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Conditions that enable effective feedback

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ABSTRACT

Despite an increasing focus on assessment feedback, educators continue to find that simply replicating an effective feedback practice from one context does not guarantee success in the next. There is a growing recognition that the contextual factors surrounding successful practices need to be considered. This article reports on a large-scale mixed methods project and proposes 12 conditions that enable successful feedback in higher education. The conditions were distilled from seven rich case studies through multiple stages of thematic analysis, case comparison and reliability checking. The conditions were also evaluated by surveying senior leaders of Australian universities. These conditions highlight the importance of carefully designing feedback processes, along with the need for addressing capacity and culture for feedback. This helps to explain why there are such variances in effective feedback across contexts, and offers insight into how it may be achieved.

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Introduction

Assessment feedback has an important role in improving learners' decision making, and ultimately improving their learning outcomes. However, despite the importance of feedback, it is often under-utilised, particularly in higher education (Pitt & Norton, 2017). This is due to the widespread misconception that feedback is one-way performance-related information given by the educator to the learner (Boud & Molloy, 2013b). This often takes the form of written comments or mark-up on an assessment task; the flavour of which is focused on justifying the assessed grade (Carless & Boud, 2018). One of the most significant limitations of this 'delivery' model of feedback is that it does little in supporting the agency of the learner in improving their work (Boud & Molloy, 2013b).

In contrast with this 'delivery' model of feedback, scholars are working to reposition feedback as a learner-centred process. Consequently, we build on Boud and Molloy's (2013a) description of effective feedback, and subsequent work by Carless (2015), to

define feedback as a process in which learners make sense of information about their performance and use it to enhance the quality of their work or learning strategies. In proposing this definition, we recognise that the feedback process is driven by the learner, and influenced by their individual context and needs (Evans, 2013). As such, there is no panacea or ‘magic bullet’ for feedback design that will be suitable for every learner (Krause-Jenson, 2010). Moreover, it is important to recognise that feedback takes place in highly varied and situational contexts (Bailey & Garner, 2010; Li & De Luca, 2014). Contextual variables may be broad and have sector-wide implications, such as larger class sizes and increasingly diverse learner cohorts (Evans, 2013), or they may relate to more localised concerns, such as institutional cultures and policies (Price, Carroll, O’Donovan, & Rust, 2011).

This article adopts a socioecological perspective in considering the contextual variables which constrain and enable educators’ and learners’ effective engagement in feedback mechanisms, and identifying the conditions that best enable effective feedback at the task, subject, course and institutional level. A socioecological approach encourages the interpretation of human experience as an interplay of individual and environmental factors. It has been applied to explain a variety of phenomena including human development (Bronfenbrenner, 1977) and the (non)adoption of technology in education (Zhao & Frank, 2003). In each case, the explanation of the phenomena were enriched through the recognition of how social systems interacted with each other and the individuals, and in doing so provided a useful framework for understanding complex human social issues (Bronfenbrenner, 1977; Ivankova & Plano Clark, 2018; Zhao & Frank, 2003).

The research literature has provided some recognition of the impact that contextual factors can have on the effectiveness of feedback – for instance, Shute (2008) advocates consideration of instructional circumstances, task characteristics and learner individualities when designing formative feedback – and much of the existing attention to context has focused on achieving generalisability within and across disciplinary settings (Evans, 2013; Li & De Luca, 2014). However, Boud and Molloy (2013b, p. 8) warn against the idea that ‘a generic model of best-practice feedback can be applied to all learners and all learning situations’. Instead, feedback is inherently socially constructed and contextually situated (Ajjawi & Boud, 2017), and varying situations will demand different forms of feedback (Boud & Molloy, 2013b).

This growing focus on context highlights how factors such as learner backgrounds, institutional policies and different disciplinary approaches interact with and impact feedback design (Evans & Waring, 2011; Li & De Luca, 2014). Less consideration has been given to the contextual factors which surround and support existing effective feedback practices, and how these factors can be utilised in different settings to create the conditions in which effective feedback practices can flourish. In this article, we seek to explain the experience of feedback as a dynamic of the varied influences at the level of the individual learner and educator, alongside the layered context of the classroom, faculty and university.

Method

The findings in this article stem from a four-stage project conducted over an 18-month period. Stage 1 involved identifying feedback practices and experiences at two Australian

universities through a large-scale survey of 4514 students and 406 staff. In Stage 2, seven rich case studies of effective feedback were analysed through document analysis and interviews with 20 students and 14 academic staff. In Stage 3, a framework of conditions for effective feedback was developed comprising: a new definition for feedback, seven design challenges arising from the definition, 12 conditions that enable effective feedback and 40 principles for enacting the conditions. Finally, Stage 4 involved workshops with 295 academics and 66 senior leaders from 23 universities, and a survey of 78 senior leaders from 34 universities.

Stage 1. Identifying feedback practices

The online survey included both closed and open-ended questions asking about effective and ineffective feedback practices. Promising cases were identified by triangulating staff and student responses to two survey items which asked respondents to (a) identify a subject that involved effective feedback processes, and (b) explain why they were effective. Subjects were added to a short-list if they were mentioned by multiple students and staff respondents, and the success of the feedback was not based on heroic or unsustainable practices by the educators. Initial pre-interviews were then conducted with the educators-in-charge of eight short-listed subjects to gain further details regarding the feedback design, outcomes and context. Cases were purposefully selected based on criteria such as diversity of practice, assessment, discipline and institution. These elements were considered to support the development of a more robust understanding of breadth of contextual factors. This process yielded seven diverse examples of ‘promising’ or ‘best’ practice feedback.

Stage 2. Case study data collection and reporting

Data collection

Interviews were conducted with three students and two academic staff from each of the seven subjects. Staff interviews were conducted with the educator-in-charge of the subject wherever possible, and at least one other individual associated with teaching or designing the subject (e.g., educational designer, tutor, etc.). Student participants were required to have completed the subject in the previous teaching period.

Student interview questions focused on the impact of the feedback, motivation to engage with the feedback and perceptions of the feedback design, while staff questions focused on enabling and limiting factors for the feedback design. Documentary evidence was also collected where possible, including subject guides, marking rubrics and tutor guidebooks. Examples of feedback comments were also obtained from student interviewees.

Preliminary data analysis

Each member of the project team took lead on one case and analysed the qualitative interview data and other resources. A summary of the key points was produced for each case, including the subject context, assessment structure, feedback design and a thematic analysis of the enablers and challenges of effective feedback practices. This summary and thematic analysis of the collected data was then crosschecked by one other member of the

team to improve thematic saturation and degree of analytic reliability (for more detail, see Yin, 2003).

Team workshops

A three-day intensive workshop was held with the entire project team and an external feedback expert from an international higher education context. The workshop involved an analysis of each case summary with a goal of further eliciting and clarifying conditions that enabled and challenged the effective feedback practices (e.g., the contextual factors that were evident within and across cases).

Reporting

Drawing on the workshop, each case lead expanded on the summary and produced a detailed version of their case study which was then reviewed by the rest of the team to check uniformity of style, level of understanding and conceptual rigour. A version of these reports was then published on the project website, featuring sections highlighting why the feedback design worked, enabling factors, challenges and advice to educators, institutions, schools and faculties. Information about the cases is presented in [Table 1](#). Additional details about the cases can be found on the project website [<http://feedbackforlearning.org>].

Stage 3. Development of framework (including the conditions)

Initial conceptual organisation

Factors that influenced the success of feedback (e.g., why the design worked, enabling factors, challenges, etc.) were extracted from the case studies. Three members of the project team then worked together through six iterations to thematically analyse the data. This process resulted in identifying 40 key principles variously employed by the

Table 1. Descriptive information about the seven case studies.

Case	Subject	Year level	Class size	Description
1	History	First year	200	Diverse feedback spread across semester, including automated, peer and self-feedback, along with face-to-face feedback from tutors. Students learn how to seek and use feedback.
2	Psychology	First year	1500	Successful personalisation of feedback (via audio recordings) at scale. Feedback designed to support subsequent assessments. Rigorous moderation of feedback (not just grading).
3	Physics	First year	400	Flipped teaching model with frequent assessment/feedback cycles, including tasks that develop incrementally and are aligned with the final exam.
4	Digital Media	Second year	200	Authentic and gamified feedback information from various sources on Twitter and via audio recordings.
5	Biology	First year	1400	Careful leadership planning to ensure a consistent high quality of written and verbal feedback across a large teaching team. Learners engage in multiple feedback opportunities.
6	Optometry	Post-graduate	70	Different feedback processes for different tasks, including peer discussions. Systematic improvements to feedback practices based on learner comments.
7	Science	Second year	600	Explicit teaching about the purpose of feedback. Iterative and nested tasks and multiple forms and sources of feedback including group-based feedback.

cases. These were then further thematically analysed to form 16 overarching conditions for effective feedback.

Refinement

The project team then collectively scrutinised the 16 conditions and their constituent principles to ensure that they were discrete, succinct and grounded in the case study data. Based on the outcomes of this process, the list was refined down to 14 conditions and organised into four thematic categories: capacity, design, culture and resources.

National workshops

The 14 conditions were evaluated with educators and senior leaders at a series of workshops in six of the eight Australian capital cities. An international reference group of leading researchers in the field was also consulted. This process resulted in the merging and rephrasing of several conditions. The final result was 12 conditions.

Stage 4. Verification

Survey

A survey was conducted with senior leaders from Australian universities to evaluate the level of importance and implementation of the final 12 conditions. Responses were obtained from 78 Pro-Vice Chancellors, Deputy Pro-Vice Chancellors, Executive Deans, Provosts, Deans/Associate Deans, Directors of Learning Centres and Heads of Schools from 83% (34 of 41) of Australian universities.

Results and discussion

The results indicate that successful feedback practices are influenced by the feedback design, capacity of the people involved and the institutional culture. Moreover, to engender effective feedback, one needs to consider more than simply how to ‘deliver’ feedback comments. Each of the case studies reveals that effective feedback practices have complex histories in which their development have been influenced by a range of factors over time. Some of these factors confirm findings that have been reported elsewhere in relation to higher education learning designs. However, this article is unique in trying to recognise that effective feedback is influenced by designs but also learner and educator capacities and dispositions, as well as the competing and layered demands of classroom, faculty, disciplinary and university contexts.

Accordingly, this article identifies 12 conditions that enable effective feedback, which are thematically organised into three categories: capacity, designs and culture (see [Figure 1](#)). This is not to suggest that these are the only conditions, nor that all conditions need to be simultaneously present to ensure success. Nevertheless, in each of the seven rich case studies, at least six or more of these conditions were observed as being a significant factor in the feedback success.

Each of the conditions is complex and, as demonstrated by the case studies, can be tackled in a variety of ways. Indeed, many of the cases used multiple approaches in working towards achieving any one condition. However, when we compared the cases and the approaches they adopted, we were able to distil common feedback principles

Feedback is successful when...

Capacity for feedback

1. Learners and educators understand and value feedback
2. Learners are active in the feedback process
3. Educators seek and use evidence to plan and judge effectiveness
4. Learners and educators have access to appropriate space and technology

Designs for feedback

5. Information provided is usable and learners know how to use it
6. It is tailored to meet the different needs of learners
7. A variety of sources and modes are used as appropriate
8. Learning outcomes of multiple tasks are aligned

Culture for feedback

9. It is a valued and visible enterprise at all levels
10. There are processes in place to ensure consistency and quality
11. Leaders and educators ensure continuity of vision and commitment
12. Educators have flexibility to deploy resources to best effect

Figure 1. The 12 conditions that enable effective feedback.

that supported the conditions. Nevertheless, the implication is that it is unlikely that there is a simple or single solution. To highlight this point, the description of each condition below is accompanied by a selection of feedback principles that encompass the approaches adopted in the cases. Due to the need for brevity, each principle offers a short description of how it was enacted by one of the cases. The range of enactments, and case study elaborations, can be further explored at the project website [<http://feedbackforlearning.org>].

Capacity for feedback

1. Learners and educators understand and value feedback.

Feedback is not an artefact (e.g., comments), nor is it an attempt to justify a grade (Carless & Boud, 2018). The cases of effective feedback in this study reveal the importance for both educators and learners to understand that feedback is a process, and comments given by an educator are only one possible part of the process. Critically, the learners themselves need to be able to make sense of the information and then act upon it. An implication is that feedback needs to be constructed so that it can be easily understood and then enacted (Higgins, Hartley, & Skelton, 2001). This condition was addressed by the cases adopting a number of principles, including:

- *Learners need support to develop feedback literacy, that is, the capacity to seek, understand, enact and produce evaluative information that leads to improvement.* As an example, learners in the History case were challenged with assessment tasks that incrementally built their skills around seeking and using feedback
- *Feedback is a core component of the educative process that needs to be instructionally designed.* In the Science case, teaching time was used to explicitly describe the design and purpose of feedback to learners. Preparing students to understand their role within the feedback process, particularly how they can seek, interpret and use the information, needs to occur early and continue throughout a course. Such capacity building

is a valuable focus for core teaching and learning, and not just something that happens after assessment.

2. Learners are active in the feedback process.

In the case studies, effective feedback was enabled when learners engaged with feedback processes with a degree of independence. Indeed, given that effective feedback needs to be learner centred, it is logical to expect that learners need to increasingly develop their capacity to seek, generate and use feedback comments from multiple diverse sources (Carless & Boud, 2018). However, learners are often unused to or inhibited from seeking feedback, or when they do, they may be unable to judge the relevance of the comments (Winstone, Nash, Rowntree, & Parker, 2017). Two key principles observed across the cases were:

- *Learners need support to seek feedback.* In the Digital Media case, assessment tasks were designed to explicitly develop students' ability to seek, interpret and act on comments. Learners were required to post their work to a dedicated Twitter hashtag to obtain feedback comments from peers, members of the public, businesses and university social media accounts
- *Learners should be able to evaluate their own performance.* Learners need to develop their capability for evaluative judgment (Tai, Ajjawi, Boud, Dawson, & Panadero, 2018). This capacity building was evident in the History case, where learners were given the opportunity to develop evaluative judgement skills and appraise their own learning by completing a self-assessment rubric and reflective writing tasks
- *Learners benefit from learning to generate feedback.* Providing feedback comments to a peer engages learners with standards of work and further develops their capabilities of evaluative judgement (Tai et al., 2018). As an example, in the Science case, learners were given structured support to provide feedback comments to their peers. The goal was to support peer learning, but importantly, to develop learners' capacity to engage independently in evaluating the quality of their own work.

3. Educators seek and use evidence to plan and judge effectiveness.

Effective feedback design involves continually challenging and improving one's own practice (Hounsell, Mccune, Hounsell, & Litjens, 2008). This necessitates a degree of self-reflection on the part of educators, along with an inquiry mind-set (Elwood & Klenowski, 2002). In all of the case studies, educators and leaders sought evidence of the success of their practices, researched new ideas and alternative models, and allowed for iterative improvements. In meeting this condition the cases adopt a number of principles, however there was one that was particularly significant across all cases:

- *Innovation stems from a sense of evaluative restlessness.* Educators evaluated their own practices, adopting the mind-set that they can always improve. For example, the teaching staff in the Physics case endeavoured to continually improve the flipped feedback design and practice by collecting empirical data from learning analytics, student satisfaction surveys, and pre- and post-testing.

4. Learners and educators have access to appropriate space and technology.

Literature indicates that technology and novel learning environments can stimulate and support innovative feedback practices (Dawson et al., 2018). This finding was supported in the data, and played out in a number of ways across the cases:

- *Collaborative learning spaces can support immediate feedback.* In the Physics case, purpose-built classrooms enabled frequent formative and summative feedback loops. The classroom was equipped with technologies such as screens, whiteboards, microphones and ‘clickers’ to support frequent feedback loops whether students were working in groups or sharing with the whole class
- *A permissive operating environment allows educators to explore technologies outside of learning management systems.* In the Digital Media case, the educator-in-charge had tried to stimulate feedback conversations inside the learning management system, but found the tools did not support immediate, rich conversations. Instead, he used a Twitter hashtag where learners could tweet links to their work-in-progress assignments and engage in brief feedback interactions with others
- *Technologies can enhance the richness of feedback information.* Written comments and rubrics can be limited in detail and specificity. Other media, such as audio, video and screencast recordings can include more details, with richer cues that can help learners’ sense-making. In the Psychology case, educators created five-minute audio recordings to provide comments that were considered to be detailed, meaningful, personal and motivating
- *Technologies can support immediate and distributed feedback.* Feedback should be timely, that is, it should occur when it is likely to have the most impact. Several of the case studies, including Physics, exemplified the use of polls, quizzes, simulators and other technologies for providing immediate feedback. The cases also demonstrated how technologies such as forums, Twitter and sites such as wikis diversified feedback sources other than their teachers, including those of peers and industry professionals.

Designs for feedback

5. Information provided is usable and learners know how to use it.

One of the key elements of effective feedback is the ability for learners to use the information in order to improve subsequent work or learning strategies (Boud & Molloy, 2013a). It is therefore critical that educators consider what learners will do with the feedback comments, and how usable they are (Winstone et al., 2017). This requires that educator-provided feedback comments are clearly interpretable by the learner, and provided in time to be used on a subsequent task. In fulfilling this condition many of the cases demonstrated a commitment to these two principles:

- *Feedback information needs to be actionable.* Feedback comments need to provide some insight into how the learner can usefully improve. For this reason, some specificity and

detail in feedback comments will likely be more useful than generic praise or criticism. In the Psychology case, educators used audio recordings to explain how learners could improve their next assessment task, and incorporated concrete examples drawn from the learner's work for both positive and critical comments

- *Feedback comments need to be provided at a time that learners are best able to use them.* The design of feedback should always be considered in relation to subsequent related tasks. In the Optometry and Physics cases feedback information was provided to learners rapidly, however in the Psychology case the feedback information was provided at a later time to best support learners as they begin to engage with a related subsequent task.

6. It is tailored to meet the different needs of learners.

It is unlikely that a single feedback design will be effective for every type of learner, so it is important to try to understand the nature of different cohorts and pay attention to each learner's individual needs, including capacity for sense-making and motivation (Ryan & Henderson, 2018). Tailoring feedback can involve extra work from educators, but these efforts can foster a relationship of respect and trust, and in turn increase learners' levels of receptiveness to the feedback comments (Carless, 2013). Some of the principles adopted were:

- *Foster relationships between educators and learners by maintaining consistency of assessors.* Personalised and meaningful feedback is dependent on the assessor understanding students' progression. In the Psychology case, assessors were able to monitor learners' progress across multiple assessments, thereby developing an understanding of each learner's strengths and weaknesses, and what sort of information they needed in order to improve
- *Recognise the emotional impact of feedback.* Students can have emotional reactions to feedback comments that can then reduce their sense-making and motivation. However, educators also have emotional reactions and may shy away from difficult conversations with learners. In the Psychology case, assessors were placed in the learners' shoes by receiving audio feedback from the educators-in-charge. This not only helped the assessor empathise with their students, but provided them with explicit suggestions about how to further improve their own audio-recorded feedback comments.

7. A variety of sources and modes are used as appropriate.

Effective feedback is supported by providing information to learners through a range of sources and modes (Elola & Oskoz, 2016; Evans, 2013). The cases in this study confirmed that multiple sources and modes were useful for the same feedback instance, but also for instances over time. In particular, they adopted a number of principles including:

- *Learners need opportunities to engage in feedback cycles with a variety of sources.* Learners' sense-making and evaluative judgement (Tai et al., 2018) can be improved by

triangulating feedback information across multiple sources and feedback loops. These sources could be people with whom learners engage regularly in class, such as educators and peers, or other sources including online communities, tutoring software, grammar checkers, program compilers and simulators

- *Feedback comments can be communicated more effectively using various modes.* Different modes of feedback comments can cater for a variety of learner needs in differing contexts. In some contexts, a mixture of modes can complement each other and help learners' sense-making of the information. In the Digital Media case, learners received feedback comments through audio recordings, traditional long-form text and short-form text (Twitter).

8. Learning outcomes of multiple tasks are aligned.

Effective feedback design involves alignment of multiple assessment tasks with linked competencies, interspersed with opportunities for learners to seek and receive useful information that can influence their next task (Boud & Molloy, 2013a). In this way, each feedback cycle builds on the previous one, and learners have several opportunities within each cycle to demonstrate their understanding and strengthen their performance. The cases adopted a number of principles that helped achieve this condition, including:

- *Feedback should be a regular occurrence.* When learners are provided with the opportunity to experience regular and varied feedback loops, the likelihood of important information being understood and acted upon increases. In the Biology case, learners were regularly exposed to face-to-face discussions, clicker questions, written feedback on tests, online quizzes and peer assessments
- *Plan for interconnectedness of tasks and feedback across subjects and programs.* This is perhaps the most challenging principle, and was least represented by the cases. Nevertheless, it was recognised as being important if learners are to be most effectively supported across their course, not just within a subject. In the Physics case, it was acknowledged the skill development of a learner should not be limited to a single subject, but viewed from the point of view of their entire course experience. The implication here is that the curriculum, assessment and the feedback need to be designed to provide programmatic coherence
- *Enable learners to use feedback by explicitly designing connected assessment tasks.* In the History case, assessment tasks were iterative and comments were provided quickly, allowing learners to improve in related tasks. This was facilitated by spacing tasks out, front-end loading tasks at the start of the subject and providing low-risk tasks.

Culture for feedback

9. It is a valued and visible enterprise at all levels.

Data from this project reveals that the success of feedback is facilitated when institutions are seen to value it in its systems, policies and activities. In other words, effective

assessment feedback is a valued and genuine part of the university culture (Bailey & Garner, 2010). Two key principles were evident across many of the cases:

- *Institutions need to inspire innovation.* Institutionally provided professional learning events, showcases, exemplars, models and resources provide inspiration and encourage educators to experiment with their feedback designs. In both the History and Physics cases, the educators-in-charge were enthused and educated about effective feedback practices after attending university learning and teaching events. Institutions would do well to challenge educators to reimagine feedback and not be tied to disciplinary cultures. However, there is a latency effect, in that these events and experiences often did not lead to immediate changes in instructional designs, but rather shaped plans over time
- *Effective feedback principles are featured in policy.* Institutional policy has an influential role in embedding effective feedback principles in processes, systems and culture. However, it is important that policy recognises the role of feedback in enhancing future work and does not conflate it with the work of marking. Policy should encourage and support the conditions outlined here. For example, a policy change that no longer mandated end-of-semester exams allowed the educator-in-charge of the History case to restructure the assessment and feedback design to provide more effective and diverse forms of feedback loops.

10. There are processes in place to ensure consistency and quality.

Consistency and quality of feedback is a significant issue for an institution (Crisp, 2007; Reddy et al., 2015). It is particularly noticeable in subjects with more than one educator or assessor. A key issue here is that the processes involved in creating effective feedback comments are complex and contextually dependent, and it cannot be assumed that new and sessional staff have broad experiences with effective feedback practices. Learners have been shown to feel disgruntled and dissatisfied if they do not receive the same level of high-quality feedback as their peers (Smith & Coombe, 2006). The cases in this project affirm that effective feedback practices need to be learned. Even experienced educators may need to unlearn habits and assumptions they have developed over time. Key principles adopted by several of the cases included:

- *Use marking and assessment guidebooks to support feedback consistency.* In several case studies, including History, the educator-in-charge created detailed feedback resources, including exemplars, for tutors
- *Moderate feedback comments, not just grades.* The educators-in-charge of the Psychology case developed a rigorous moderation process which not only maintained consistency and quality of feedback, but also supported and developed assessors. This enabled corrective interventions to occur before a large volume of assignments had been marked, reducing the demand for later re-marking procedures
- *Encourage experienced educators to mentor less experienced educators.* In the Biology case, less experienced tutors were paired with more experienced educators in order to model feedback provision in face-to-face situations (during laboratory classes).

11. Leaders and educators ensure continuity of vision and commitment.

As argued by Elwood and Klenowski (2002, p. 254), ‘the development of pedagogic and assessment practices is a never-ending process that involves ongoing review and refinement’. Therefore, it is important to have continuity in leadership and membership of teaching teams to provide the opportunity for both reflection and forward planning. All of the cases clearly demonstrated that effective feedback processes were iteratively developed over time. A key component was that staff carried their experience from one semester to the next. Two principles were particularly evident in the cases:

- *Faculties and schools should appoint leadership positions for extended periods of time.* All of the case studies illustrated leadership continuity in different ways. However, the most noteworthy had, at their core, a commitment at Faculty level to provide a stable working environment. In the Physics case, the lead educator knew he would be responsible for the continued improvement of the subject for years to come. This afforded a long-term vision and the implementation of a considered and measurable approach to improvement by iteration
- *Stability within teaching teams enhances capability to iteratively improve feedback practices.* Quality and continuity of teaching teams can result in enhanced feedback designs. In the Biology case, teaching staff were able to work on just one subject, which helped to focus their attention and energy into the design and providing of feedback. The stability of the team providing feedback in this subject allowed for iterative development over a number of years.

12. Educators have flexibility to deploy resources to best effect.

Effective feedback design can be challenging in contexts where workloads, labour models, or subject structures are overly prescriptive (Bailey & Garner, 2010). Feedback information needs to be carefully designed, particularly in terms of timeliness, modality, sequence, frequency and usefulness. It is therefore important to seek feedback designs that do not require educators to resort to heroic, unsustainable workplace practices (Broadbent, Panadero, & Boud, 2018). In the cases identified in this project, educators were able to modify teaching delivery and explore different labour models:

- *Educators should be empowered to reimagine their workload.* In the Science case, the educator-in-charge was able to replace face-to-face tutorials with online self-directed activities for one week, so that the teaching team could use those hours for enhancing their assessment feedback. Institutions should therefore consider if their workload models allow educators to use time to best effect
- *Roles within teaching teams could be shaped to ensure sufficient attention is given to achieving effective feedback.* In the Biology case, leadership of the subject was the responsibility of an Assistant Lecturer, whose sole role was to focus on the development of effective teaching teams and feedback provision in this large subject. While senior educators were still involved in leading the subject, they provided direct input on the teaching content rather than designing and directing feedback.

Table 2. Means and standard deviations for senior leaders on questions measuring levels of importance and implementation of each condition.

Condition	Level of importance			Level of implementation		
	<i>n</i>	Mean	SD	<i>n</i>	Mean	SD
1. Learners and educators understand and value feedback	76	4.84	0.37	73	4.00	0.69
2. Learners are active in the feedback process	77	4.60	0.69	75	3.17	0.78
3. Educators seek and use evidence to plan and judge effectiveness	77	4.39	0.67	74	3.66	0.91
4. Learners and educators have access to appropriate space and technology	77	3.92	0.94	75	3.83	0.96
5. Information provided is usable and learners know how to use it	75	4.72	0.51	74	3.54	0.74
6. It is tailored to meet the different needs of learners	76	4.24	0.83	75	3.09	0.81
7. A variety of sources and modes are used as appropriate	76	4.01	0.89	74	3.58	0.95
8. Learning outcomes of multiple tasks are aligned	74	4.38	0.85	74	3.49	0.93
9. It is a valued and visible enterprise at all levels	76	4.39	0.77	75	3.52	0.89
10. There are processes in place to ensure consistency and quality	77	4.65	0.64	75	3.61	1.05
11. Leaders and educators ensure continuity of vision and commitment	76	4.37	0.80	74	3.58	0.8
12. Educators have flexibility to deploy resources to best effect	77	4.26	0.75	75	3.57	0.87

Note: Not applicable responses have been removed. Response options were 1 = 'not at all' – 5 = 'extremely' for level of importance, and 1 = 'not at all' – 5 = 'to a large extent' for level of implementation.

Survey with senior leaders of universities

As part of the verification stage (Stage 4), senior leaders from 34 of the 41 Australian universities rated the 12 conditions according to the level of importance and implementation at their institution. Results for both items are presented in Table 2. The means for importance range from 3.92 to 4.84, therefore most leaders confirmed the conditions to be 'very important'. These results validate the relevance of all 12 conditions, but particularly the four conditions that had means of 4.5 or more: 1, 2, 5 and 10.

With regard to implementation of the conditions, means ranged from 3.09 to 4.00, which represents the response category 'to some extent'. While it is encouraging to note that the senior leaders reported the conditions were being addressed to some extent, clearly more work needs to be done, particularly given the overall need for improved feedback in the higher education literature.

As noted in the case studies, the conditions can be tackled in multiple ways and can synergistically impact on each other. With this in mind, future research should focus on how the impact of the variously enacted conditions are moderated by institutional and individual variables. For example, senior leaders considered conditions 2 and 6 as the most difficult to address; they were selected as most challenging by 30% and 18% of the sample respectively. The most common reasons centred on staff and student attitudes. For instance, those who selected condition 2 proposed that many educators will find it difficult to accept students as active participants in the learning process, or mentioned that students are primarily interested in their mark. Other challenges to implementing a condition (or conditions) with a strong minority included workload difficulties (including sessional staff and policy restrictions), large and diverse student cohorts, and problems with approaches and systems at faculty or institutional levels (including coordinating programmatic assessment).

Conclusion

Despite significant investment by institutions and educators in improving feedback, successful practices cannot easily be transplanted from one context to another. The literature

is replete with studies that argue the ineffectual nature of dominant feedback practices while also reporting on innovations in feedback designs. However, current thinking in this field concludes that feedback is more than educators just giving information to students. It is a process in which the learner needs to attend to, and make sense of, information about the quality of their performance in order to improve future work or learning strategies. The feedback information can vary greatly between contexts and still be considered to be highly effective. Different sources (e.g., peers), modes (e.g., video, rubrics), timing and content are just some of the design variations that need to be considered by educators and supported by institutions. However, these design decisions are situated within a larger context and their success is clearly influenced by the capacities of educators, students and institutions.

An implication of this study is that educators and institutions need to recognise that effective feedback is complex and unlikely to be achieved unless conditions of capacity, design and culture are addressed. The cases in this project highlighted the importance of 12 conditions, and often revealed a synergistic interaction between them. The cases also demonstrated that there is more than one way in which the various conditions could be satisfied. The goal here was not to provide a list of actions, which are inevitably contingent and negotiable in each new setting, but rather to help navigate the complexity along with some of the diverse ways we could approach the problem.

Indeed, each of the cases revealed how the strategies they are employing and the conditions that sustain their practices are temporal, constantly changing either through design (i.e., iterative improvements) or in response to new situations such as changes to assessment policies. It is not surprising then that this article could never provide a comprehensive list of contextual influences. However, through a rigorous process of abstraction it has synthesised a framework that offers 12 key conditions that support effective feedback. These reveal the importance of developing capacities for feedback in educators and students. We also need to go beyond the typical focus of best 'practices of giving' to designs of enabling. Crucially, we need to develop a culture for effective feedback within the institution.

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