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The feedback triangle and the enhancement of dialogic feedback processes

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This article explores some of the main barriers to the enhancement of feedback processes and proposes a framework for using dialogic feedback to foster productive student learning in the discipline. The framework suggests a feedback triangle focused on the content of feedback (cognitive dimension), the interpersonal negotiation of feedback (social-affective dimension) and the organisation of feedback provision (structural dimension). The interplay between these three elements is central to prospects for the enhancement of feedback processes. Derived from the framework is a set of six key features of optimal feedback practice which we represent as building blocks of an architecture of dialogic feedback. The paper concludes with a research agenda which suggests issues to be further explored in the cognitive, social-affective and structural dimensions.

Keywords: dialogic feedback; assessment; student self-regulation; student learning

Introduction

Feedback to undergraduate students is a topic that is on the agenda of many stakeholders in higher education, from senior management downwards. In a sector often driven by accountability forces, one of the main reasons for current attention to feedback is the consistent results of institutional surveys (HEFCE 2010; Radloff 2010), which indicate that students find the effectiveness of feedback one of the least satisfactory aspects of their university experience. A repercussion is that there are practical desires to find solutions to the challenge of enhancing feedback which may vary along a continuum of quick fixes to steadier long-term improvement agendas. A decade ago, Higgins, Hartley, and Skelton (2002) argued that feedback was an under-researched and relatively unexplored area, this is clearly no longer the case and there is now a rapidly burgeoning literature on feedback in higher education.

The potential of feedback in promoting effective student learning has been well-articulated by various researchers (e.g. Black and Wiliam 1998; Hattie and Timperley 2007; Shute 2008). Feedback plays a critical role in helping students close the gap between current and desired understandings, by clarifying misconceptions and identifying flaws in learning strategies and skills (Sadler 1989). It also contributes to student self-regulation: the planning, monitoring and evaluation of learning, and the

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adaptation of learning strategies to task demands and progress (Pekrun et al. 2002). In its most productive forms, feedback goes beyond the development of students' knowledge or skills in the direction of nurturing students' capabilities for independent judgment, problem-solving, self-appraisal and reflection (Sadler 2010). This is congruent with the position that for students to be making constructive use of feedback, they need to be monitoring the quality of their work at increasingly higher levels.

Feedback is, however, frequently reported by students to be inadequate in helpfulness, timeliness, consistency, specificity and clarity (Bailey and Garner 2010; Carless 2006). The structural limitations of mass higher education are also a barrier to the development of feedback processes (Hounsell et al. 2008). These compound the difficulties faced by teachers, which are in turn exacerbated by their often limited awareness, ability, time or will-power to attend sufficiently to the complexities of the feedback process. Feedback remains a perennial source of discontent amongst students because they seek timely and helpful dialogue about their progress, yet the university experience cannot reproduce the sustained support of the secondary school.

Some recent contributions to the feedback literature are conceptual (e.g. Sadler 2010), whilst others are accounts of relatively small-scale data collection at a module, course or faculty level within a specific university (Pokorny and Pickford 2010; Wingate 2010). Many papers include valuable suggestions about how feedback could be more effectively provided and Nicol (2010) is exemplary in this aspect, not least in indicating how dialogic feedback can be promoted in ways that are not labour-intensive. To what extent, however, is the cumulative effect of the growing literature on feedback contributing to significant ways forward in its theory and practice? We believe that the study of feedback in higher education needs new thinking and re-conceptualisation. Reinforcing this position is a conviction that relatively superficial adjustments, such as enhancing the promptness, volume or even quality of feedback provision may be insufficient to move the field forward significantly.

A promising development elaborated in recent literature (Beaumont, O'Doherty, and Shannon 2011; Carless et al. 2011; Nicol 2010; Price, Handley, and Millar 2011), and underpinning the current paper, is the notion of dialogic approaches to feedback. Accordingly, we adopt a definition of feedback as 'all dialogue to support learning in both formal and informal situations' (Askew and Lodge 2000, 1). Dialogue is more than conversation or exchange of ideas, it involves relationships in which participants think and reason together (Gravett and Petersen 2002). Our emphasis on dialogue is an explicit attempt to circumvent the limitations of one-way transmission of feedback which frequently arises from the dominant structural constraint of written comments on end of course assignments. Dialogue is also a useful tool for reconciling the different perceptions of teachers and students of the feedback process which have been discussed by a number of researchers (Adcroft 2011; Carless 2006; Maclellan 2001).

This article is conceptual in nature. Its objective is to explore the question: how might teachers in higher education optimally construct dialogic feedback in order to foster students' productive learning? The contribution of the paper lies in analysing the influences of the discipline on three dimensions which we have developed through reviewing, analysing and synthesising relevant literature. From this synoptic view of the existing knowledge base on feedback in higher education, we categorised

emergent themes into three different elements. We have named these dimensions: cognitive, social-affective and structural, as an organisational device to chart current and future directions in feedback research. We should acknowledge before proceeding that there are obviously alternative ways of naming and organising dimensions of the feedback process. Indeed, a further element would be a cultural dimension, especially pertinent in view of the internationalisation and increasing mobility in higher education.

In the remainder of the article, we define and discuss cognitive, social-affective and structural elements and develop a framework organised around these three dimensions. We then draw out implications of the framework by identifying from the dimensions, six features of optimal feedback practice and considering the main barriers arising. We conclude by charting avenues for further research across the three dimensions.

A framework for effective feedback

From our review and synthesis of literature, we infer that the academic discipline profoundly influences the feedback process. The discipline defines what intellectual content is the subject of the feedback process and what student cognitive attributes should be fostered through feedback (the cognitive dimension). It also affects how students relate to the teacher, their peers and the subject matter, and respond emotionally to feedback and assessment (the social-affective dimension). The disciplinary practices in conjunction with institutional policies determine how the feedback process is arranged and what resources are mobilised in providing feedback (the structural dimension). The first two dimensions relate mainly to what teachers and students do within specific learning environments. The third dimension is of a different category, and includes elements that are both within and outside the immediate influence of students and teachers.

The dynamic interplay between the dimensions is expressed by the feedback triangle (Figure 1), where the essence of each dimension is depicted as forming a part of the feedback space. The three areas interact in that developments in one can be supported or undermined by actions in another. Accordingly, the three aspects need

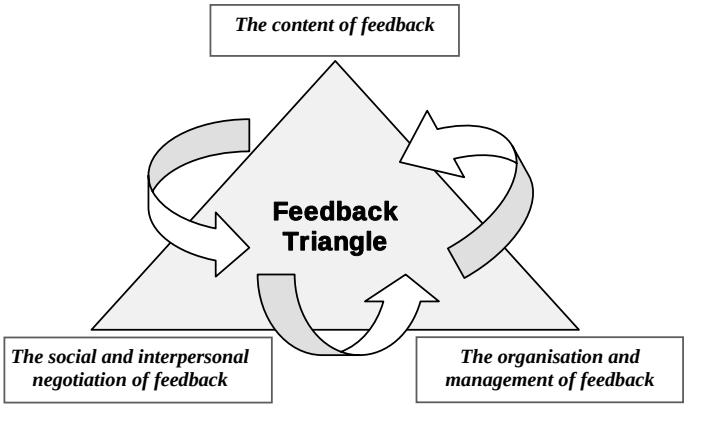

Figure 1. The feedback triangle.

to be considered in relation to one another in analysing how teachers formulate ways to organise feedback effectively. This is particularly the case because elements of the structural dimension sometimes act inadvertently as a barrier to the development of feedback processes through the other two dimensions. The triangle captures the essence of our framework. The discussion below then explores further by unpacking the complexities in each dimension, identifying issues that impede productive feedback and suggesting ways to address them.

The cognitive dimension

By the cognitive dimension, we mean the content of feedback, for example, discussion of a concept, technique, strategy, procedure or other aspects of the quality of the student work. The content may not be limited to academic knowledge, but depending on the nature of the task or the learning needs of the student can also focus on skills, values, attitudes or task completion strategy. We begin our analysis of the influences of the discipline on the cognitive dimension of the feedback process by noting core elements of effective disciplinary learning. Members of a discipline share a common set of knowledge such as beliefs, values, concepts and principles, as well as methodologies and skills for investigating disciplinary problems and practising in the profession (Ratcliff 1997; Stark and Lattuca 1996). Learning entails engagement with problems embedded in the academic discourse that communicates these key disciplinary components, such that students will become increasingly confident in participating in disciplinary practice and pursuing lifelong learning (Engle and Conant 2002).

The effective student progresses by taking meaningful actions in tackling assessment and learning tasks which represent disciplinary problems. Such actions include discerning key aspects of the problem, applying appropriate knowledge and skills to analyse it and formulating hypotheses and developing solutions (Bowden and Marton 1998). Throughout the process, successful students are likely to self-regulate their learning (i.e. self-evaluate the quality of work-in-progress and/or the task completion strategy) in view of discipline-specific goals and standards (Hattie and Timperley 2007). These actions are manifestations of deep approaches to learning wherein students seek to integrate internal meanings and relations among key aspects of the learning problem in order to devise viable solutions.

Although previous research demonstrates that deep learning is supported when assessment prioritises understanding over memorisation and allows sufficient time to tackle tasks in the light of clear goals and standards (Gibbs 2006; Prosser and Trigwell 1999), assessment systems in reality often fall short in this respect (Knight 2002). Some students may enter university with prior experiences of relying on factual recall for survival in competitive school examinations (Jones, Jones, and Hargrove 2003). University assessment systems sometimes unwittingly reward instrumental uses of cues (e.g. what questions are likely to be tested) to gain higher grades, rather than deep understanding (Miller and Parlett 1974).

For learning to be effective, students need to be assisted to become cue-conscious – an essential attribute of self-regulative learners (Boekaerts 2010; Heikkilä and Lonka 2006). Cue-consciousness refers to the ability to identify signals in tutors' discourse about what is important in the discipline; what is required by the assessment process; and what can be done to obtain optimal results.

Cue-consciousness is particularly relevant to feedback, as students often do not understand the purposes of feedback, sometimes privilege written over verbal feedback and may have received little modelling or guidance on how to use feedback (Price, Handley, and Millar 2011). The cue-deaf (Miller and Parlett 1974) often find written feedback to be too deeply encrypted, and may not be able to recognise verbal commentaries and other implicit messages as comprising feedback. Cultivating among students sensitivity to cues is an important part of pedagogical literacy (Price, Handley, and Millar 2011) and a facilitator for the development of self-regulative capacities (Nicol and Macfarlane-Dick 2006).

To sum up the cognitive dimension, feedback needs to focus students' attention on how to tackle disciplinary problems effectively, how to increase their capacity to self-regulate and how to use feedback productively. It draws students' attention to key aspects of disciplinary problems, guides them to apply knowledge and skills for formulating hypotheses and testing solutions, and assists in their appraisal of the gap between current and desired performance.

The social-affective dimension

By social-affective, we mean that feedback is a social practice in which the management of relationships represents a source of emotions influencing learners' ways of studying. This dimension concerns how feedback implies messages about students' social role in their learning environment, and how students' emotions are engaged as they undertake learning and assessment tasks. The literature indicates the interaction of social-affective issues with students' sense of identity in the discipline (Higgins, Hartley, and Skelton 2001), ability to self-regulate learning (Boekaerts 2010; Pekrun et al. 2002), and level of engagement with feedback (Price, Handley, and Millar 2011).

Disciplinary cultures generally entail an imbalanced teacher–student power relationship which can impede students from becoming active agents in the feedback process (Boud 2007; Hyatt 2005). Power imbalance in the teacher–student relationship might seem inevitable considering the dual teacher role as the assessor and facilitator of learning (Ramsden 2003), but at the heart of the issue is the polarised teachers' and students' positions in the discipline. Perceived unequal power relationship with teachers can cause students to lose confidence in obtaining teacher feedback or distrust their teacher's commitment to enhancing their performance (Price, Handley, and Millar 2011). This can lead to 'faking good' (Gibbs 2006), when students try to give the impression that they are more knowledgeable than they are for fear that revealing weaknesses may count against them in summative assessment.

Assessment and feedback experiences can arouse positive (e.g. pride or satisfaction) or negative (e.g. anxiety or anger) reactions (Pekrun et al. 2002). Positive emotions encourage self-regulation and flexible strategies (related to deep learning), whereas negative emotions prompt external regulation (e.g. over-reliance on teacher guidance or on peers) and rigid strategies (associated with surface learning) (Pekrun et al. 2002). Negative emotions, in particular, are associated with threats to student's sense of identity and self-esteem (Crossman 2007; Falchikov and Boud 2007) or unproductive feedback experiences. These can range from the trauma of receiving a fail grade, to more mundane events, such as neglecting to collect feedback or seek help (Price, Handley, and Millar 2011). Affective threats are

exacerbated when teachers are not fully aware of students' negative emotional reactions to feedback (Higgins, Hartley, and Skelton 2001). Positive teacher responses involve teachers showing empathy with students' emotions about assessment (Crossman 2007; Falchikov and Boud 2007), and bridging the social distance with students sensitively so as to foster students' trust in teachers (Carless 2009). We are not proposing, however, that feedback should be too 'soft'. Critical feedback can often be the most penetrating and useful, and some overconfident but underperforming students may at times need frank criticism. Being open and responsive to critical comments is also a key attribute of effective learners (Butler and Winne 1995). An appropriate balance between support and critique in feedback can, however, be difficult to achieve in view of the different preferences and reactions of individual learners.

The input of peers, a recurring undercurrent of our perspective on dialogic feedback, can be an effective way of reducing the impact of power-relations and negative emotional reactions discussed above and strengthening the social-relational aspects of feedback. Peer support can, for example, be made feasible through schemes of peer-mentoring and learning communities in departments and residential halls (Fox et al. 2010; Zhao and Kuh 2004). Such strategies can support the development of empathy and trust between peers (Värlander 2008). To facilitate such processes, a productive strategy involves dealing sensitively with possible student resistance to advising peers or being evaluated by them (Liu and Carless 2006).

The effective student makes use of feedback from peers and tutors to channel their emotions towards their self-regulation of learning. Feedback can be employed to facilitate self-regulation by modelling strategies for regulating motivational beliefs and reassuring students that emotions are a natural part of learning (Boekaerts 2010). Given the inherent challenges of subjecting one's performance to standards and moving into uncertain zones of disciplinary practice, the effective student must be sufficiently self-motivated, self-confident and determined to be able to exercise a sense of agency in confronting emotional risks (Barnett 2007).

To sum up the social-affective dimension, feedback in its most productive forms is experienced as a social and relational process in which dialogic interaction within a trusting atmosphere can help to promote learner agency and self-regulation. The management of emotions can support relationships, the uptake of feedback and promote positive learning dispositions.

The structural dimension

By structural, we mean the timing, sequencing and modes of feedback, allied to resources for generating and providing feedback. This dimension relates to how feedback processes are organised and managed by teachers and institutions. Structural constraints such as modularised programmes, large class sizes, the multiple demands of academic life, the intensification of workloads and the imperative to produce research outputs exacerbate the challenges of engineering effective feedback. These realities can impede students and teachers from engaging in dialogic feedback (Beaumont, O'Doherty, and Shannon 2011; Price, Handley, and Millar 2011).

The diversity of assessment types and experiences across disciplines (Boud 2000; Entwistle and Tait 1995) requires flexible feedback provision. Flexibility lies both in

the modes and timing of feedback. Students in different disciplines, for example, may have varying needs and preferences for feedback. In disciplines where extended written communication is dominant, teachers may engineer opportunities for students to receive or generate feedback on work in progress. In applied work or clinical practice, it may be more common to provide immediate verbal feedback or oral and written feedback simultaneously. Written feedback, when engaged with sufficiently, has the potential to allow unhurried reflection and can be retained over a lengthy timeframe. Verbal feedback can flexibly accommodate students' needs (Orsmond, Merry, and Reiling 2005), allow negotiation of meaning, help develop relationships and, when effective, can clarify confusions promptly.

Timing of feedback is a critical issue. When feedback arrives too late, it is unlikely to be acted upon. Feedback provided too soon after a student experiences a learning difficulty may, however, deter independent judgment that is crucial for self-regulated learning (Sadler 2010). Task design is an important structural element impacting on timing and uptake of feedback, and is generally most productive when assessment tasks prompt students to spread study time evenly throughout the duration of a module (Gibbs 2006). Integrated multi-stage assignments generally facilitate timely comments and student uptake of feedback. An assignment divided into two or more phases permits iterative feedback cycles which facilitate engagement with feedback and the prospects of improvement from one task to the other (e.g. Prowse et al. 2007).

Some of the structural barriers to feedback provision can be mitigated by re-engineering the feedback process. For example, an 'interactive coversheet' (Bloxham and Campbell 2010) can be submitted alongside assignments, through which students request feedback on specific aspects of their writing. Tutors write the same quantity of feedback, so importantly workload is not increased, but it is more focused and dialogic because it is addressing students' perceived needs and may reduce unproductive comments from teachers (Nicol 2010).

A further aspect of flexibility concerns the mobilisation of disciplinary and non-disciplinary resources (Engle and Conant 2002). Disciplinary resources are those which embody the issues, practices and discourses characteristic of a discipline. These may include exemplars demonstrating high-quality student work (Handley and Williams 2011), practitioners involved as guest speakers providing analyses of workplace scenarios (Wearmouth, Smith, and Soler 2004), or senior-year students suggesting tips and strategies for junior-year peers (Topping 2005).

Non-disciplinary resources are learning tools applicable to all disciplines, which may comprise traditional media such as encyclopaedias and dictionaries, but are increasingly represented by new technologies, such as mobile devices, electronic voting systems (EVS), learning management systems and social networks. For example, students can answer multiple-choice questions through an EVS system and engage in 'peer instruction' to convince peers of their answer; opportunities for dialogue occur as students interact, and are challenged to re-appraise their reasoning when the correct answer is revealed (Nicol 2007).

Technology within the structural dimension can also play a role in personalising feedback, and so contribute to strengthening teacher–student relationships, that is the social-affective dimension. One approach is by using podcasts to facilitate verbal feedback in MP3 format. Podcasting allows more detailed and nuanced feedback, enhances students' perceptions of teacher's concern for their progress, but increases

staff workload and the additional volume of feedback may obscure the key messages (Savin-Baden 2010).

To sum up, structural constraints are a major barrier facing effective feedback processes and arise from assessment policies, practices and the ways universities are organised. Ideally, universities would allocate sufficient human and material resources to reduce these constraints. In cases when these resources do not materialise, the situation could, to some extent, be mitigated by flexible feedback provision and the mobilisation of various tools and resources, especially technological ones. Adaptive use of resources can alleviate some of the challenges within the structural dimension, make feedback provision possible beyond the temporal-spatial confinements of the classroom, involve multi-modal materials and multiple agents in feedback processes, and create opportunities for collective learning and individual reflection.

Implications of the framework

To summarise, the analysis of the cognitive dimension of the feedback process leads us to propose that when providing feedback, emphasis should be given to engaging students with key disciplinary problems, sharing with them the multiple purposes of feedback and modelling how students can self-regulate their own learning. Our analysis of the social-affective dimension prompts us to suggest that students need to be stimulated through the feedback process to develop a sense of agency and responsibility. These goals are supported by trusting relationships and sensitivity when dealing with students' emotional responses and psychological needs. The analysis of how the discipline impacts on the structural dimension indicates the need to deploy feedback and assessment arrangements flexibly; and to mobilise disciplinary and non-disciplinary resources in order to generate enriched and relevant feedback. Technology-enhanced feedback is noted as a promising direction which affords opportunities for flexible feedback provision.

The three dimensions are closely interconnected in that they build on each other in terms of mutual support. Following from this, we envisage feedback as involving the interplay of three building blocks represented as an architecture of dialogic feedback in Figure 2. The block at the top of the figure represents the cognitive dimension, implying that the content of feedback is most central to the improvement of student learning. The social-affective and structural dimensions are building blocks supporting the content of feedback in that its substance can be derailed if social-affective and organisational factors are not handled effectively. Enhancement of feedback practice in one dimension often implies concurrent adjustments in the other two. A simple illustration demonstrates this interplay. Students actively making use of feedback from peers and tutors to self-regulate their own performance (cognitive dimension) can be facilitated by trusting relationships between participants (social-affective dimension) and the strategy of using a multi-stage assignment (structural dimension) which enables students to use evidence from the first stage in improving the next one.

To sum up, the discussion leads us to propose the following six key features (two derived from each of the three dimensions) of feedback practice which are included in abbreviated form in Figure 2. This is not to say that other alternative features are

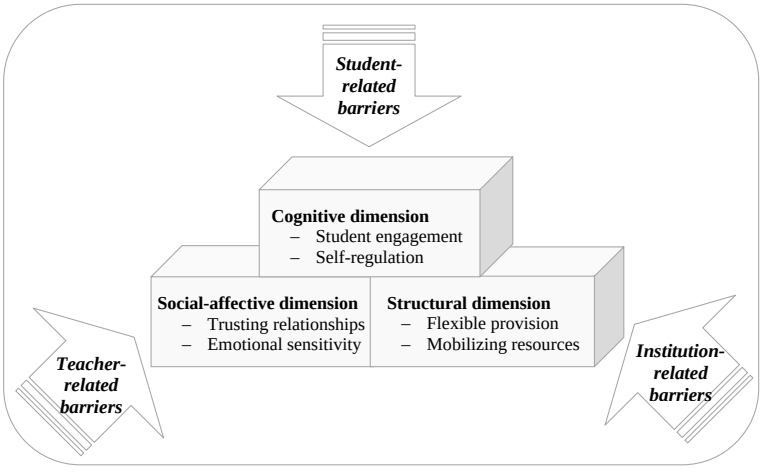

Figure 2. The architecture of dialogic feedback.

not plausible, simply that these follow most pertinently from our analysis. The features of effective feedback derived from our framework involve teachers:

(1) stimulating student engagement with disciplinary problems through dialogic feedback;
(2) developing student self-regulation through inducting students to the multiple purposes of feedback and their active role in generating, processing and using feedback;
(3) nurturing collaborative and mutually trusting teacher–student and peer relationships;
(4) showing sensitivity to students' emotional responses and psychological needs;
(5) being flexible in the provision, timing, forms and sequencing of feedback, to facilitate student uptake;
(6) mobilising disciplinary and non-disciplinary resources for feedback provision, especially new technologies.

There is, of course, a danger that proposing a set of features of effective feedback practice fails to problematise the feedback process sufficiently, or acknowledge the barriers to implementing them beyond small groups of enthusiasts. We have alluded throughout this article to various challenges and summarise here three different levels of barrier that need to be accounted for in relation to attempts to enhance feedback processes. Institutional structures, incentives and rewards do not explicitly encourage the development or refinement of effective feedback practice. Teachers are likely to have other priorities or be uncertain of good practice in dialogic feedback. Students may be sceptical or unprepared in taking responsibility for generating, reflecting on and using feedback, and may lack experience or confidence in developing high level self-regulative capacities. Teacher and student challenges are also exacerbated by their different understandings and perceptions of the feedback process. These three sets of barriers are represented in Figure 2 as forces impacting on the feedback process.

Conclusion

In this article, we have synthesised a wide range of literature and conceptualised it according to three aspects of a feedback triangle comprising cognitive, social-affective and structural elements (Figure 1). We have proposed a framework which seeks to analyse feedback practice coherently in order to promote dialogic feedback and self-regulated student learning. The framework is presented as an architecture of dialogic feedback nestled within a series of challenges (Figure 2).

Research directions in the three dimensions discussed in the paper are now suggested. A significant strand of recent research interest within the cognitive dimension concerns dialogic forms of feedback as a facilitator of self-regulated learning. Particularly needing further research are workload-efficient means of involving students in classroom activities which develop self-regulative capacities in tandem with feedback from peers and tutors. Related to this, the following issues need more exploration: How do teachers most effectively support students in acquiring self-regulative capacities (cf. Boekaerts 2010) and how can they be prompted to develop them further? What is the nature of feedback that optimally supports such development? How do low, medium and high achieving students enhance their self-regulative capacities in response to feedback (cf. Orsmond and Merry, 2012)?

With respect to the socio-affective dimension, relational issues and the emotional side of feedback merit further exploration. How do relationships and trust between students and teachers impact on the feedback process? Under what circumstances are critical comments valued and appreciated, and when do they discourage and demoralise? Are there identifiable qualitative differences in how low, medium and high achievers respond to the emotional side of feedback?

Research into innovative ways of arranging the structural dimension might also yield rewarding outputs. Particularly useful would be well-researched reports of institutional attempts to adjust structures to support the enhancement of feedback practice. Whilst these can sometimes be identified on websites and anecdotally, more rigorous research-based analyses are required. Technology-enhanced feedback is clearly another major area for future research within the structural dimension. The key, as ever, is not in the technology per se but its role in advancing student learning. Under what circumstances does technology-enhanced assessment serve as a facilitator for effective feedback and when is the technology as much a distraction as an asset? What are workload-efficient means of technology-enhanced feedback?

Finally, how committed, within current resourcing regimes, are stakeholders to restructuring and re-conceptualising feedback? Teachers, for example, are already strained by the multiple demands of academic life. Without will-power, changed mindsets and careful consideration of issues spanning the three dimensions discussed in this article, re-conceptualisations of feedback risk remaining on a small-scale and with individual enthusiasts.

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