step that stands out as the most significant in the formative assessment process explained above is the teacher's response to the diagnostic data at hand by giving a quick and valuable piece of information—feedback—to acknowledge and enable the progress in the student's current performance (Price et al., 2010). In this regard, the prevalent general understanding found in the relevant educational literature represents feedback as “information provided by the teachers to the learners regarding some aspect(s) of their work or performance, to modify the learner's cognition, motivation and/or behavior for improvement” (Duijnhouwer et al., 2010, p. 16). Taking a broader view, all modes of communicative dialogues that support learning (Carless, 2022), both formal and informal, such as oral, visual, or text-based, are considered feedback (Sadler, 2010). For instance, facial expressions, body gestures, grades, advice, praise, or criticism are all types of post-response information and are considered feedback once they involve an element of assessment or evaluation (Wiggins, 2012). Generally, as an instructional tool, feedback intends to serve the following functions: confirm correct answers, address mistakes and weaknesses (criticism or critical feedback), rectify errors (corrective feedback), explain errors, demonstrate correct practices (e.g., ideal or model answer), engage students in critical thinking, challenge students' preconceptions, suggest further search, appreciate the strengths in students' work by giving them praise and encouragement (positive feedback), justify marks, and suggest approaches for future assignments (Alt et al., 2023; Sanford, 2018).

Irrespective of the function that the feedback strives to serve, the embedded information is considered formative when it highlights three major areas of students' learning (Hattie & Timperley, 2007):

1. ‘How are they doing?’ This provides students with information that can help them recognize the gap in their learning.
2. ‘Where should they aim at?’ This identifies specific goals of learning.
3. ‘What should they do next?’ This determines the action needed for closing the gap to help learners improve.

Ultimately, the impact of the communicated feedback information on the learner's improvement, whether in the short term or the long term, should become the end goal (Sadler, 2010). This shifts the attention from the input process, in terms of how the feedback is constructed, to the output that mainly involves the student's interaction with that information (Elsayed & Cakir, 2023). As such, equal importance is placed on the feedback provider (the teacher) and the feedback receiver (the student). Thereby, students are expected to fulfill their role in the feedback practice by seriously considering investing their time and effort in the uptake of the information from the received feedback to upgrade their learning (Ali et al., 2015; Carless, 2019; Nash & Winstone, 2017; Scott et al., 2011). In this sense, feedback without the students' active engagement is completely unproductive (Carless, 2019). Thus, the students' agency in the regulation of their own learning is crucial in making feedback effective for learning (Strijbos et al., 2021) and is the essence of sustainable feedback (Carless, 2022).

Nevertheless, it should not be taken for granted that all students need to engage in time and effort-consuming actions to enable their uptake of the feedback (Winstone et al., 2019). It is both notable and disappointing that in recent literature, student engagement with teacher feedback has been frequently judged as limited, passive, and challenging (Ajjawi et al., 2022; Van der Kleij, 2020; Winstone et al., 2021). This means that they do not always consciously internalize and work on feedback, and some might just skim the comments or even fully disregard the feedback (Zhang & Zheng, 2018). A fairly straightforward explanation for this dilemma is simply that some students do not think of feedback as something profitable and essential for their improvement (Winstone et al., 2016). In support of this, Sadler (2010) notes that some students are more or less inclined than others to turn feedback information into their advantage. Displaying a responsible stance toward the feedback or not doing so, is at the end, a decision made by students (Winstone et al., 2017) and needs to be voluntarily performed by the students themselves, rather than coerced (Price et al., 2011).

By implication, students' disengagement from feedback becomes a source of frustration for educators who spend a lot of time on grading the students' work and provide them with high-quality feedback (Carless, 2022; Vattøy et al., 2020). As such, students' disengagement from feedback becomes a prime concern internationally across different learning stages and academic subjects (Ali et al., 2015; Carless & Boud, 2018; Winstone et al., 2021). Accordingly, the question of how to engage students with feedback is emphasized and often surfaces when discussing the usefulness of feedback in classrooms; thus, it has gained increasing attention in recent educational literature (Esterhazy & Damşa, 2019). The more the feedback is utilized thoughtfully in alignment with the best practices of formative assessment, the better the outcomes.

## **Purpose and Chapter Outline**

This chapter is intended to provide a more profound understanding of how engagement with feedback operates in a broad sense, while considering the three interdependent dimensions of engagement—emotional, cognitive, and behavioral—that are based on Fredricks and colleagues' (2004) holistic framework for student engagement. Within this framework, this chapter explains how a multidirectional approach to feedback, which is called 3D feedback here, helps engage students at these three levels. In doing so, this chapter unfolds previous research studies on students' engagement with feedback (e.g., Ali et al., 2018; Carless & Boud, 2018; Han & Xu, 2021; Man et al., 2021; Zhang & Zheng, 2018; Zhan et al., 2023) to display the characteristics of 3D feedback in a practical sense by establishing a preliminary categorization of its key activities/indicators. This step is necessary, given that the application of these multidimensional facets of feedback may be lacking in many classrooms, which can be perceived as a key weakness undermining the students' active engagement with feedback.

Incorporating the 3D approach with the recommendations for engagement with feedback that are proposed in this chapter presents some practical advantages. It is potentially useful to educators who are interested in maximizing their feedback literacy and honing their skills in order to adopt new ways of feedback interactions that foster productive student engagement (Zhan et al., 2023). Many educators may not have received substantial training in how to make the right choice of words and present the feedback in a tactful and constructive manner, whether written or spoken, the very best it can be, to remain influential in their students' learning. Without this attention, teachers will not become confident in implementing the formative features of assessment in their classrooms (Han & Xu, 2021; Molloy et al., 2020).

### **3D Feedback**

Overall, the current work highlights some features of interest for the wider community of teachers and other practitioners. It has the currency for adoption across different subjects and grade levels since the discussed 3D approach for engagement with feedback serves shared purposes, enabling educators to apply them to their unique contexts, so their feedback can be utilized in more engaging and inspiring means.

Against this introduction, the next section is devoted to connecting the research problem to extant literature. First, the chapter provides a background on the multidimensional approach that considers student engagement with feedback at the emotional, cognitive, and behavioral levels, building on Fredricks and colleagues' (2004) framework for student engagement. The, it presents an inclusive account of key indicators/activities reflecting the three dimensions of engagement with feedback—emotional, cognitive, and behavioral—involving the “what, when, how, and why” of each context. Special attention is paid to how to translate these findings into pedagogy by offering teachers the corresponding strategies that encourage students to successfully utilize the teachers' feedback at the aforementioned levels. This chapter concludes with suggestions for further research in the local context and beyond.

## **A MULTIDIMENSIONAL APPROACH TO STUDENT ENGAGEMENT**

Generally, students' active engagement in learning is a key contributor to academic achievement as it is linked to higher levels of academic commitment, grades, discipline, and school completion rates (Fredricks et al., 2016). Fundamentally and in a general sense, student engagement reflects the level and quality of student involvement that is directed toward achieving high learning outcomes (Fredricks et al., 2004; Hu & Kuh, 2002). However, it is worth noting that such involvement is not only limited to observable actions or apparent behaviors (Handley et al., 2011) but also entails invisible activities, such as those related to feelings, attitudes, and sense-making processes (Carless et al., 2011). Thereby, significant contributors to the field have done much to shape the understanding of the complexity associated with engagement as a construct.

Overall, there is a broad consensus that the concept of engagement needs to be viewed as a multifaceted entity, or rather, as a ‘meta-construct’, involving multiple components that are evidenced in a range of activities or indicators (Fredricks et al., 2004). Specifically, prior research has identified three widely accepted dimensions of engagement, namely affective/emotional, cognitive, and behavioral, which have been deemed interdependent (e.g., Fredricks et al., 2004; Han & Xu, 2021; Yu et al., 2019). Two additional dimensions have been highlighted in the literature; one is agentic engagement (Reeve & Tseng, 2011), denoting the proactive contribution to the learning activity, such as when the student enriches the task and advances the suggested way of approaching it. The other dimension is social engagement (Fredricks et al., 2016), which is concerned with collaborative engagement, such as those conducted as part of group work. Students may engage either positively or negatively in any of these dimensions of engagement, in varying degrees and at different times (Fredricks et al., 2004). For example, in a group project, a student may contribute to raising the standards of the assigned task while devoting extra effort to enhancing its quality, whereas another student may decide to put the least amount of effort in performing the task, being dependent on other members of the group (negative social engagement).

Translating this understanding to the current focus—students' engagement with feedback—this means that they are expected to engage with the teacher's feedback at multiple levels, basically the affective, cognitive, and behavioral, all of which intersect in reality. In advocating this approach, Price and colleagues' (2011) three-year study that focused on student engagement with assessment feedback drew

attention to the need for a more socially embedded and holistic paradigm of engagement with feedback. Furthermore, recent conceptualizations of feedback started to explore the nature of students' active engagement with feedback through the multidimensional lens. For instance, Jørgensen (2019) and Yu et al. (2019) recommended students' affective, cognitive, and behavioral involvement in the teachers' comments on their submitted work.

Given the above, the central question to be answered next is how can educators engage students with teachers' feedback on these multifaceted levels? In other words, how can students feel, think of, and act on the information they received? In the quest to address this inquiry, the current chapter considers the three dimensions of student engagement (Fredricks et al., 2004) in the discussion of the multidimensional approach of engagement with feedback. These dimensions are dynamically interrelated (Christenson et al., 2012) and thus, should not be overlooked or taken as an isolated process if the aim is to examine the phenomenon of engagement in a comprehensive manner (Fredricks et al., 2016). This approach's advantage also lies in its fluidity and flexibility. It could be adapted to different learning domains or contexts (e.g., engagement with a particular teaching in a certain academic subject or at a specific class level), while catering to the engagement of different demographics of students (e.g., college students or school-level students) (Fredricks et al., 2016).

## **FEELING, THINKING, AND ACTING ON THE FEEDBACK**

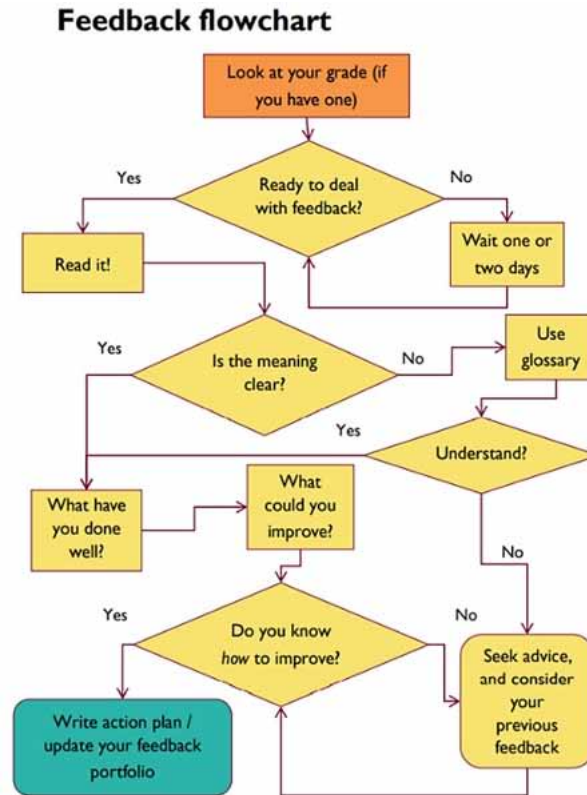
Winstone and Nash (2016) provided a productive practical transformation of the theoretical ideas relating to engagement with feedback across different dimensions of engagement for classroom teaching and learning purposes. In their contribution, they designed an educational toolkit called Developing Engagement with Feedback Toolkit (DEFT), which contains open-access editable materials that can be utilized to support engagement with feedback (e.g., feedback glossary with the meanings of commonly used feedback terms, workshop materials, student feedback guide, and feedback portfolio). The toolkit encapsulates the three dimensions of engagement with feedback, starting with the emotional readiness to deal with feedback, the recognition of feedback, the synthesis of its content, and ending with deciding what actions to do next for improvement (see Figure 1).

### **Feelings About Feedback: Affective/Emotional Engagement**

Learning is indeed an emotional process, and the teaching profession, in its entirety, cannot be detached from emotions (Christenson et al., 2012). The rationale behind this notion is that feelings are key to gaining access to the mind, and people first react emotionally to the information, which then informs their subsequent reactions (Kahneman, 2011). This understanding places a particularly high value on the need to influence the emotional mind first (Kahneman, 2011), which is especially true in the case of feedback because it is an emotional business (Ajjawi et al., 2022). More explicitly, emotions strongly influence how students engage with feedback (Quinton & Smallbone, 2010); they are essential for maintaining students' motivation (Shute, 2008) and reinforcing their willingness to follow the requirements stated in the feedback (Fredricks et al., 2004). Therefore, the most influential act in the process of giving feedback is when teachers need to precisely select the words and communicate these in a way that demonstrates their emotional understanding and support in order to positively affect their students' feelings. For instance, instead of crossing out an answer to indicate that it is wrong, the teachers may

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Figure 1. Feedback flowchart  
(extracted from Winstone & Nash, 2016, p. 21)

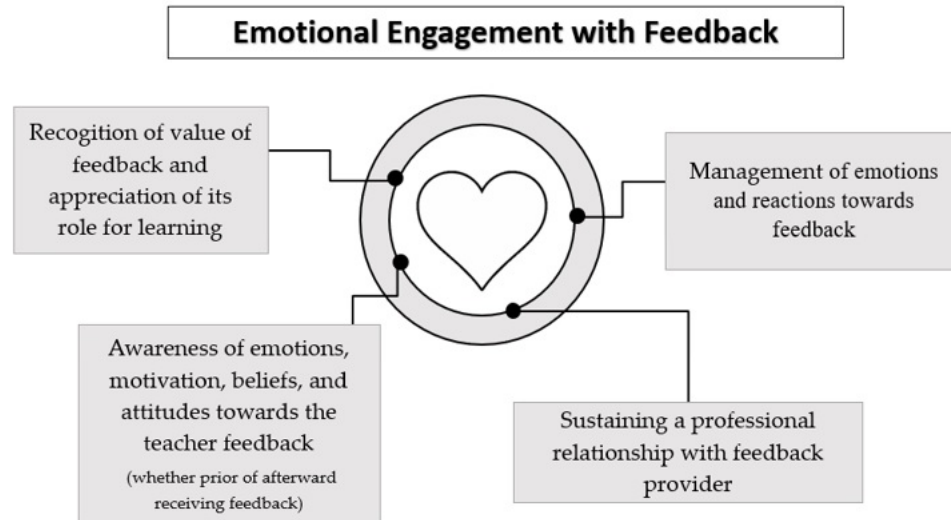


respond by writing, “You decided to ..., which is right in the sense that... but is not scientifically sound in the sense that ..., so how about ...?”

Emotional engagement with feedback is generally expressed through “affective reactions” or general feelings toward teachers, classmates, academics, and the school, whether positive or negative (Christenson et al., 2012). Specifically, it highlights the following key features: recognition of the feedback’s value and role in learning, the students’ feelings toward the feedback, and the ability to positively manage those feelings to avoid potential damaging consequences, whether for themselves or others (e.g., affecting the relationship with the person providing the feedback) (Carless & Boud, 2018; Han & Xu, 2021; Quinton & Smallbone, 2010; Yu et al., 2019). Figure 2 summarizes the key features characterizing emotional engagement with feedback.

More specifically, feelings toward the feedback may involve the students’ emotions (e.g., interest, enjoyment, boredom, happiness, and anxiety), motivation (e.g., a desire to learn or improve their grades), beliefs (e.g., perceiving an error as a sign of weakness), and attitudes (e.g., acceptance or rejection of the feedback) (Carless & Boud, 2018; Quinton & Smallbone, 2010). Such sort of emotional interaction can be an outcome of the feedback and/or a mediator of other outcomes. In other words, it can be considered a pre-factor or a post-factor since the students may have prior affective dispositions before engaging with the given feedback or may experience these emotions after receiving the feedback. Nevertheless, whether emotions have already existed before engagement with the feedback or are evoked as a result

Figure 2. Key features characterizing emotional engagement with feedback



of the obtained feedback, they affect the students' willingness to invest their efforts in learning from the feedback (Han & Xu, 2021). For instance, positive emotional engagement may be demonstrated by the students' appreciation of feedback as a key means of improvement (Cartney, 2010) and their openness to receiving comments on their work without displaying a defensive or aggressive stance, specifically in the case of critical comments or low grades (Cengiz & Ayvaci, 2017).

Because feedback may trigger emotions in some way or another, such as those explained above, students need to have the ability to positively manage their own emotional responses to feedback and most importantly, maintain a positive relationship with the person providing that feedback, that is, the relational dimension (Price et al., 2011). This "management of feelings" has been considered by Dowden et al. (2013) as a vital and natural part of receiving feedback and has been identified as a critical competency to become feedback literate (Carless & Boud, 2018). However, when naturally occurring, it demands a great deal of emotional strength, commonly known as emotional intelligence. In this respect, some students have been able to keep the adverse impact of unwelcomed feedback under control and overcome their negative emotions, such as frustration or embarrassment, to further use the teacher's feedback successfully (Mahfoodh, 2017).

To this end, Table 1 offers examples of responses that showcase how the emotional element can be incorporated into feedback. These phrases are not confined to specific academic subjects or learning levels; they can be adapted for different purposes and thus have a wide applicability across learning contexts.

### Thinking Through Feedback: Cognitive Engagement

Cognitive engagement is required to assimilate complex ideas, accomplish tasks, and master difficult skills (Christenson et al., 2012). It is undertaken through information-processing activities to plan, monitor, and evaluate one's own thinking (Fredricks et al., 2016). These may include all sorts of cognitive and metacognitive learning strategies and processes, such as summarizing, remembering, analyzing, organiz-

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Table 1. Examples of responses demonstrating the incorporation of the emotional element in feedback

Feedback Element	Purpose	Feedback Phrase	Advantage
Emotional	To continuously support the emotional fulfillment of students through words of inspiration and empowerment	<i>You always surprise me when you...</i>	Showing interest in students' work
		<i>This is impressive and makes sense to me, as you...</i>	Praising specific positive features of students' work
		<i>That was quite a challenging task. I commend you for taking the challenge, as you...</i>	Maximizing students' self-confidence

ing, and understanding the material studied, besides relating the newly learned information to existing knowledge (Fredricks et al., 2011). Self-regulation to manage learning also comes as part of cognitive engagement, as is the case of regulating one's attention and effort while studying (Fredricks et al., 2016).

Students may cognitively engage with feedback information in similar ways, as explained above, through various mental strategies to regulate their learning while processing feedback (Han & Xu, 2021; Price et al., 2011; Yu et al., 2019). For instance, they may engage in a mindful reflection on their work (Jørgensen, 2019); notice and identify the reasons for their errors and correct them (Cengiz & Ayvaci, 2017; Han & Xu, 2021), as well as make evaluative judgments and sound decisions about the quality of their work and that of others (Carless & Winstone, 2023). Students actually allocate their mental efforts and a great deal of concentration, as part of these processes, to the absorption of their teachers' feedback (Man et al., 2021). Figure 3 sums up the key features characterizing cognitive engagement with feedback.

Table 2 provides a more detailed account of the activities/indicators associated with students' cognitive engagement with feedback, reflecting the key features displayed in Figure 3.

The stage where students engage with feedback at the cognitive level is vital (Price et al., 2011). The reason is that such an act prompts students to meaningfully consider taking up feedback in relation to their learning goals, which, in turn, maximizes their awareness of the learning processes involved in the assignment (Zhang & Zheng, 2018). It encourages them to attempt to fully comprehend the feedback message to further execute what is needed (Winstone et al., 2021). However, when this stage does not occur, students will be unable to detect their errors and explore the misconceptions that led to these errors (Cengiz & Ayvaci, 2017); as a consequence, they might repeat the same mistakes in the future.

Figure 3. Key features characterizing cognitive engagement with feedback

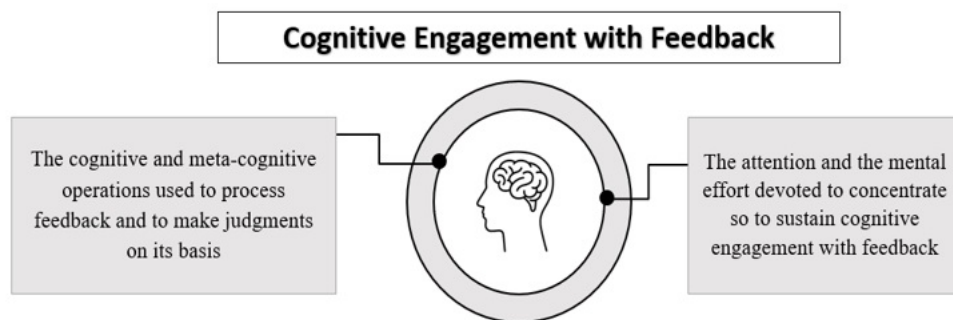




Table 2. Categorization of activities/indicators reflecting cognitive engagement with feedback (Source: Rabbani, in press)

	Activities/Indicators
<b>Cognitive engagement</b>	<ul style="list-style-type: none"> <li>• Look over and read the feedback comments (Ali et al., 2015).</li> <li>• Summarize and organize the information (Fredricks et al., 2011).</li> <li>• Attempt to understand and make sense of the feedback information (Boud &amp; Molloy, 2013; Man et al., 2021).</li> <li>• Notice and identify the reasons for the errors and correct them (Han &amp; Xu, 2021).</li> <li>• Spend time on a mindful reflection on the work based on the feedback (Ali et al., 2015; Jørgensen, 2019).</li> <li>• Make attempts to figure out the reasons for the addressed errors (Man et al., 2021).</li> <li>• Focus on the areas that need improvement (Ali et al., 2015).</li> <li>• Practice problem-solving, self-correcting (Finn et al., 2018).</li> <li>• Relate the newly learned information to existing knowledge (Fredricks et al., 2016).</li> <li>• Avoid any distractions to focus on learning or the task at hand (Fredricks et al., 2011).</li> <li>• Make an evaluative judgment or self-assessment of one's work (Carless &amp; Boud, 2018; Cengiz &amp; Ayyaci, 2017).</li> </ul>

Accordingly, for formative feedback to work in a cognitively engaging way, it should not only target factual knowledge but also have the sole intention of building on, probing, and extending the students' conceptual understanding to scaffold productive thinking (Chin, 2006). Feedback in this sense helps stimulate deeper thinking beyond simple recall, while directing students toward either judging their existing knowledge or producing new knowledge on their own, thus achieving greater conceptual understanding of ideas rather than remaining at the level of surface knowledge (Price et al., 2010).

For instance, cognitively engaging feedback may come in the form of open questions to evoke a dialogic discourse that challenges the students' ideas and allows them to argue, justify, and debate on these, enabling them to make their thinking more visible and scientifically sound (Chin, 2006), which applies to the feedback on both correct and incorrect answers. As explained by Chin (2006), this may include questions of clarification (e.g., Can you give an example? What do you mean by that?); questions that probe assumptions (e.g., Why would you say that? What makes you think that is true? Could be there another interpretation for that?); evidence and reason (e.g., What are your reasons for that? How can you prove that?); consequences and implications (e.g., What might happen if you did this ... not that...? What are the implications of ...? Does this also apply to ...?); and questions about perspectives or viewpoints (e.g., How do these ideas differ from that idea? How does this point relate to ...?).

Such examples of elaborative feedback are beneficial in several ways. They put further pressure on the students to use their own mental resources for practicing deep reflection of the target mistake, self-correction, and repair; they stimulate brainstorming of ideas to make inferences or generate explanations; and they expose students to cognitive challenges (Chin, 2006; Price et al., 2010), all which facilitate long-term retention of the correct information (Finn et al., 2018). Clearly, in these scenarios, the feedback hands over the responsibility of thinking to the students; therefore, it is more student-centered. In illustrating this point, Chin (2006, p. 1341) posits:

*As part of formative assessment instructions, teachers need to initiate lines of discourse that engage students in various cognitive processes such as comparing, generating hypotheses, explaining, predicting, interpreting, inferring, and reflecting. Teachers need to decide what questions to ask, in what sequence, and how to adjust the questions to accommodate student contributions to enable moving forward in their thinking.*

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An important consideration here is that teachers need to choose the right questioning approach in their composed feedback to properly address the specific type of error. In clarifying this point, Bennett (2011) explains that the error that the teacher may observe while assessing the student’s work may be attributed to several underlying causes, for example, it could be due to a slip (a careless procedural mistake), a misconception (a naïve view), a misunderstanding (confused knowledge), or a lack of understanding (missing pieces of knowledge). Therefore, the teacher may use corrective or direct feedback, which provides quick fixes and rectifies the incorrect responses in the cases of the slip-related errors and simple questions that merely demand recall of information. In contrast, when students give an incorrect answer that reflects a misconception or misunderstanding, the teacher shall pose a series of further challenging questions as a follow-up to reveal the students’ assumptions. Table 3 offers examples of responses that showcase how the cognitive element can be used in feedback.

Table 3. Examples of responses demonstrating the use of the cognitive element in feedback

Feedback Element	Purpose	Feedback Phrase	Advantage
Cognitive	To prompt a deep cognitive deliberation of students’ ideas	<i>I would like to know on what basis you considered...</i>	Tapping into students’ misunderstanding of a concept
		<i>How about reinforcing your argument here with stronger evidence?</i>	Validation of ideas
		<i>If... is true, why does it not apply to...</i>	Fostering conceptual change by challenging previous perceptions

### Acting on Feedback: Behavioral Engagement

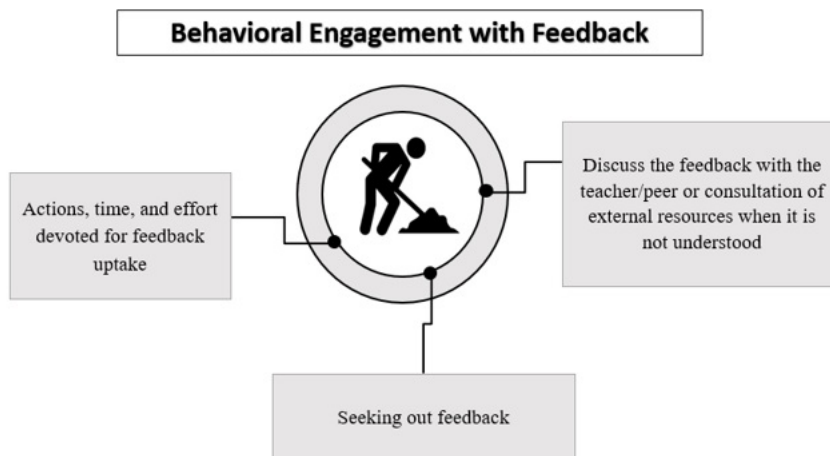
In a general sense, behavioral engagement is mainly drawn from the idea of actual involvement in learning and authentic participation in academic/social/extracurricular tasks (Fredricks et al., 2011). It is generally demonstrated by the student’s compliance with behavioral norms, such as active participation in discussions, attendance, asking questions, persistence, discipline, effort, attention, positive conduct, and the absence of disruptive behaviors (Christenson et al., 2012; Fredricks et al., 2011).

In an attempt to situate this understanding about behavioral engagement in this study’s focus on engagement with feedback, this chapter draws from Bennett’s (2011) interesting analogy; the real work of scientists starts after collecting data, which they interpret and make inferences from to determine what to do next. Likewise, the real work in formative assessment begins after students receive feedback data, which presents an opportunity for improvement, where they start to dedicate their time and effort to refining their work accordingly. In principle, acting on the interpreted information embedded in the feedback to improve learning is the most critical part of the formative assessment process (Molloy et al., 2020) because it is where the learning gap is approached and closed (Carless, 2019). Therefore, skimming the feedback alone without further remedial actions to drive the ongoing progress makes the overall formative assessment process not only incomplete but also pointless (Handley et al., 2011).

Specifically, behavioral engagement with feedback is all about the “acting element” that is manifested in the students’ actions take up the feedback (Cengiz & Ayvaci, 2017; Van der Kleij, 2020). In this sense,

behaviorally engaging with feedback implies committing their time and energy to the engagement with and implementation of the received information (Molloy et al., 2020; Van der Kleij, 2020). Figure 4 summarizes the key features characterizing behavioral engagement with feedback.

Figure 4. Key features characterizing behavioral engagement with feedback



More explicitly, the literature on engagement with feedback highlights several activities that demonstrate behavioral engagement with feedback (see Table 4). For instance, students may revise their assignments in response to the feedback (Han & Xu, 2021; Mahfoodh, 2017) or record feedback, such as keeping an error log or practice book to take notes, whether it is for future use or for reviewing errors (Van der Kleij, 2020). Behavior engagement with feedback also includes student consultation of external resources such as using supplemental materials as references or requesting post-feedback discussions with teachers and peers to obtain further clarification or resolve any misunderstanding (Man et al., 2021). Furthermore, when students themselves willingly seek feedback from others, this is considered behavioral engagement with feedback (Carless & Boud, 2018). Another common behavioral orientation toward feedback is making action plans (to set goals or actions for improvement in response to the

Table 4. Categorization of activities/indicators reflecting behavioral engagement with feedback (Source: Rabbani, in press)

Activities/Indicators	
<b>Behavioral Engagement</b>	<ul style="list-style-type: none"> <li>● Undertake productive strategies to act on the feedback (Carless &amp; Boud, 2018).</li> <li>● Record the feedback for future reference (e.g., make notes) (Van der Kleij, 2020).</li> <li>● Revise work in response to the feedback (Ali et al., 2015; Han &amp; Xu, 2021; Mahfoodh, 2017; Man et al., 2021).</li> <li>● Be proactive in seeking feedback (Carless &amp; Boud, 2018).</li> <li>● Consult external or supplemental resources, such as using learning materials as references (Man et al., 2021).</li> <li>● Make action plans (Ajjawi et al., 2022; Winstone &amp; Nash, 2016).</li> <li>● Discuss the feedback with the teacher or peers when it is not understood (Man et al., 2021).</li> </ul>

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feedback) (Ajjawi et al., 2022). Despite being a promising strategy to encourage engagement (Winstone et al., 2017), unfortunately, it is rarely used by students (Van der Kleij, 2020).

In reality, many of the above-listed self-regulated and actionable learning strategies are all believed to be rarely performed by students (Han, 2017). For instance, Hyland (2003) found that some students might decide to exert minimal or no effort to make corrective revisions in order to resubmit their work. It is probably easier for students to correct and work on errors that demand the least amount of effort, as long as doing so satisfies the teacher’s request. However, they might have some kind of reluctance to spend extra time on analyzing and rectifying errors that are more complex or responding to feedback that demands fundamental or drastic changes. This seemed especially true in the case where the amendments applied by the students would not change their grades. Such a desire for easy work may tend to increase as students advance from elementary to middle school, as argued by Christenson et al. (2012). This could partly be explained by the students’ desire for quick wins; therefore, they regard feedback that asks for superficial changes or on-the-spot corrections as more applicable (Carless & Boud, 2018). In contrast, more advanced or demanding feedback somehow forces students to expand their learning beyond their comfort zones, which naturally feels like a quite challenging or unpleasant situation, though it is where growth and intellectual development occur (Molloy et al., 2020). For these reasons, the ability to elicit the students’ willingness to invest in feedback information for their own benefit and of their own accord becomes the main challenge, which is a rather difficult undertaking for both the teacher and the student. Table 5 offers examples of responses that showcase how the behavioral element can be included in feedback.

Table 5. Examples of feedback responses demonstrating the inclusion of the behavioral element in feedback

Feedback Element	Purpose	Feedback Phrase	Advantage
Behavioral	To enable students to translate feedback into actions	<i>You have successfully attempted to..., which is great. Now, why not move to the next level and...</i>	Clarifies the following action or performance goal
		<i>The steps listed below will help you to... Here is an example of how these standards might be used in the assignment.</i>	Provides supportive instruction, approaches, or resources to implement the demanded goals

## DISCUSSION AND RECOMMENDATIONS

Overall, and in view of the three dimensions of engagement with feedback explained above, it is important to note that the aforementioned provisions that students need to possess or undertake in order to effectively engage with 3D feedback are essential components of feedback literacy (Sadler, 2010; Zhan et al., 2023). This considers engagement with feedback as a multifaceted construct that involves cognitive capacity, affective disposition, and social capacity, and it assumes that the unbalanced development of these facets often limits such engagement (Han & Xu, 2021). For instance, according to Carless and Boud (2018), a feedback-literate student is one who appreciates feedback, makes judgments, manages one’s own affects, and takes action in response to feedback. Likewise,

more recent frameworks of feedback literacy have incorporated the following elements: appreciating feedback as an active process, committing to feedback as improvement, eliciting feedback information to improve learning, processing feedback information, acknowledging and working with one's emotions, acknowledging feedback as a reciprocal process, and acting on feedback information to achieve outcomes (Molloy et al., 2020). Nonetheless, taken collectively, these provisions of feedback literacy should not be regarded as a finite list.

It is also important to bear in mind that there are varying opinions on the allocation of these provisions across the different dimensions of engagement (Christenson et al., 2012; Fredricks et al., 2004). For instance, provisions may be labeled as cognitive in some contexts and behavioral in others (Fredricks et al., 2016). Regardless of this, various activities that might reflect the complexity of the engagement with feedback construct in different dimensions (visible/invisible) need to be considered when discussing student interaction with the teacher feedback in a holistic manner.

In sum, students need to understand their role as agents in their learning process, which shall be demonstrated through the productive use of feedback input, which interchangeably stresses the teachers' role in steering their feedback practices in ways that allow this to occur (Carless, 2022; Jørgensen, 2019). Such interactive roles between teachers and students will help coordinate their dependence on each other (Rabbani et al., 2022), resulting in a more collaborative feedback relationship (Ajjawi et al., 2022).

## **CONCLUSION**

The key contribution of this work comprises its insights on how to help make feedback feel engaging so that it can be utilized in meaningful ways with clear purposes. Fundamentally, students do have a central role in the process as they are expected to emotionally, cognitively, and behaviorally engage with the feedback, which calls for an educational shift in the practice. The current discussion therefore presents a multidimensional approach to engagement with feedback (3D feedback) that helps create a sense of emotional, cognitive, and behavioral engagement. Under the conditions explained thoroughly in this chapter, feedback can be used more purposefully and skillfully to become worthwhile for learning.

## **FUTURE RESEARCH DIRECTIONS**

One important area of potential research that can be tackled as an extension to the current work involves the practical implications of the discussed multidimensional approach to engagement with feedback (3D). Generally, limited evidence about the impact of engaging feedback strategies is available in the literature. As such, new research agenda should empirically test the effectiveness of existing approaches and interventions of these strategies. Generating such in-action and evidence-based findings on feedback strategies that have proven effective is indeed highly beneficial for teacher education and professional development programs.

## REFERENCES

- Ajjawi, R., Kent, F., Broadbent, J., Tai, J. H.-M., Bearman, M., & Boud, D. (2022). Feedback that works: A realist review of feedback interventions for written tasks. *Studies in Higher Education, 47*(7), 1343–1356. doi:10.1080/03075079.2021.1894115
- Ali, N., Ahmed, L., & Rose, S. (2018). Identifying predictors of students' perception of and engagement with assessment feedback. *Active Learning in Higher Education, 19*(3), 239–251. doi:10.1177/1469787417735609
- Ali, N., Rose, S., & Ahmed, L. (2015). Psychology students' perception of and engagement with feedback as a function of year of study. *Assessment & Evaluation in Higher Education, 40*(4), 574–586. doi:10.1080/02602938.2014.936355
- Alt, D., Naamati-Schneider, L., & Weishut, D. J. (2023). Competency-based learning and formative assessment feedback as precursors of college students' soft skills acquisition. *Studies in Higher Education, 48*(12), 1–17. doi:10.1080/03075079.2023.2217203
- Bennett, R. E. (2011). Formative assessment: A critical review. *Assessment in Education: Principles, Policy & Practice, 18*(1), 5–25. doi:10.1080/0969594X.2010.513678
- Boud, D., & Molloy, E. (2013). Rethinking models of feedback for learning: The challenge of design. *Assessment & Evaluation in Higher Education, 38*(6), 698–712. doi:10.1080/02602938.2012.691462
- Carless, D. (2019). Feedback loops and the longer-term: Towards feedback spirals. *Assessment & Evaluation in Higher Education, 44*(5), 705–714. doi:10.1080/02602938.2018.1531108
- Carless, D. (2022). From teacher transmission of information to student feedback literacy: Activating the learner role in feedback processes. *Active Learning in Higher Education, 23*(2), 143–153. doi:10.1177/1469787420945845
- Carless, D., & Boud, D. (2018). The development of student feedback literacy: Enabling uptake of feedback. *Assessment & Evaluation in Higher Education, 43*(8), 1315–1325. doi:10.1080/02602938.2018.1463354
- Carless, D., & Winstone, N. (2023). Teacher feedback literacy and its interplay with student feedback literacy. *Teaching in Higher Education, 28*(1), 150–163. doi: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. doi:10.1080/02602931003632381
- Cengiz, E., & Ayvaci, H. Ş. (2017). Analysing the feedback that secondary school science teachers provide for student errors that show up in their lessons. *Journal of Turkish Science Education, 14*(3), 109–124.
- Chin, C. (2006). Classroom interaction in science: Teacher questioning and feedback to students' responses. *International Journal of Science Education, 28*(11), 1315–1346. doi:10.1080/09500690600621100
- Christenson, S., Reschly, A. L., & Wylie, C. (2012). *Handbook of research on student engagement*. Springer. doi:10.1007/978-1-4614-2018-7

- Dowden, T., Pittaway, S., Yost, H., & McCarthy, R. (2013). Students' perceptions of written feedback in teacher education: Ideally feedback is a continuing two-way communication that encourages progress. *Assessment & Evaluation in Higher Education*, 38(3), 349–362. doi:10.1080/02602938.2011.632676
- Duijnhouwer, H., Prins, F. J., & Stokking, K. M. (2010). Progress feedback effects on students' writing mastery goal, self-efficacy beliefs, and performance. *Educational Research and Evaluation*, 16(1), 53–74. doi:10.1080/13803611003711393
- Dunworth, K., & Sanchez, H. S. (2016). Perceptions of quality in staff-student written feedback in higher education: A case study. *Teaching in Higher Education*, 21(5), 576–589. doi:10.1080/13562517.2016.1160219
- Elsayed, S., & Cakir, D. (2023). Implementation of Assessment and Feedback in Higher Education. *Acta Pedagogica Asiana*, 2(1), 34–42. doi:10.53623/apga.v2i1.170
- Esterhazy, R., & Damşa, C. (2019). Unpacking the feedback process: An analysis of undergraduate students' interactional meaning-making of feedback comments. *Studies in Higher Education*, 44(2), 260–274. doi:10.1080/03075079.2017.1359249
- Finn, B., Thomas, R., & Rawson, K. A. (2018). Learning more from feedback: Elaborating feedback with examples enhances concept learning. *Learning and Instruction*, 54, 104–113. doi:10.1016/j.learninstruc.2017.08.007
- Fredricks, J., McColskey, W., Meli, J., Mordica, J., Montrosse, B., & Mooney, K. (2011). *Measuring student engagement in upper elementary through high school: A description of 21 instruments. Issues & answers*. Regional Educational Laboratory Southeast. <https://eric.ed.gov/?id=ED514996>
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59–109. doi:10.3102/00346543074001059
- Fredricks, J. A., Filsecker, M., & Lawson, M. A. (2016). Student engagement, context, and adjustment: Addressing definitional, measurement, and methodological issues. *Learning and Instruction*, 43, 1–4. doi:10.1016/j.learninstruc.2016.02.002
- Han, Y. (2017). Mediating and being mediated: Learner beliefs and learner engagement with written corrective feedback. *System*, 69, 133–142. doi:10.1016/j.system.2017.07.003
- Han, Y., & Xu, Y. (2021). Student feedback literacy and engagement with feedback: A case study of Chinese undergraduate students. *Teaching in Higher Education*, 26(2), 181–196. doi:10.1080/13562517.2019.1648410
- Handley, K., Price, M., & Millar, J. (2011). Beyond 'doing time': Investigating the concept of student engagement with feedback. *Oxford Review of Education*, 37(4), 543–560. doi:10.1080/03054985.2011.604951
- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81–112. doi:10.3102/003465430298487

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Hu, S., & Kuh, G. D. (2002). Being (dis)engaged in educationally purposeful activities: The influences of student and institutional characteristics. *Research in Higher Education, 43*(5), 555–575. doi:10.1023/A:1020114231387

Hyland, F. (2003). Focusing on form: Student engagement with teacher feedback. *System, 31*(2), 217–230. doi:10.1016/S0346-251X(03)00021-6

Jørgensen, B. M. (2019). Investigating non-engagement with feedback in higher education as a social practice. *Assessment & Evaluation in Higher Education, 44*(4), 623–635. doi:10.1080/02602938.2018.1525691

Kahneman, D. (2011). *Thinking, Fast and Slow*. Macmillan.

Mahfoodh, O. H. A. (2017). “I feel disappointed”: EFL university students’ emotional responses towards teacher written feedback. *Assessing Writing, 31*, 53–72. doi:10.1016/j.asw.2016.07.001

Man, D., Chau, M. H., & Kong, B. (2021). Promoting student engagement with teacher feedback through rebuttal writing. *Educational Psychology, 41*(7), 883–901. doi:10.1080/01443410.2020.1746238

Molloy, E., Boud, D., & Henderson, M. (2020). Developing a learning-centred framework for feedback literacy. *Assessment & Evaluation in Higher Education, 45*(4), 527–540. doi:10.1080/02602938.2019.1667955

Nash, R. A., & Winstone, N. E. (2017). Responsibility-sharing in the giving and receiving of assessment feedback. *Frontiers in Psychology, 8*, 1519. <https://www.frontiersin.org/articles/10.3389/fpsyg.2017.01519>. doi:10.3389/fpsyg.2017.01519 PMID:28932202

Price, M., Handley, K., & Millar, J. (2011). Feedback: Focusing attention on engagement. *Studies in Higher Education, 36*(8), 879–896. doi:10.1080/03075079.2010.483513

Price, M., Handley, K., Millar, J., & O’Donovan, B. (2010). Feedback: All that effort, but what is the effect? *Assessment & Evaluation in Higher Education, 35*(3), 277–289. doi:10.1080/02602930903541007

Quinton, S., & Smallbone, T. (2010). Feeding forward: Using feedback to promote student reflection and learning – a teaching model. *Innovations in Education and Teaching International, 47*(1), 125–135. doi:10.1080/14703290903525911

Rabbani, L. M. (in press). *Formative Written Feedback as Perceived by the United Arab Emirates Secondary Science Students and Teachers: A Mixed Methods* [Doctoral Dissertation, The United Arab Emirates University, UAE].

Rabbani, L. M., Alarabi, K. S., Alsalhi, N. R., & Al Qawasmi, A. A. (2022). Roles Interplay between Teachers and Students in the Provisions of Feedback: Establishing a Common Ground. *International Journal of Early Childhood Special Education, 14*(1), 688–696. doi:10.9756/INT-JECSE/V14I1.221081

Reeve, J., & Tseng, C.-M. (2011). Agency as a fourth aspect of students’ engagement during learning activities. *Contemporary Educational Psychology, 36*(4), 257–267. doi:10.1016/j.cedpsych.2011.05.002

Sadler, D. R. (2010). Beyond feedback: Developing student capability in complex appraisal. *Assessment & Evaluation in Higher Education, 35*(5), 535–535. doi:10.1080/02602930903541015



- Sanford, C. (2018). *No More Feedback: Cultivate Consciousness at Work*. InterOctave.
- Scott, J., Shields, C., Gardner, J., Hancock, A., & Nutt, A. (2011). Student engagement with feedback. *Bioscience Education*, *18*(1), 1–9. doi:10.3108/beej.18.5SE
- Shute, V. J. (2008). Focus on formative feedback. *Review of Educational Research*, *78*(1), 153–189. doi:10.3102/0034654307313795
- Strijbos, J.-W., Pat-El, R., & Narciss, S. (2021). Structural validity and invariance of the Feedback Perceptions Questionnaire. *Studies in Educational Evaluation*, *68*, 100980. Advance online publication. doi:10.1016/j.stueduc.2021.100980
- Van der Kleij, F. M. (2020). Evaluation of the ‘Feedback Engagement Enhancement Tool’ to examine and enhance students’ engagement with feedback on their writing. *Studies in Educational Evaluation*, *66*, 100907. doi:10.1016/j.stueduc.2020.100907
- Vattøy, K.-D., Gamlem, S. M., & Rogne, W. M. (2020). Examining students’ feedback engagement and assessment experiences: A mixed study. *Studies in Higher Education*, *46*(11), 2325–2337. doi:10.1080/03075079.2020.1723523
- Wiggins, G. (2012). Seven keys to effective feedback. *Educational Leadership*, *70*(1), 10–16.
- Winstone, N., 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. doi:10.1080/02602938.2020.1787331
- Winstone, N. E., Mathlin, G., & Nash, R. A. (2019). Building feedback literacy: Students’ perceptions of the developing engagement with feedback toolkit. *Frontiers in Education*, *4*(39), 39. doi:10.3389/educ.2019.00039
- Winstone, N. E., & Nash, R. A. (2016). *The Developing Engagement with Feedback Toolkit (DEFT)*. Higher Education Academy. <https://publications.aston.ac.uk/id/eprint/40981/>
- Winstone, N. E., Nash, R. A., Rowntree, J., & Menezes, R. (2016). What do students want most from written feedback information? Distinguishing necessities from luxuries using a budgeting methodology. *Assessment & Evaluation in Higher Education*, *41*(8), 1237–1253. doi:10.1080/02602938.2015.1075956
- 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. doi:10.1080/03075079.2015.1130032
- Yu, S., Zhang, Y., Zheng, Y., Yuan, K., & Zhang, L. (2019). Understanding student engagement with peer feedback on master’s theses: A Macau study. *Assessment & Evaluation in Higher Education*, *44*(1), 50–65. doi:10.1080/02602938.2018.1467879
- Zhan, Y., Wan, Z. H., & Khon, M. (2023). What predicts undergraduates’ student feedback literacy? Impacts of epistemic beliefs and mediation of critical thinking. *Teaching in Higher Education*, 1–19. doi:10.1080/13562517.2023.2280268
- Zhang, L., & Zheng, Y. (2018). Feedback as an assessment for learning tool: How useful can it be? *Assessment & Evaluation in Higher Education*, *43*(7), 1120–1132. doi:10.1080/02602938.2018.1434481