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# **A Dialogic Technology-Mediated Model of Feedback Uptake and Literacy**

## Abstract

Despite the importance of feedback uptake in higher education, there is still much to be learned about supporting it. Recent perspectives hold that guiding learners through feedback uptake-oriented activities may also help them to develop feedback literacy. However, due to the acceleration of digitisation trends in higher education, there is an increasing need to explore feedback uptake and literacy development exploiting opportunities offered by digital environments. This need constitutes a significant gap that is of immediate importance to practitioners teaching online and will also be crucial in the post-COVID-19 context in which the use of blended and online learning is only expected to increase. This conceptual article draws on a synthesis of existing feedback uptake, formative assessment, and technology literature to offer a technology-mediated dialogic model of feedback uptake and literacy. Focused on how technological mediation can enrich opportunities for co-regulation of the processes involved in feedback uptake, the model is intended for use in designing classroom feedback practices that can be embedded in standard curricula. The model serves to inform the discussion of feedback uptake and the nascent discussion of teacher feedback literacy in the digital settings in which feedback practices in higher education now frequently take place.

Keywords: technology-mediated dialogic feedback, feedback uptake, digital feedback literacy.

## **Introduction**

While feedback is an essential determinant of success in higher education and other contexts, it has varying impacts on attainment (Hattie 2009; Carless and Boud 2018). Feedback and assessment is one of the least satisfactory aspects of the university experience in the UK (Bell and Brooks 2018; OFS 2020), Australia (Winstone and Boud 2018; QUILT 2019), and China (Guo and Shi 2016). Accordingly, it is not surprising that there are many reports in the literature of maladaptive behaviours regarding engagement with feedback; these range from not even accessing feedback (Evans 2013; Mensink and King 2020) to focusing on summative grades (Bailey and Garner 2010; Winstone et al. 2020), rather than on implementing feedback recommendations (Crisp 2007).

Related to such problems and in line with contemporary perspectives, feedback processes are only successful if feedback information is used. The feedback process can thus be defined as the practice of navigating the sense-making process of using feedback information to improve work and learning strategies (Carless and Boud 2018; Henderson et al. 2019). For this reason, discourses regarding the effectiveness of learning designs for feedback engagement and uptake have become prominent in higher education contexts (Winstone et al. 2017; Molloy, Boud, and Henderson 2020). Accordingly, a learner-centric view of the value of feedback has emerged, predominantly focused on the learner's role in engaging with feedback information and using it.

Given the need for learners to engage with feedback information and use it, the notion of feedback literacy has recently gained currency. Feedback literacy is conceptualised as consisting of three broad, interrelated processes that facilitate feedback engagement and uptake. First, the ability to appreciate feedback, that is, understand the purpose of the feedback process and the role of the student in making it effective; second, the ability to

make and refine evaluative judgements about what constitutes quality, and, finally, the ability to manage the emotional aspects of giving and receiving feedback information productively (Carless and Boud 2018; Carless and Winstone 2020). The notion of feedback literacy also aligns with earlier work on feedback uptake that emphasises the proactive role of the student in making uptake processes effective (i.e. Nash and Winstone 2017; Winstone et al. 2017). From this perspective, improved feedback literacy is viewed as a pre-requisite for successful feedback engagement and uptake. This understanding has encouraged approaches to scaffolding feedback literacy before learners engage with feedback information, for example, the approaches of Evans (2016) and Winstone, Mathlin, and Nash (2019).

However, recent perspectives suggest that the relationship between feedback literacy and feedback engagement may be bi-directional (Molloy, Boud and Henderson 2020). From this perspective, feedback literacy is developed through ‘sustained participation in relevant learning activities designed to promote active engagement by both students and teachers’ (Malecka, Boud and Carless 2020, 4). Consequently, supporting learners’ skill development in the processes involved in the uptake of feedback through such activities may be a more effective way to nurture the ability to engage with and use feedback independently.

As an act of communication, the feedback uptake process is also mediated and influenced by characteristics of the feedback context, message, provider and receiver (Winstone et al. 2017). From this perspective, the recent global shift to ‘emergency remote teaching’ (Hodges et al. 2020) in higher education may have further encouraged the ongoing trend towards the greater use of blended and online learning in higher education contexts (Broadbent et al. 2020), which may also influence characteristics of the feedback uptake

process. The ongoing need to explore how feedback uptake and literacy can be supported, modelled and theorised, in conditions in which most classroom learning can now be considered 'blended' (Broadbent et al. 2020) suggests the need for perspectives on feedback uptake that consider some of the potential difficulties but most importantly the opportunities inherent in teaching and learning in digital environments.

Some previous work on feedback and feedback engagement has considered the effects of the provision of peer and teacher feedback in online environments (e.g. Nicol, Thomson, and Breslin 2014; Pham et al. 2020; Er, Dimitriadis, & Gašević 2020). Evidence suggests that technology can offer enhancements. Learners, for example, are reported to be more likely to access audio or video feedback information, feel that the quantity and quality of screencast feedback are higher than written feedback, and find it preferable (Borup, West, and Thomas 2015; Henderson and Phillips 2015). Other studies have shown some the benefits of online dialogues to deepen learning through forum discussions (Gikandi and Morrow 2016). It has also been suggested that in the absence of evidence about their effectiveness, digital feedback environments should be investigated to explore their impact on engagement in feedback dialogues (Ajjawi and Boud 2017). Furthermore, recent work increasingly calls on the use of technology to manage the practicalities of feedback practices and provide opportunities to support feedback uptake and literacy (Carless and Boud 2018; Dawson et al. 2018; Carless and Winstone 2020).

However, to date, the literature has not specifically addressed how the use of technology might impact feedback uptake and literacy processes and how such processes can be theorised and modelled when mediated by technology. This gap in the literature is of immediate importance to informing practitioners working in emergency remote



conditions, but will also be important in a post-COVID-19 context in which blended, and online learning are predicted to become increasingly ubiquitous (Salmon 2020; Li and Lalani 2020; Maloney and Kim 2020).

Accordingly, the goal of this conceptual article is to contribute to discussions of how the new paradigm of feedback focusing on agentic engagement and the use of feedback can be advanced, modelled and supported in environments in which there may be limited opportunities or resources for face-to-face discussion of feedback. In such environments, the affordances of digital technologies can be utilised to mediate feedback related dialogues that may enhance feedback uptake and literacy processes.

In the paper, I take a socio-constructivist perspective, focusing on the enhancement of the processes by which learners make sense of feedback information and use it. I first consider the potential of dialogues in supporting learners through three major processes involved in feedback uptake through co-regulation and go on to explore how technology can help overcome some of the reported limitations to its use. I then introduce the rationale for a technology-mediated dialogic model of feedback uptake and literacy, as well as ‘feedback practices’ or ‘inputs’ to the model that can offer learners support in feedback engagement and enrich uptake processes. Finally, I examine what contributions the paper makes to theory and practice in the areas of feedback uptake and literacy, and how this may contribute to the emerging understanding of teacher feedback literacy for digital contexts.

### ***The Role of Feedback Dialogue in Mitigating Barriers to Feedback Uptake***

In recent years, there is a general acceptance that feedback should no longer be viewed

as a ‘gift’ transmitted from an expert to a novice (Askew and Lodge 2000) through a transmission or cognitivist mechanism. Instead, it should be considered a socially embedded, agentic process (Price, Handley and Millar 2011) involving the acceptance of shared responsibility for making feedback effective (Nash and Winstone 2017). Although good feedback practice is predicated on high-quality feedback production (Evans 2013; Carless 2015), the need for a paradigm shift is based on the understanding that it is learners’ engagement with feedback and implementation of feedback information that is most important (Ajjawi and Boud 2017).

From a Vygotskian (1978), socio-constructivist perspective, feedback is viewed as a ‘dynamic,’ interpretive’ communication process. It is thus, both a ‘social and constructed phenomenon’ (Ajjawi and Boud 2017, 253) involving dialogic co-construction and sense-making among participants in the feedback process (Carless and Boud 2018). Knowledge from the feedback process is thus constructed through the interplay between internal and social processes.

One way through which a socio-constructivist approach to supporting feedback uptake can be realised in practice is through providing opportunities for learners to take part in dialogues with feedback providers, during the processes involved in feedback engagement. Doing so has various theoretical advantages. When engaged in such dialogues, for example, learners are no longer positioned as ‘disempowered apprentices’ (Hyatt 2005, 351) who can only adhere to instructions. Instead, they are critically included in the learning process through opportunities to negotiate meaning, question, or clarify feedback information they receive from educators or peers. Opportunities for dialogue can also help learners with one of the most commonly cited barriers to feedback engagement (Carless 2006; Lea and Street 2006; Winstone et al. 2017) that students are not able to understand the feedback information they are given. It also offers the

opportunity for learners to elicit additional information or support they may need in utilising feedback input received.

Recent empirical work on the effects of ‘dialogic feedback’ (Carless, 2015) illustrates the benefits of such approaches in the higher education classroom. Zhu and Carless (2018), for example, found in a Chinese undergraduate EFL context that in-person peer feedback dialogues can help feedback receivers to negotiate the meaning of feedback information, and feedback givers to reflect on (and presumably improve) the quality of the feedback information they give. Despite the significance of this finding, the paper also reported that peer feedback often fails due to a lack of class time, logistical difficulties in meeting for peer feedback sessions outside class, or the need for teacher adjudication of peer disagreements (see also Schillings et al. 2020). The authors perceived such challenges and the potentially workload-increasing factor as unresolved issues for the general uptake of dialogic peer feedback practices. Indeed, such problems may limit the extent to which learning designs that include opportunities for ongoing and extensive dialogic peer feedback, have been researched or taken up. As Blair and McGinty (2013) point out, there is often a gap between theory and practice when it comes to how feedback dialogues are employed in practice settings.

In another dialogic feedback study, Hill and West (2020) report on learner perceptions of teacher and student ‘dialogic feedforward’ meetings with two UK undergraduate cohorts using 44 interviews, a pre and post-intervention performance test, and two group interviews. In addition to a 7% grade increase in comparison with a previous cohort, participants reported that the meetings were enjoyable, helped them to know they were on the right track and made them feel personally valued and cared for while increasing time-on-task. They also reported that the drafting process and use of exemplars supported self-assessment, self-efficacy, and regulation as well as feedback-seeking behaviour and

engagement after the intervention. While Hill and West (2020) appropriately recognise the importance of such dialogues, they also acknowledge that they constitute a ‘resource intensive scenario’ (92). Recent trends in higher education suggest that fewer rather than more such resources are likely to be available in the future, considering the trend towards larger class sizes (Shi 2019).

While the studies thus far discussed evidence the potential of dialogues for supporting feedback engagement and uptake, they also underscore the need for methods that can help overcome difficulties in finding the time resources and physical space to meet for dialogues between feedback information givers and receivers and the teacher resource allocation challenges reported. Accordingly, these are some of the problems that the technology-mediated dialogic model of feedback uptake and literacy offered in this paper aims to address.

### ***Feedback Uptake, Literacy and Technology in Mediating Feedback Dialogues***

In recent literature, feedback is often viewed as a socio-constructivist process involving interplay between feedback providers and receivers in sense-making and co-construction of knowledge from it. However, to date, the role and nature of such interaction in the processes involved in engaging with and utilising feedback appear to have been under-explored in accounts of feedback uptake processes. Winstone et al. (2017) for example, propose the SAGE taxonomy of four processes involved in recipience, i.e. ‘Self-Appraisal, Assessment Literacy, Goal Setting and Self-Regulation, and Engagement and Motivation’ for the purpose of ‘conceptualising learners’ responsibility within feedback dialogues’ (abstract). Similarly, Carless and Boud (2018), before explicating their feedback literacy processes, state that their orientation towards feedback is informed by social constructivist approaches, in which ‘shared and individual interpretations are

developed through dialogue, sense making...and co-construction' (1316). From these excerpts, it can be assumed that feedback related dialogues are understood to play an essential underlying role in feedback uptake and the development of feedback literacy. However, to date, the role of feedback dialogues in the processes involved in feedback uptake and the development of feedback literacy appear to have been underexplored.

In this paper, I argue that the processes of feedback engagement and uptake and engagement in dialogues with feedback providers and peers are highly synergistic and complementary, especially when mediated by the use of technology. Such synergy can be achieved because technological mediation can help alleviate some of the noted issues with dialogic feedback in face-to-face conditions, such as the temporal, spatial and resource challenges already highlighted. In this way, feedback dialogues, mediated by technology, among peers and between learners and teachers, can enrich the feedback engagement process, improve feedback uptake, and as a result, help scaffold feedback literacy. Thus, I argue that technological mediation should be considered integral to models of feedback uptake and literacy in higher education settings in which technological mediation opportunities are present, and those for in-person discussion of feedback are sparse.

### ***Peer Feedback as Co-Regulation***

A range of studies evidence the power of employing a critical lens on the work of others, which is one of the core learning mechanisms of dialogic peer feedback. It is generally believed that peer learning activities (and potentially peer dialogues) help in the development of the kinds of evaluative judgement capacities (Tai et al. 2018; Carless, 2020) required for making accurate comparisons between one's own work and the standard of work desired; and this was also confirmed in a recent longitudinal assessment

of dialogic feedback (see Reddy et al. 2020). However, it should not be assumed that the development of evaluative judgement skills from providing feedback information is the only significant benefit of engaging in peer feedback activities.

From a socio-constructivist perspective, the role of dialogue in scaffolding learning from feedback relates to the expansion of the ‘zone of proximal development’ (ZPD) (Vygotsky 1978). This concept refers to the difference between what a learner can do alone compared to when assisted through ‘adult guidance’ or ‘in collaboration with more capable peers’ (Vygotsky 1978, 8). In terms of self-regulative ability, feedback from peers, teachers (or in combination) together with dialogue to clarify and negotiate the meaning of feedback and how it can be enacted, can be described as ‘co-regulation’ (Panadero, Andrade, and Brookhart 2018) and this also refers to the co-regulation of the process of expanding individuals’ ZPDs. Through this process, if a learner receives feedback information that cannot be understood or applied, or that has potential for further development, they can then ask questions or solicit additional support in using it in the form of a discussion with peers. However, effectively employing such dialogues in learning processes can be challenging in practice, due to the temporal, spatial, and resource limitations already discussed. One potential solution or a tool to mitigate some of these issues is the use of technology.

### **Technology-Mediated Dialogism in Overcoming In-Person Limitations**

There are several ways in which technologies can improve feedback processes. Cloud applications (such as Google Docs) for example, can ‘mediate’ and ‘distribute’ peer co-regulative processes among students, peers, and educators. Such technologies can be used synchronously alongside a text chat function or Zoom/Google meet session. They can

also facilitate discussions as ‘comment threads’, within a document, anchored to a particular piece of text, asynchronously over time, aided by a synchronous ‘chat’, conferencing technology, or a face-to-face meeting (see figure 1).

Figure 1. Co-constructed feedback among a group of four students

The image shows a document with a comment thread on the right side. The document text is highlighted in yellow and pink. The comment thread consists of four messages from different users, each with a blue checkmark and a three-dot menu icon. The first message says: "I think it will be easier to read if there's a brief explanation on what a 'commercial spaceflight market' is". The second message says: "okay, I'll add a line. I'm trying to not explain too much though cause I'm already out of space". The third message says: "for? in? I am not so sure about the grammars". The fourth message says: "in sounds good". The fifth message says: "supplying? not so sure as well...". The sixth message says: "'supply missions' is a whole phrase so I think it's okay".

even the SLS Block 2. This renders the argument irrelevant. And, being commercial companies, it is reasonable to believe that rockets with higher payload capacities will be developed should the current levels prove to be unsatisfactory for customers.

Another argument for SLS is that, being developed from preexisting technologies derived from the Space Shuttle, Constellation program and Orion lunar excursion module, it is inherently safer than new, relatively untested methods such as SpaceX's reusable launch system. However, considering the current costs and NASA's budget, a continuation of continuing past these methods and technologies from the past will not only prolong the campaign but also lead to its collapse, considering the tremendous cost of them and NASA's limited budget. The Constellation Program, the forerunner of the SLS, suffered similar problems; it was cancelled after the Review of U.S. Human Spaceflight Plans Committee determined that it would not succeed without significant funding unless funding was significantly increased. Thus, a feasible large-scale space program will require multiple-many technological innovations. In addition, since the first Falcon 9 launch in June 2010, SpaceX has demonstrated the Falcon series' reliability multiple times, since the first Falcon 9 launch in June 2010. Out of 54 total launches, there have been 52 full successes, one partial failure and one total loss; a 96% success rate (just to reduce word counts:) success rate of 96%. In comparison, the total launch success rate in the history of spaceflight is 94.2% [sources, maybe NASA success rate]. Also, out of 30 attempts of first-stage booster landing and recovery since December 2015, 24 have been successful, with 11 rockets flying second missions. It should also be noted that the maiden flight of FH was successfully conducted recently on February 6, 2018 with both its side boosters landing safely. In addition, the payload (Musk's

I think it will be easier to read if there's a brief explanation on what a "commercial spaceflight market" is

Show all 2 replies

okay, I'll add a line. I'm trying to not explain too much though cause I'm already out of space

for? in? I am not so sure about the grammars

in sounds good

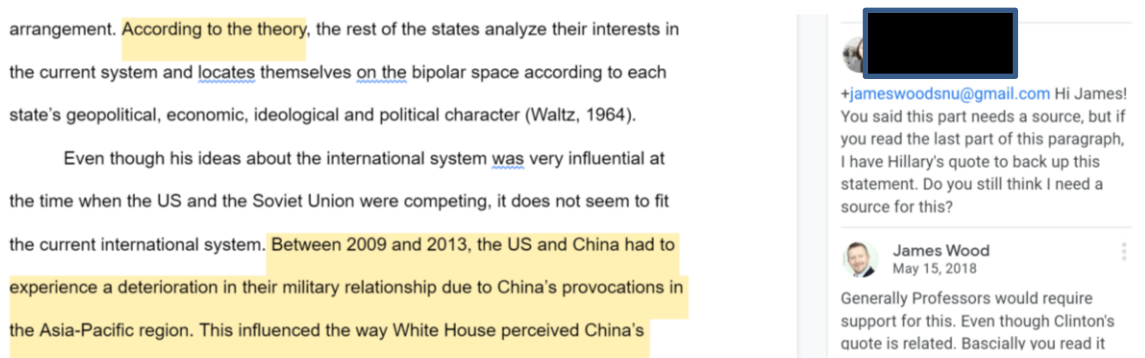
supplying? not so sure as well...

"supply missions" is a whole phrase so I think it's okay

The use of an asynchronous feedback technology also allows time for learners to be more critical of the opinions they accept from peers through the use of various ‘mediating’ learning resources (criteria, exemplars, online writing tools, internet and library resources etc). These can be used to check understanding of feedback information or to help settle disagreements among peers (which can form debates) by providing evidence for a particular position. Similarly, depending on teacher workload, as a last resort the teacher can be ‘tagged’ with questions through the technology platform (see figure 2) in the role of ‘a more knowledgeable other’ in socio-constructivist interactions (Reddy et al. 2020).

Technologies and learning designs adapted to them, also overcome some of the logistical, limitations of feedback dialogues (as evidenced in Ajjawi and Boud, 2017). For example, they can allow discussions to expand in depth and purpose while offering time for reflective problem-solving strategies without the need for class time. In class or in-person dialogues, on the other hand, often afford little time for contemplating others' work, or consulting authoritative sources other than the teacher. Dialogues mediated by technology may also alleviate issues related to conducting feedback dialogues in 'spaces' or situations that connote unequal power, a barrier to productive student-teacher feedback dialogue described by undergraduate students in Gravett and Winstone (2019). Technology-mediated discussion in the form of comment threads may also help dissipate expectations of formality in student-teacher communication and be perceived as more convenient than generating an email to ask questions which may disincentivise some learners (Winstone et al. 2020). Similarly, peers may find it affectively easier to communicate feedback information as a socio-constructivist oriented 'conversation' rather than as one-way 'transmission'.

Figure 2. Example of a student' tagging' the teacher in Google Docs



The use of technology is again integral for achieving the full benefits of such processes that go beyond the in-person classroom. For example, while in-person dialogues exist 'momentarily and only for those involved' (Wegerif 2013), technology, can be used for 'deepening dialogues, by turning transitory talk and thoughts into external objects that



are available to learners for discussion and shared reflection' (144). Technology-mediated feedback 'spaces' or environments can offer access to peers' work and feedback, so that digital records left by peer and teacher interactions at any stage, can be employed as learning resources for other learners (Jesson and Rosedale 2016). Such records offer extended opportunities for vicarious learning (Mayes 2015). For example, through digital 'on display assignments' (Hounsell et al. 2008; Carless 2015), a teacher can highlight examples of good practice as a form of dynamic exemplar. Such practices also expose learners to examples of the struggle towards the successful enactment of feedback information, which may serve as particularly impactful evidence of the shared difficulties and benefits of feedback engagement and uptake, as they happen in real-time as a form of 'intellectual streaking' (see Bearman and Molloy 2017), which may offer affective benefits.

### ***The Development of the Model***

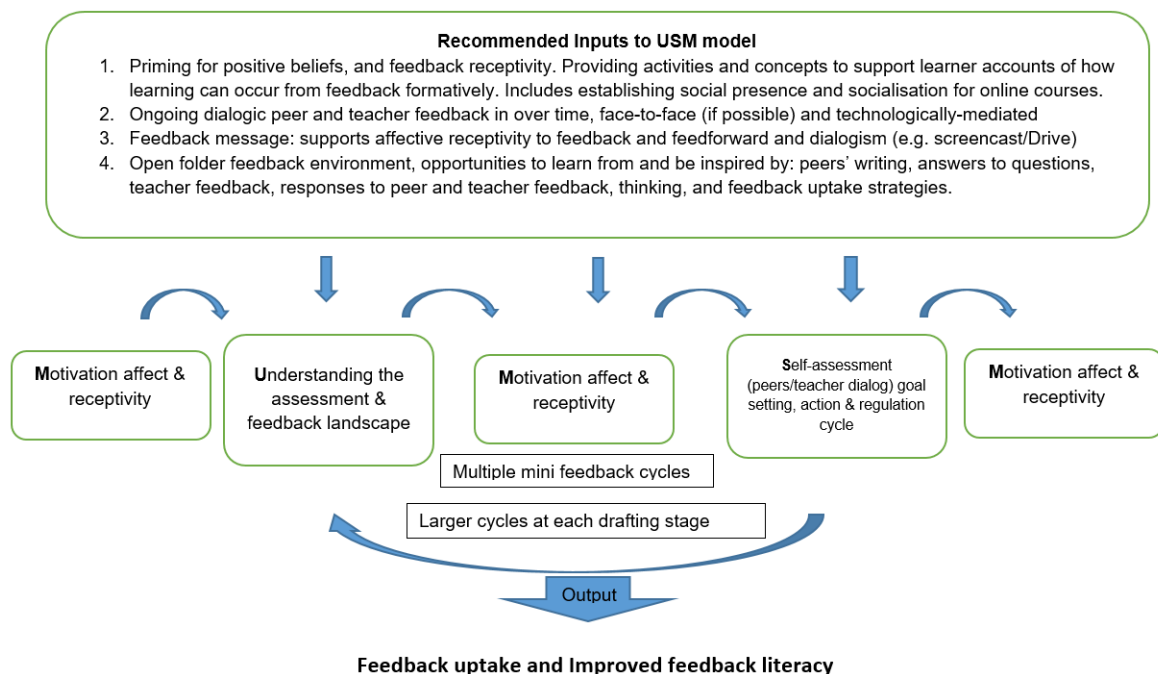
The model to be introduced draws on several strands of literature related to feedback; formative assessment theory (e.g. Nicol and MacFarlane-Dick 2006) dialogic feedback (e.g. Nicol 2010; Carless 2015), feedback engagement; (e.g. Price, Handley, and Millar 2011; Evans 2013; Jönsson 2013) 'process approaches' to engagement with feedback (e.g. Winstone et al. 2017) and feedback literacy (Carless and Boud 2018; Molloy, Boud and Henderson 2020). The model also encapsulates findings from the broader literature on feedback engagement, such as psychological mediators of feedback engagement, and the influence of technology on learning.

The model takes a process rather than 'checklist' approach to feedback uptake to avoid being perceived as either an unwelcome burden for overworked teachers (Black 2015) or as 'another competency to be ticked off in the assessment game' (Molloy, Boud and

Henderson 2020, 12). Viewing feedback uptake as a process also helps to avoid perceptions that lower levels of feedback literacy constitute a ‘deficit’ (Lea and Street 2006; Gravett 2020) because it is assumed that feedback literacy is developed through opportunities to engage in activities that support feedback engagement and uptake (Malecka, Boud and Carless 2020) which the curriculum may not yet have provided.

### *The Technology-Mediated Dialogic USM Model of Feedback Uptake*

Figure 3: The Full ‘Understanding’ ‘Self-Assessment’ and ‘Motivation’ (USM) model



**Appreciating Feedback & Managing Affect**

Understanding purpose, role and types of feedback, eliciting feedback, discussing feedback, committing to improvement from feedback, eliciting feedback, understanding reciprocal nature of feedback. Developing mental models of learning from feedback that support handling affect and taking a pragmatic approach after feedback. Developing online peer communities.

**Contributing Factors:** *Priming and reflection activities, positive experience of growth after responding to dialogic feedback. Feeling supported by peers.*

**Potential evidence:** *Account data, analysis of online data, interviews/focus groups, reflection activities,*

**Making Judgements**

Develop ability to make sound academic judgements, refine self-evaluative capacities and evaluative judgement abilities. Develop skills in co-regulation discussions to aid in the judgement process using different technologies and in different relationships.

**Contributing Factors:** *Working dialogically with criteria, exemplars, and peers' work. Giving and receiving multiple turn bi-directional dialogic feedback with multiple partners overtime using technology dialogues on peer and teacher feedback.*

**Potential evidence:** *Account data, records of digital feedback and dialogues, changes through multiple drafts, cohort data.*

The first of the overlapping processes is ‘Understanding the feedback and assessment landscape’ or ‘Understanding’ process. This process builds on previous conceptualisations of ‘assessment literacy’ (Smith et al. 2013; Winstone et al. 2017). Within this, first, learners come to understand the purpose and meaning of the feedback process, as misconstruing purpose, for example, as ‘justification for the grade’ (Ali, Ahmed, and Rose 2018) can act as a ‘barrier’ to feedback engagement (Winstone, Nash, Rowntree and Parker 2017). Learners also come to understand the ‘criteria for success’ (Nicol and McFarlane-Dick 2006; Black and Wiliam 2009). Sharing examples of previously marked work and assessment criteria can help learners to decode how markers tacit understandings of quality manifest in reality (see Carless and Boud (2018) and Tam (2020) for further discussion).

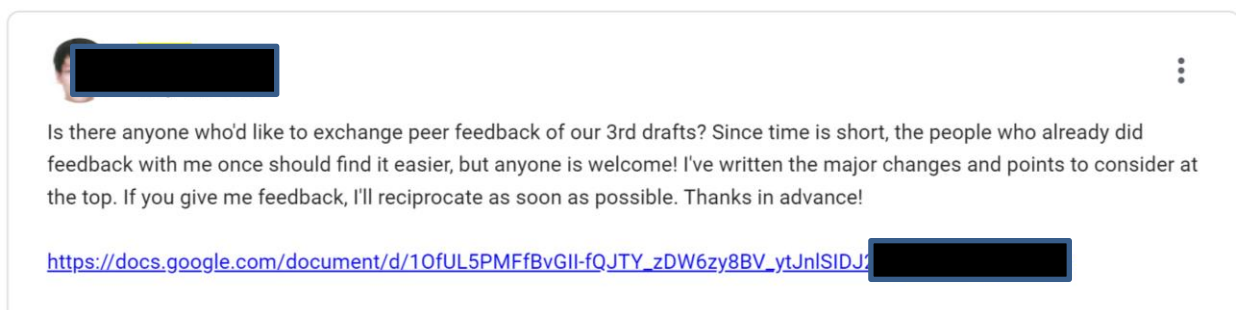
The term ‘landscape’ is used here to expand the notion of ‘appreciating feedback’ (Carless and Boud 2018). The use of the term denotes the importance of an agentic understanding of how the assessment and feedback process combine with course content to facilitate overarching learning goals, which according to undergraduate self-reports, encourages engagement with feedback interventions (Parker and Winstone 2016). Self-efficacy and perceived feedback utility were also found to be important moderators in self-reported use of feedback (Winstone, Hepper and Nash 2019). Accordingly, attempting to support the development of such understandings and beliefs may enhance feedback uptake by encouraging the ‘appreciation of feedback’ together with an understanding of the greater feedback ‘landscape’.

### ***The Role of Technology in Synergising with ‘Understanding’ Processes***

Access to peer feedback and the feedback information peers have received from the teacher, together with peer and teacher discussions through virtual learning environments

(VLE) (such as Moodle, Blackboard or Google Classroom/Drive) provide additional input that if engaged with through a critical and evaluative filter can also aid in the understanding of academic standards in a way similar to on-display assignments. Using the open feedback environment as a resource for formative assessment allows emergent examples of the high-quality application of course content from learners to be highlighted for the group. Doing so can also help to reify teachers' tacit knowledge and expectations regarding academic standards. In an online feedback and assessment environment, peer review, rather than being a once-only, paired, teacher-initiated process, can become an ongoing community practice among groups. New collaborations can be elicited through the VLE (see figure 3), and peer groups can be repositioned as an ongoing sounding board as the quality of the work evolves and new problems emerge. Such learning communities can then offer mutual assistance as they navigate feedback uptake processes together.

Figure 4. A student elicits additional peer feedback through a post on Google Classroom

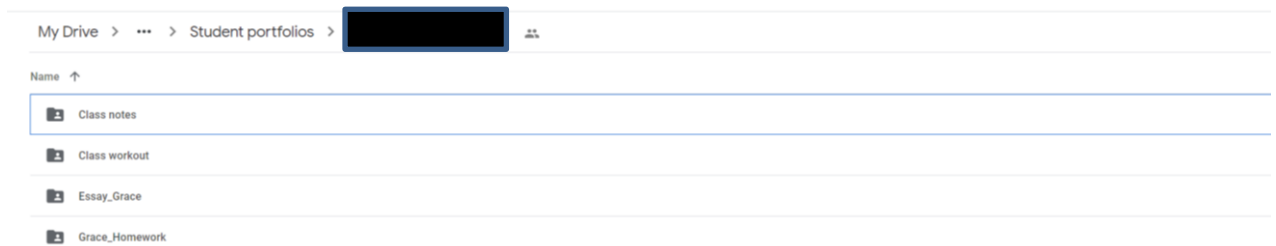


In addition, feedback information on drafts, and online answers to questions to the teacher about peer disagreements on how to act on feedback, or to negotiate the meaning of teacher feedback or clarify disagreements with it, can provide well-timed input that improves 'Understanding' processes.

Furthermore, as students can produce a new draft at every stage of the peer and teacher feedback process, records of discussions and decisions facilitate the production of instant

‘e-portfolios’ (see figure 4). Such automatic records provide ‘traceability’ (Malecka, Boud and Carless 2020), which may aid later reflection on progress. It also allows both learners and educators to build on previous comments and responses and for ipsative peer and teacher feedback, which may provide additional affective support (Hughes 2011), particularly for lower-level learners.

Figure 5. An example of a shared e-portfolio



### ***The Role of Screencasts with Cloud Applications for Dialogic Feedback***

One more contribution of a shift to digital feedback environments to learners’ navigation of ‘Understanding’ processes (especially understanding academic standards or goals for improvement), is the use of screencast feedback, which allow educators to share their screens, audio, and talking head, as work is reviewed. In addition to offering higher perceived quality and quantity (Crook et al. 2012; Henderson and Phillips 2015; Borup, West, and Thomas 2015) screencasts are thought to be more efficient and workload sustainable than providing text comments (Dawson et al. 2018). Learners have also reported themselves more likely to engage with screencast feedback (West and Turner 2016) and report viewing it multiple times (Grigoryan 2017), feeling feedback is personalised to them (Henderson and Phillips 2015) and more human (Marshall, Love, and Scott 2020). Screencasts may be especially useful in educational contexts in which there is a need to bolster socio-affective aspects of the teacher-student relationship (Dawson et al. 2018) as they are thought to convey rapport (West and Turner 2016) and

‘social presence’ (Thomas, West and Borup 2017) more effectively. Such factors may be especially crucial for settings in which face-to-face rapport-building opportunities for students, teachers, and peers are less frequent or impractical, such as during the current crisis.

However, one sustained criticism of screencast feedback in much of the research is the lack of bi-directionality or potential for ongoing dialogues regarding screencast contents. This ‘perpetuates a monologic “information transmission” approach to feedback’ (Mahoney, Macfarlane and Ajjawi 2019, 173), even though in some studies, screencasts and video were viewed by learners as more conducive to interaction and dialogue (Lamey 2015; Espasa et al. 2019). However, the use of screencasts combined with a cloud application (e.g. Google Docs) can solve these issues, as students can respond to and question screencast comments through cloud application mediated dialogues. This combination may help preserve the conversational feeling of screencast feedback while providing a convenient mechanism for further discussion of the feedback. In this way, the combined use of screencasts and cloud applications can help to overcome some of the most significant ‘barriers’ to the use of teacher feedback, such as not understanding it or not knowing what to do with it (Winstone, Nash, Rowntree and Parker 2017), while simultaneously leveraging numerous benefits.

### ***Self-Assessment, Goal Setting, and Regulation Processes***

Closely related to ‘Understanding’ processes is the ability to make and refine accurate ‘evaluative judgements’ (Tai et al. 2018; Carless and Winstone 2020) about the quality of learners’ own and others’ work, which also involves making comparisons. ‘Self-assessment, goal setting, and regulation’ or ‘Self-assessment’ processes can be considered a continuous cycle, which first requires learners to self-assess according to

their understanding of task criteria, set goals, act on feedback information and regulate their achievement of goals (Nicol and McFarlane-Dick 2006; Winstone et al. 2017). In navigating this process, learners may develop the ability to assess ‘their own malleable strengths and weaknesses, reducing reliance on the educator’ (Winstone et al. 2017, 9).

These cycles happen at the point of understanding an improvement needs to be made. This can be realised by learners comparing their own understandings with peer or teacher feedback information, external information, and resources, or through self-assessment oriented comparative ‘internal’ feedback processes (see Nicol 2020). Both mini-cycles, to fix one aspect of an assignment, or more extensive cycles can occur after responding to feedback on an entire draft. As learners move through such cycles, they learn more about academic standards and refine evaluative abilities. In this way, success in making evaluative judgements (‘Self-assessment’ process) leads to a better understanding of academic standards (‘Understanding’ process), which, in turn, enhances the ability to self-assess (‘Self-assessment’ process). Accordingly, learners become more proficient in setting goals and regulating their attainment in an iterative virtuous cycle of developing feedback literacy and continually improving self-efficacy (‘Motivation’ Processes) (see Han and Xu 2019; Reddy et al. 2020; Nicol 2020).

### ***The Role of Technology in Synergising with Self-Assessment Processes***

Again, opportunities to engage in technology-mediated dialogues can help learners to make judgements and comparisons through discussion, consultation, and co-regulation with peers. Peer groups can also help in the selection of appropriate goals and the evaluation of success. As learners engage in peer-to-peer feedback activities, they navigate cycles of the ‘Understanding’ and ‘Self-assessment’ aspects of the USM model, negotiate meaning and co-create higher-quality actionable feedback information through

ongoing multidirectional technology-mediated dialogues. This allows comprehension gaps between feedback pitched at an unsuitable level or delivered without the necessary depth or context to be closed. Temporal, spatial, curricular, and socio-affective barriers can also be overcome. At the same time, additional 'spaces' for learning through peer feedback are 'opened' as learners use commuting or transition time to engage using mobile applications, or exploit the time afforded by asynchronous discussion to conduct additional research and consult external resources or reflect on feedback processes in which they are engaged more deeply.

### ***Motivation Affect and Receptivity***

The final aspect of the model is 'Motivation, affect and receptivity' or 'Motivation' processes. In the model, navigating this process is understood to be a condition for learners to continue to engage with 'Understanding' and 'Self-assessment' cycles. As Carless and Boud (2018) argue, to successfully engage with feedback, learners need to manage their feelings on receiving feedback to use it productively. A potential starting point in this process may be to initiate dialogues with learners that encourage them to reflect on their emotional reactions to feedback and the role of their beliefs about feedback and its utility. Such beliefs have been shown to influence feedback engagement and uptake (Forsythe and Johnson 2017). Negative feedback experiences (Price Handley and Millar 2011) or the influences of culture (Evans 2013; Tian and Lowe 2013) may also influence willingness to engage in the 'Understanding' and 'Self-assessment' feedback cycles and can thus also be considered.

Conversely, insufficient levels of motivation, affect and receptivity, or a lack of ability to handle negative emotions, may lead to disengagement with the feedback process (see Price, Handley and Millar 2011, 883). Increased motivation, affect, and receptivity are



also a result of successful navigation (or viewing others' successful navigation) of the processes, as positive experiences (or evidence) reinforce belief in the efficacy of feedback (Molloy, Boud and Henderson 2020), and in individuals' ability to use feedback information effectively. Such beliefs then improve understanding of the feedback landscape and increase 'readiness to engage' (Price Handley and Millar 2011; Winstone, Hepper and Nash 2019).

### **Recommended Feedback Practices or Inputs to the Model**

Based on the USM model, to facilitate learners' movement through the USM process cycle, four inputs are initially suggested in the form of blended or online feedback practices based on the model. The output section of the model also proposes how feedback literacy might be supported and measured (See figure 3):

1. 'Priming' learners for positive beliefs about the purpose and value of the feedback process and for receptivity when receiving feedback information. Priming can include providing concepts (in the form of video and reading materials) to underpin learner accounts of how the feedback process can support learning, and thus, why peer and teacher feedback information should be engaged with. Priming could also be in the form of 'pass/fail' writing to learn' (McConlogue 2020) forum tasks to reflect on what has been learned and what future goals and actions to reach them should be after summative feedback. Such 'reflections' are targeted at helping learners to 'appreciate feedback' through metacognition (Carless and Boud 2018) and at the 'U' processes of the USM model, which overlap.
2. The use of ongoing technology-mediated dialogic peer and teacher feedback over time, (blended or online), with training, modelling and support (Nicol, 2010;

Carless, 2015). Learners first elicit feedback information from peers and the teacher in the form of ‘feedback requests’ (see Jönsson and Panadero 2017; Winstone and Carless 2019). These can be posted as comments on the document (or VLE) submitted for peer or teacher feedback. The feedback information generated is then processed with the help of technology-mediated dialogues with peers and educators. A recent study shows that Google Docs can facilitate ongoing discussion of feedback among peers (Alharbi 2020) instead of a once-only peer-review process (see Nicol, Thompson and Breslin, 2014). The practice of ongoing technology-mediated dialogic feedback supports both ‘appreciating feedback’ and ‘making judgements’ (Carless and Boud 2018) (the ‘Understanding’ and ‘Self-assessment’ aspects of the USM model). The use of technology to offer mutual support can also enhance group rapport or promote a potential ‘pedagogic alliance’ of peers, which encourages uptake by supporting positive affect.

3. Producing a feedback message that helps to instil in learners trust in a ‘pedagogic alliance’ between learners and teachers (Leighton and Bustos Gómez 2018) and among peers. Developing such relationships is important because the quality of teacher-student (and peer) relationships can influence intentions to engage with feedback (Telio, Ajjawi, and Regehr 2015). The practice of feedback should also demonstrate ‘care’ (Sutton, 2012; Carless and Boud 2018), show respect (Zhou, Zheng, and Tai 2020) and empathy (Steen-Utheim and Wittek 2017). Screencast feedback (e.g. Loom.com), is thus suggested as a medium that can aid in increasing social presence, rapport and connote teacher concern for students’ development (Dawson et al. 2018). It can also offer more, higher-quality information that helps learners understand standards, make judgements and take action on feedback information (Carless and Boud 2018) in a relatively

sustainable manner compared with text comments (Dawson et al. 2018) or in-person dialogues.

4. The final recommended practice is operating a digital feedback environment as ‘open’ as course conditions allow. ‘Open’ feedback environments facilitate vicarious learning from others’ work, feedback exchanges, reflective thinking, and teacher feedback and may boost social presence and the feeling of assimilating into a caring learning community (see Reddy et al. 2020). ‘Openness’ can be achieved using a VLE such as Moodle, Blackboard, or Google Classroom to post links to student work that are accessible to others. Such an environment also supports the development of e-portfolios, assessment for learning, and ipsative feedback. It also provides storage for course materials, feedback, and responses to it. Following such standard practices across a university can facilitate continuity and promote the transfer of learning from feedback across modules. However, to encourage use, such platforms designed with attention to perceived convenience may be more attractive to users (Winstone and Bourne et al. 2020). Focus on convenience and utility also aligns with the technology acceptance model (TAM), which shows that perceived ease of use and usefulness are correlated with the acceptance of new technologies in various contexts (Rejón-Guardia, Polo-Peña and Maraver-Tarifa 2019).

## **Implications**

In this paper, I have argued that the trend towards increasing uptake of blended learning in higher education together with the recent shift to emergency remote teaching, necessitates new perspectives on how feedback uptake and literacy can be theorised and modelled, considering the contextual challenges and opportunities presented by digital

feedback environments. Building on previous findings, the USM model shows how the potential of feedback dialogues for enhancing feedback uptake can be realised through technology by overcoming the limits of space and class time, alleviating some socio-affective issues, and potentially reducing the time burden of face-to-face dialogues by employing screencasts combined with cloud document editors. The model also illustrates how peer and student-teacher dialogues can help individuals navigate critical feedback uptake processes (USM) and develop feedback literacy.

Because the USM model is intended to offer teachers guidance in supporting the uptake of feedback, an important implication of this is the contribution to the emerging understanding of teacher feedback literacy for digital environments. Teacher feedback literacy has recently been defined by Carless and Winstone (2020) as ‘the knowledge, expertise, and dispositions to design feedback processes in ways which enable student uptake of feedback and seed the development of feedback literacy’ (4). Teacher feedback literacy also requires the management of some of the socio-affective and practical aspects of the learner feedback uptake process, and the authors suggest that technology can be key to achieving this.

Accordingly, the technology-mediated USM model of feedback uptake and literacy offers teachers support in understanding what may be involved in ‘designing for uptake’ as well as feedback practices and recommendations derived from the literature that can be easily managed with freely available applications entirely online or as blended activities for in-person settings. The multidirectional and ongoing dialogic nature of the model and inputs also support the relational dimension of feedback uptake and literacy. Students feel connected with feedback givers and supported by online communities that can offer ongoing support for learning and feedback literacy development. Screencasts, combined with the dialogic potential of feedback mediated by cloud applications, also improve

‘social presence,’ making feedback more emotionally compelling and increasing rapport and trust. Such affordances support both the practical and relational dimensions of the teacher feedback literacy model. The USM model provides detailed explanations and guidance about what might be involved in nurturing feedback uptake and literacy, yet it is also simple enough to be offered as a guide for teachers who are inexperienced in supporting feedback uptake and literacy in online settings.

However, it must also be noted that feedback uptake in online settings is likely to be mediated by digital literacy (see Gourlay and Oliver 2018) as well as access to technology, private space for the production or consumption of screencasts, hardware, and technology acceptance (see Scherer, Siddiq, and Tondeur 2019). Thus, training and support in using the technologies chosen for deploying the practices may be a necessary first step for some teachers. Teacher feedback literacy for digital settings could be supported through informal peer-to-peer staff development opportunities and conversations (see Wenger 1998; Eraut 2009) and formal approaches such as staff development workshops or online seminars. The USM model and skills for operationalising it could also be taught on courses oriented towards teacher development such as post graduate certificate courses in higher education, perhaps as an logical extension of the model of teacher feedback literacy proposed by Carless and Winstone (2020).

The model serves as a starting point to operationalise current theory regarding feedback uptake and literacy for online and blended settings and can be adapted and enhanced for the needs of individual contexts and cohorts. It also helps fill a gap in the literature regarding the study of technology-mediated dialogism while taking a multidimensional perspective to understand how multiple interventions can be used to achieve synergistic

effects (Handley Price and Millar 2011; Winstone et al. 2017). However, empirical research of feedback designs utilising the model and recommended feedback practices in different contexts is required to determine such effects. It has also been suggested that work needs to be undertaken to ‘counter the invisibility of learners’ engagement’ based on qualitative ‘descriptions of engagement’ and ‘analysis of the influences on and outcomes of students’ engagement with feedback’ (Price, Handley and Millar 2011, 553).

One researchable route towards such goals would be to qualitatively investigate learners’ and teachers’ experiences of the feedback practices in the form of in-depth account data such as reflective writing, qualitative surveys, interviews, and focus groups. This data could then be inductively analysed to ‘empirically enhance’ (Yin 2014), refine or reject aspects of the model, and better understand how it can be effectively deployed. Quantitative approaches such as cohort studies, studies across different contexts, or the use of various software applications and environments could then be conducted to learn more about the model’s generalisability and its effects on attainment. It is also essential to determine workload and training implications as this may be a crucial aspect of encouraging established professionals to adopt the model into their online practice and to their feedback practices post COVID-19. Thus, generating an understanding of how practitioners can be trained to use the feedback practices and how they and learners respond to them in different contexts represents another essential dimension of the future study of teacher and student feedback literacy in digital settings.

## **Conclusion**

In recent years the importance of feedback dialogue has begun to feature more in theoretical and empirical discussions around feedback uptake. However, emphasis on the

potentially synergistic relationship between technology-mediated ongoing multidirectional dialogues and the processes involved in feedback uptake and literacy in online environments has been mostly absent from the literature. Therefore, this paper makes a modest but potentially significant contribution by exploring how these can be theoretically linked and modelled. Furthermore, it describes how a technology-mediated dialogic model of feedback uptake and literacy can be deployed in digital environments in higher education settings to aid teacher feedback literacy development. To do this, I have attempted to synthesise a range of theoretical and empirical perspectives into a model that attempts to illuminate a critical academic and practical problem for stakeholders and in various contexts. The model is likely to be especially relevant considering the current shift to emergency remote teaching and is likely to be of increasing importance in post-COVID-19 practice as higher education contexts become ever more reliant on technology and digital learning.

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