Delivering Effective Student Feedback in Higher Education: An Evaluation of the Challenges and Best Practice

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Article Info	Abstract
	Effective student feedback can have a significant influence on student motivation, learning and performance. However, feedback practices can be difficult to implement, thereby inhibiting the potential of feedback for student learning. Despite numerous attempts to improve the quality of feedback and student feedback literacy, difficulties persist, including disparate perceptions and expectations between teachers and students, while consistency, effectiveness and timeliness are often cited as areas requiring improvement. This review evaluates the key challenges faced by tutors in delivering student feedback and examines several approaches to delivering more effective student feedback. These include the principle of feedforward, a modified praise, question and revise (PQR) system referred to as the WWW system, directive versus facilitative feedback, dialogue as feedback, peer review, formative versus summative, constructive alignment and the use of digital and AI technologies. These approaches are evaluated in the context of effective feedback processes that influence student motivation, engagement, self-reflective learning and performance. These feedback approaches are further discussed in relation to the challenges faced by teachers and students in contemporary higher education, highlighting areas where further research may be needed.

Introduction

Providing effective student feedback has been identified as a critical component of student learning and an integral part of teaching (Orrell, 2006; Ramsden, 2003). Delivering feedback in a timely manner and ensuring that students have the opportunity to use it to improve learning is considered fundamental to its success (Poulos & Mahony, 2008; Shute, 2008). The notion of 'feed forward' is also associated with the effectiveness of feedback, as a means of improving performance in the future. It is therefore important to ensure that feedback meets its intended purpose, of delivering improvement to student learning and performance. As Pitt and Quinlan (2022) emphasise, 'Educators know that assessment and feedback practices are among the most effective levers for improving student learning in higher education (HE)' (Pitt & Quinlan, 2022).

Several attempts to define feedback in the context of higher education have been made, with Benne defining feedback as 'verbal and nonverbal responses from others to a unit of behaviour provided as close in time to the behaviour as possible, and capable of being perceived and utilised by the individual initiating the behaviour'

(Knight, 2012). Boud and Molloy (2013) define feedback as simply, 'information provided by teachers to students about their work' (Boud & Molloy, 2013). From a more practical perspective, feedback can be conceptualized 'as information provided by an agent regarding performance or understanding' (Hattie & Timperley, 2007), which can take various forms such as corrective, facilitative, directive, alternative or affective (Burke & Pieterick, 2010). However, it is important to note that the effectiveness of feedback can vary and individual students perceive feedback in different ways.

Despite extensive literature and research on the effectiveness of student feedback, considerable challenges still face tutors and teaching staff responsible for delivering assessment and feedback. In particular, students repeatedly cite issues with feedback consistency, effectiveness and timeliness. Student dissatisfaction with the effectiveness of feedback is iterated internationally by national student surveys, such as the UK National Student Survey (NSS) or the Australian Course Experience Questionnaire (CEQ) (MacKay et al., 2019; Rowe & Wood, 2008). Furthermore, this dissatisfaction is echoed by teaching staff themselves, who spend considerable time and effort producing feedback, which may never be collected or reviewed by students (Orsmond et al., 2005).

The aim of this review is to highlight the key challenges faced by teachers in higher education in delivering effective student feedback and to emphasise the importance of feedback in the context of improving student understanding, performance and learning. I will discuss the student perceptions of feedback and provide several examples of practical approaches, including recent developments in digital and artificial intelligence technologies, to provide feedback that aims to meet the goal of enhancing student learning. I will also place feedback in the context of the particular needs of students and how teachers may be able to embed a culture of feedback literacy within their programmes.

The Value of Feedback

'Assessment and feedback practices are among the most powerful influences on students' learning in higher education (HE)' (Baartman & Quinlan, 2023). Assessments in higher education have traditionally been dominated by a testing culture, with an emphasis on assessment of learning rather than assessment for learning (Black & Wiliam, 2018; Knight, 2012; Wiliam, 2011). The latter emphasises the potential for assessments to enhance and support the learning process. Integrating assessments across programmes and aligning assessments with learning outcomes, referred to a constructive alignment, facilitates the process of assessment for learning and promotes both the evaluation of student competencies and the enhancement of student learning (Biggs, 1996; Biggs et al., 2022; Hecker et al., 2023). For students to be successful within this structure, feedback is critical, as it enables students to understand progress, areas for improvement, weaknesses, strengths and competencies.

Numerous research on the value of feedback in higher education highlights its positive effect on improving student outcomes. In a study by Higgins *et al.,* (2002), the majority of students viewed feedback as useful for identifying strengths and weaknesses and for providing guidance for improvement (Higgins et al., 2002). The intrinsic value of feedback to support a deeper learning experience was supported by a study by Hounsell *et al.,* (2008), who further conceptualised a feedback loop that depicts feedback as an ongoing and iterative process (Hounsell et al.,

2008). The feedback loop reinforces student's prior experiences (figure 1), by providing initial guidance on assignments or tasks. Providing feedback on the performance of a given assignment is then further supported by feedforward responses to students work, thus initiating the feedback cycle once again. Contemporary approaches to feedback place students at the centre of this process, as pro-active participants in the feedback loop. Therefore, feedback is most valuable when strategies that promote progress and support learning outcomes involve students as active participants, enabling them in interpret, internalize and act on their external feedback (Nicol & Macfarlane-Dick, 2006).

There is general consensus among university educators that feedback improves student learning and provides critical support to skills and performance development (Azevedo & Bernard, 1995; Bangert-Drowns et al., 1991; Moreno, 2004). Feedback is no longer considered merely a device to correct errors. The value of feedback in higher education is succinctly encapsulated by Orrell (2006) as, 'Feedback at its best is pivotal in the learning and assessment process.' (Orrell, 2006). Academic judgements on student's work can have a profound impact on student motivation, self-esteem, understanding and educational goals. Feedback, at its best, can also encourage dialogue between tutor and student, and promote self-regulated learning (Nicol & Macfarlane-Dick, 2006). Furthermore, there is evidence to suggest that students who actively engage in their feedback demonstrate improvements in their learning (Wingate, 2014), although there is a real need to bridge the gap between theory and the actual practice of delivering feedback to students.
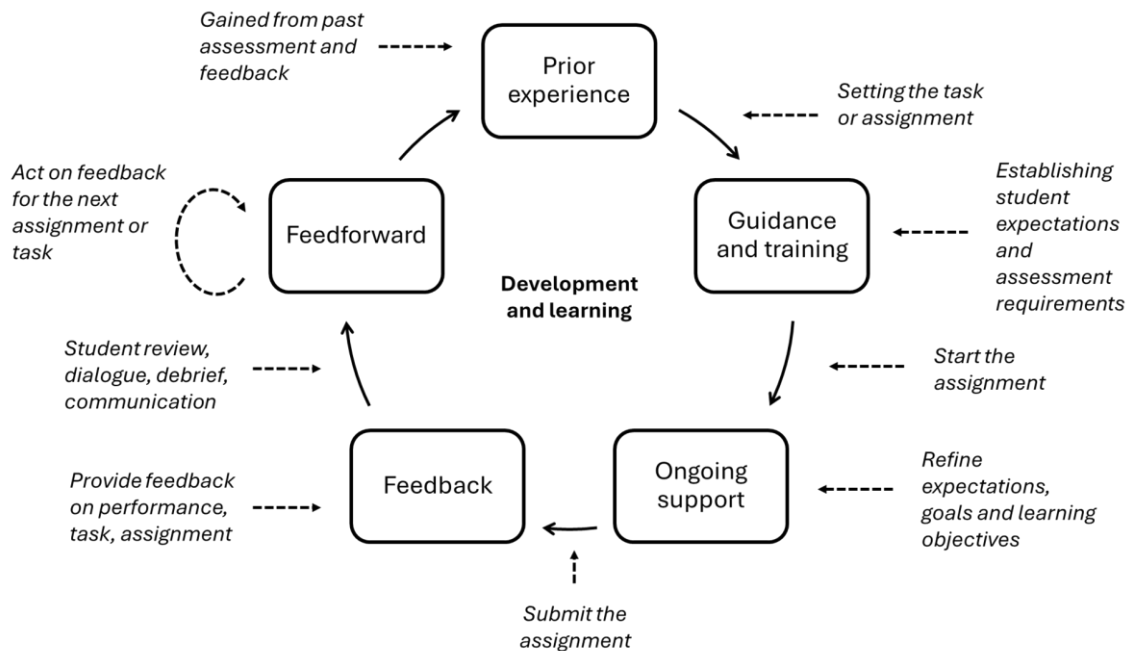

Figure 1. Enhancing Student Learning through a Feedback Loop

Grades, Assessment and Feedback

The widespread practice of attributing grades to student assessments, as a means of measuring performance outcomes, has become a naturalised phenomenon in higher education (Lynch & Hennessy, 2017). Despite

numerous counterarguments, evidenced by recent research, the practice of grading of assessments is pervasive (Rapchak et al., 2023; von Renesse & Wegner, 2023). The ideology that a modern and liberal university should function to develop critical, reflective and independent thinkers is a robust argument against graded assessment (Lynch & Hennessy, 2017). However, universities must meet the demands of internal and external stakeholders (including the public and future employers), be accountable for maintaining academic standards, provide assurance on the quality of courses and ultimately graduate students according to their level of attainment (Foster, 2016).

The marking of assessment and the provision of feedback are often seen as intrinsically linked by both staff and students (Chalmers et al., 2018). There is also a perception that students place substantial value on assessment grades, which are sometimes seen as the main motivation for course performance (Harlen et al., 2002). This is despite conflicting studies that suggest there is no association between motivation and measurable performance (Chamberlin et al., 2023; McMorran et al., 2017). A study by Chamberlain *et al.,* (2023) further suggested that grade performance enhanced anxiety and encouraged an avoidance of more challenging aspects of learning, rather than acting as motivation that favours improved learning (Chamberlin et al., 2023). It may also be the case that high performing students are more motivated by grades than lower performing students, with obvious negative impact on equity ((Pulfrey et al., 2013). Nevertheless, grading assessments remains the pervasive practice and therefore it has been challenging to separate student feedback from the grade they receive (Rogers, 2022).

Research on student motivation has its originals in behavioural studies. For example, following a metanalysis, Deci *et al.,* (1999) found that tangible, performance-related rewards significantly undermined intrinsic motivation, leading to a negative correlation between extrinsic rewards and task performance (Deci et al., 1999). Similarly, qualitative feedback has been shown to be more effective at enhancing motivation than quantitative feedback (Giamos et al., 2023) . This underlines the importance of understanding the nuanced effects of different types of feedback, and the context in which it is provided, particularly on student motivation and engagement. There is evidence to suggests that rewards, praise or punishment have little impact on the effectiveness of feedback (Hattie & Timperley, 2007).

Research on student perspectives of feedback suggest that their focus is on improving performance, rather than learning (Duncan, 2007). This may create an internal pressure on tutors to primarily use feedback to justify grades, rather than providing an opportunity for students to improve their learning (Tuck, 2017). The entanglement of grades and feedback was explored by Winstone and Baud (Winstone & Boud, 2019; Winstone & Boud, 2022), stressing that assessment often dominates and inhibits the learning function of feedback. They highlight the challenges caused by the entanglement of grades and feedback, noting that students tend to prioritize grades over developmental feedback and often disregard comments in favour of more accessible grades. Hattie and Clark further stated that, 'Grades often tell the student 'the work is over'. We must not confuse grading with feedback', thus reiterating the value of separating grades from feedback (Hattie & Clarke, 2018). These studies further highlight the benefits of shifting away from the perceived primacy of grades in university education and towards the utility of feedback for improving student engagement and the development of deep learning skills. This leads to a simple concept that grades are in the past, while feedback is for improvement in the future.

What Students Want from Feedback

Several studies suggest that students consider written and verbal feedback on assignments is failing to serve the purpose of helping them to improve and is inadequate at supporting their learning (Blair et al., 2013; Lizzio & Wilson, 2008). These negative assertions may also be influenced by the transition from school to the first year of university, which is accompanied by adjustments to independent learning, unfamiliar assessment formats and large class sizes (Blair, 2017). In a longitudinal study of student's perspectives of feedback, Carless (2019) states that 'Students often felt that there were dissonances between feedback that teachers were providing and what would be useful or palatable to them' (Carless, 2020). There is a clear disconnect between what educators are providing and what student want from their feedback.

A study by Voelkel *et al.,* (2020) revealed that students feel that good feedback should encompass several important features, including being detailed, specific, honest, and constructive (Voelkel et al., 2020). The feedback should not only point out areas for improvement but also justify the mark assigned to the work. It is interesting that students desired a justification of their grade and, although this provides transparency and clarity, it does undermine the concept of disentangling grades from feedback (Winstone & Boud, 2022). Furthermore, the study underscores the value of positive reinforcement in feedback and a preference for constructive and substantive feedback that facilitates their overall improvement. In this respect student preferences complement the principle of feedforward as a valuable learning tool that enables them to understand their strengths and weaknesses (Saeed & Mohamedali, 2022).

Most feedback received by students is either written or verbal feedback, although preferences for each format differ noticeably between students (Blair et al., 2013). This disparity highlights the complexity of feedback provision and the necessity of catering to diverse student requirements and learning styles. Students also become frustrated with inaccessible, poorly constructed or ambiguous feedback, highlighting the importance of clarity and structure in feedback provision, as well as consistency within modules and across programmes of study. Students further emphasise the importance of specific feedback that is aligned to the particular assignment but also expressed a desire for feedback to be transferable to future assignments (Lizzio & Wilson, 2008).

One area that students consistently flag as problematic, is feedback timeliness (Williams et al., 2008). This is a growing challenge for teachers, especially in institutions that support increasing student numbers, and more broadly as consumerisation of higher education adds to internal pressures. Research indicates that there is a correlation between timely return of feedback and the perceived quality of learning provision (Hanmore et al., 2023). However, debate exists in the literature as to the relative value of immediate versus delayed feedback and whether students are willing to wait longer for higher quality feedback (Chang et al., 2012; Fluckiger et al., 2010) or whether frequency is more important than quality (Gibbs, 1999). Furthermore, a study by Poulos and Mahony (2008) suggests that the effectiveness of feedback extends beyond timeliness to also include the credibility of the tutor delivering the feedback (Poulos & Mahony, 2008). Responses to recent national student surveys and contemporary research on feedback effectiveness seem to indicate that timeliness is a key factor in student perceptions of quality and teachers ability to support students in their learning (Carless & Winstone, 2023; Irons

& Elkington, 2021; Paterson et al., 2020).

Effective Feedback Practices

Different types of feedback exert varying levels of influence on student motivation, learning improvement and performance. Hattie and Timperley (2007) emphasise that effective and informative feedback is instrumental in reducing the discrepancies between current understanding and goals, ultimately leading to improved learning outcomes (Hattie & Timperley, 2007). Kluger and DeNisi (1996), further suggested that feedback is more effective when it provides information on correct rather than incorrect responses and when it builds on changes from previous performance (Kluger & DeNisi, 1996). The emphasis, therefore, is placed on positive feedback, rather than negative feedback, and feedback that can be used to feedforward to improve performance in the future (Quinton & Smallbone, 2010).

Feedforward has also been placed in the context of reflection and the importance of acquiring appropriate experiences, which have both been shown to improve student learning (Boud et al., 2013). Reflection or experience may not be sufficient to support improvements in learning when practised in isolation. However, when coupled with effective feedback, or indeed feedforward, they become a positive influence on improving student learning (Coulson & Harvey, 2013). The development of critical thinking skills and the ability to critically reflect is another layer of metacognition that students can learn and something that can be incorporated into curricula, particularly in formative assessment practices but also following summative assessments (Kruiper et al., 2022). Therefore, a direct link exists between the development of student skills, learning and the incorporation of effective feedback practises within higher education programmes.

One area of feedback research has focussed on the quality of feedback and efforts to improve the way in which written feedback is phrased and presented to students. In the UK, the NSS questions on assessment and feedback have evolved over the last 10 years, with emphasis changing from quality and quantity to timeliness, frequency and usefulness (for example, 'How often does feedback help you to improve your work?') (OfS, 2023). Therefore, the emphasis that institutions and educators place on improving feedback remains on quality and timeliness, with student responses reflecting assessment and feedback as persistent areas for improvement (Langan & Harris, 2019). Furthermore, teachers and tutors are the principal providers of feedback and therefore have primacy for ensuring feedback quality. The development of teacher feedback literacy is therefore critical for supporting both student feedback literacy and engagement (Carless & Winstone, 2023). For this reason, I evaluate several practical approaches to enhance delivery of effective feedback.

Feedback that Works?

There is no definitive consensus on what does and does not work in terms of feedback. As a formative tool, the emphasis is on growth and development of expectations, knowledge and learning. Academic staff also recognize the motivational value of feedback. However, there is scepticism about students' receptiveness to feedback, with concerns that students may focus solely on marks rather than using feedback constructively (Bailey & Garner,

2010). Therefore, I draw inspiration from the work of Shute (2008), who uses examples from the literature on formative assessment to make inferences and generalisations to include summative feedback (Shute, 2008). The emphasis is providing effective feedback on student output that supports understanding, skills development and the learning process (modified and summarised in table 1; adapted from Shute (2008) and Burke and Pieterick (2010) with addendum), irrespective of the formative or summative nature of the assessment.

Table 1. Feedback to Enhance Learning

Good feedback	Poor feedback
Focus feedback on the task or assignment	Focus feedback on the individual learner
Provide descriptive feedback (what, how, why?)	Provide verification or justification of grades
Provide feedback for the future – feedforward	Provide feedback on past performance
Provide feedback in stepwise or manageable units	Provide overwhelming or intimidating feedback
Link feedback to goals or learning objectives	Use praise sparingly or avoid highlighting competencies
Keep feedback as simple as possible	Sacrifice quality over quantity
Provide unbiased and/or objective feedback	Provide own opinions over those of the learner
Focus on learning and improvement	Focus on performance and evaluation
Provide timely, prompt feedback while learner is still engaged with the task	Delay feedback so that the learner disengages from the task
Use facilitative feedback	Use directive feedback
Provide individualised feedback	Provide normative comparisons to other students
Promote active participation or dialogue	Provide feedback as a monologue
Deliver feedback according to user's needs (written, verbal, digital)	Limit modality of feedback provision
Be a coach	Be a judge

A compellingly simple strategy is to be a coach, not a judge. In other words, the emphasis of any feedback comments should be on promoting student development, rather than passing judgement on the performance of the student. The emotional impact of feedback should therefore be considered by tutors. For example, it has been suggested that critical comments can negatively impact the self-esteem of students, while students often respond poorly to comments on their weaknesses, even if made with good intention (Bulut et al., 2019; Pitt & Norton, 2017; Rowe, 2017). It is therefore important to consider the phraseology of feedback comments so that the prominence is on a coaching style, rather than an evaluative or judgmental style.

In this way, students perceive the feedback as individualised and meaningful. Coaching has been shown to improve learner outcomes and skills acquisition in the setting of medical education (Gagnon & Abbasi, 2018; Lovell, 2018) and encourages self-reflection and self-regulated learning (Lovell, 2018). Reframing this approach in the context of written or verbal feedback is achievable with only minor modifications to the emphasis that the teacher places on their comments.

Directive versus Facilitative or Corrective versus Elaborative

Effective feedback often involves a balance between directive and facilitative elements, providing clear guidance while also encouraging self-reflection. Directive feedback generally provides specific instructions, corrections or suggestions on how to improve performance or achieve a particular goal. Facilitative feedback is a more supportive approach that aims to encourage students by promoting self-reflection, motivation and deeper learning. Using slightly different terminology, it has been shown that elaborative feedback was more effective than corrective feedback with regard to improvements in student knowledge (Butler & Woodward, 2018; Petrović et al., 2017). In a study by Thijssen *et al.,* (2019) students who received elaborative feedback reported higher levels of engagement compared to students who didn't received feedback, although no differences were observed in final grades (Thijssen et al., 2019). Both styles of feedback can be effective, when considering the purpose of feedback as a means to foster critical learning within the framework of feedforward, although facilitative or elaborative feedback is considered more valuable for deeper learning (Grant-Davie & Shapiro, 1987). Directive feedback certainly instructs students on what needs to be improved to enhance their performance and brings them nearer to the desired objective. However, the facilitative approach promotes student's agency over their feedback, rather than passively following tutor instructions and is a more learner-oriented style. Tutors should carefully consider the value and prominence of each approach in the context of the specific assessment.

The amount of directive versus facilitative feedback should be based on the task and the needs of the individual student, considering their learning style, motivation level and the nature of the assessment (Straub, 1997). However, this becomes problematic considering institutional policies on anonymity and the difficulties with large student cohorts, where the relationship between students and staff becomes less personal. Shute (2008) highlights the difference between high achieving and low achieving students and the need to balance the style and delivery of feedback to meet student needs (Shute, 2008). In this context, low achieving or struggling students may need more explicit instructions and directive feedback, while high achieving students may benefit from a more facilitative approach that challenges and promotes further learning. Examples of directive (or corrective) and facilitative (or elaborative) feedback are provided in table 2.

Table 2. Types of Directive versus Facilitative Feedback Comments.

Directive feedback (corrective)	Facilitative feedback (elaborative)
Addressing	Acknowledging
Advising	Affirming
Alerting	Assigning
Clarifying	Celebrating
Correcting	Challenging
Criticising	Commending
Directing	Cultivating
Editing	Empowering
Emphasizing	Encouraging
Explaining	Focusing

Directive feedback (corrective)	Facilitative feedback (elaborative)
Guiding	Fostering
Highlighting	Inspiring
Identifying	Motivating
Improving	Nurturing
Instructing	Praising
Pointing out	Questioning
Recommending	Recognizing
Reducing	Reinforcing
Rectifying	Reminding
Specifying	Stimulating
Validating	Supporting
Advantages	*Advantages*
Clarity: simple and clear, easy to understand what needs to be corrected or improved.	Empowerment: encourages students to take ownership of their learning.
Efficiency: time-efficient	Motivation: positive reinforcement and encouragement can boost motivation and self-esteem.
Specific: providing instructions to address issues or make improvements.	Long-term learning: fosters development and deeper understanding of subject.
Immediate: prompt direct action and correction.	
Disadvantages	*Disadvantages*
Less Autonomy: reduce the student's reliance on their own critical skills.	Ambiguity: may lack the clarity needed for improvement.
Demotivation: constant correction without positive reinforcement may demotivate students.	Time-consuming: may require more time to provide detailed feedback that encourages self-reflection.
Limited reflection: focus more on fixing errors than reflecting on the learning process.	Misinterpretation: requires clear guidance, students might consider feedback as rhetorical.

Modified PQR System and WWW System

The PQR system of praise, question and revise (Burke & Pieterick, 2010), is a similar approach to the strategy proposed by Hattie and Timperley (2007) that uses three key questions as a guide to provide formative feedback on assignments (Hattie & Timperley, 2007). They propose asking 'where am I going', 'how am I going' and 'where next', with the last question aligned with the feedforward approach or as a primary focus for summative assessments. The PQR system is a revised version that formulates feedback as comments, rather than questions. The praise element emphasises specific parts of a task that have been done well (in relation to the desired criteria), the question element highlights gaps in a student's understanding and points to areas that require further consideration, while the revise element provides feedforward advise or suggestions on how the student can improve next time. Rather than praise, question and revise, I propose that the modified WWW system invites tutors to better consider what questions they should be asking their students and uses the following questions as a reference point on which to base feedback; 1) what have you achieved, 2) what should you work on, and 3) what

should you do next (to improve)? The modification is more student centred and aimed at reframing tutor comments to be more explicit and conversational.

The first question, 'what have you achieved', aims to highlight what the student has done well but it is important to make this specific and align the praise with the task (table 3). Therefore, it may be advisable to explain why the element deserved praise, with verification and identification of how the student's output corresponded to the assessment expectations, rather than providing an empty 'good' or 'well done' comment. The second question, 'what should you work on', relates to weaknesses or gaps in the student's understanding, knowledge or explanations. Often these comments are phrased as a question, which students can perceive as being rhetorical, rather than feedback that requires action (Burke & Pieterick, 2010). Instead, phrase these as comments that allow students to appreciate the weaknesses in their assignment. The third question is linked directly to the second, as it reinforces areas for improvement for the future. There is good reason to focus on the third question as it supports the notion of feedforward, which students often state as a preference and which has been demonstrated to facilitate longitudinal learning (Hill & West, 2020). The 'what should you do next' question also encourages refinement and reflection by the student and is aimed at supporting self-directed learning by directing students to additional resources and materials. The primary aim is to guide students to be pro-active in internalising, engaging with and using their feedback.

The WWW system is designed to be both effective and timely. A common challenge for teachers is to know how much feedback to provide. This has previously been framed as the Goldilocks principle (Brookhart, 2017), which is based in the famous 19th century fairytale and saying, 'Not too much, not too little, but just right'. Studies suggest that students prefer quality feedback over quantity (Voelkel et al., 2020), while teachers have to consider time and logistics. The imperative is to provide specific, carefully phrased feedback that will be effective for students to become self-regulated and critical learners within the timeframe available to academics. This system shifts the emphasis away from performance related or judgemental feedback towards a feedforward approach that facilitates self-regulated learning, personal development and critical evaluation.

Table 3. Examples of Comments used within the WWW System

Feedback comment	Example
What have you achieved?	'Your intro started off very well, with clear scientific terminology and a focussed rationale.'
	'Your final discussion point was good, as it clearly made clear connections between the mechanism and disease.'
What should you work on?	'I wonder if you could be more precise on….'
	'I don't think this is scientifically accurate because….'
	'I wonder if you could have expanded on….'
What should you do next?	'Next time re-focus your abstract on the key findings, rather than the background.'
	'In the future, try to link your argument with the literature. Maybe you could use this resource (xxx) to support your argument.'

Feedback as Dialogue

The language or style of written feedback can have a significant influence on how students perceive and respond to tutor comments. Carless (2016) highlights the importance of feedback as a dialogue between tutor and student, where students play an active role in seeking, accessing, and using feedback to close the feedback loop (figure 1) (Carless, 2016). The emphasis is on creating successful feedback exchanges through dialogic feedback, with cumulative assessment tasks promoting active student engagement. Dialogic feedback is further supported by teaching and assessment scaffolding, whereby formative and summative assessments are linked across a module or programme and are further integrated with teaching activities that combine to support deeper student learning (Biggs, 1996; Murtagh & Webster, 2010). Assessment scaffolding enables programme assessments to be partitioned into smaller, more manageable components, which are assessed progressively (Kruiper et al., 2022). This allows students to build the competencies required for more complex tasks, with regular and timely feedback after each assessment component. This therefore feeds into the feedback cycle and provides a structured pathway for metacognitive skill and knowledge development.

Previous feedback to prompt cumulative engagement with the assessment cycle is supported by dialogue between tutor and student. However, challenges exist within modular programmes, where assessments and feedback events are considered in isolation, and where large student cohorts exist or where academic workloads are high. These challenges promote a unidirectional transfer of information from tutor to student, with detrimental consequences for learning and student satisfaction (Nicol, 2014). There is a strong argument for the involvement of students in the feedback process and for enhancing tutor feedback literacy in this area, which may mitigate for some of the challenges (Carless, 2016). Laurillard (2013) argued that the purpose of dialogue is to support students to apply their acquired knowledge and understanding through an ongoing and cyclical feedback process (Laurillard, 2013). The tutor's important role in encouraging students to actively engage with and act upon feedback emphasises the need for dialogue within the feedback process. Several authors have further advocated for sustainable feedback, which has been defined as, 'assessment that meets the needs of the present without compromising the ability of students to meet their own future learning needs' (Boud, 2000), which places dialogic feedback as a central feature of the sustainable feedback approach (Ajjawi & Boud, 2018).

In practice, there is still a prevalence of delivering feedback as a written monologue, even though students have been shown to better engage with feedback if it is more conversational (Carless, 2007; Carless et al., 2006). There are ways in which the style of dialogic feedback can be incorporated into more traditional forms of written feedback, that at least approach the manner of a dialogue. Firstly, feedback comments should be directed at the student as an individual, rather than about the student. Dialogue is about connecting and forming relationships. Secondly, the language should be personal and encouraging, rather than direct and judgemental, and thirdly, the style should be questioning, rather than explicit or framed as a blunt statement (table 4). The are some parallels with the WWW system and by no means are the two mutually exclusive. Studies have suggested that written feedback dialogue can also been improved by using assessment coversheets, which allow students to request the type of feedback they want and the areas of their academic performance they want to work on (Bloxham & Campbell, 2010). Assessment coversheets can give students a sense of agency over their feedback and provide a

more individualised experience (Keshavarz & Polat Köseoğlu, 2021).

Table 4. Examples of Framing Written Feedback in Dialogic Language

Dialogue / Personal	Monologue / Impersonal
'You did well at expressing your argument.'	'The student did well at expressing the argument.'
'I thought your case for your marketing proposal was well made. I would have liked you to include the budgeting information as well though.'	'They made a case for their marketing proposal but fail to include a budget.'
'You did well to mention the different sources of funding for medical research in the EU. For me, I would have liked you to mention industry funding as well.'	'The student mentioned some of the different sources of funding for medical research in the EU (but they failed to mention industry funding of research).'
'I found it difficult to follow your argument. You might want to consider working on the clarity of your sentences and how you can further develop your understanding of (the subject).'	'The argument lacks clarity and a poor understanding of (the subject).'
'I wonder if you could have expanded on the critical evaluation of (the subject). You might want to think about focusing on the question (or subject) as this could improve the emphasis of your essay.'	'The essay lacked critical evaluation and lacked focus.'
'I enjoyed reading your discussion on (the subject) in particular the way you framed your argument was clear. You justified your argument well with appropriate examples.'	'Good discussion on (the subject). Argument was clear. Good examples.'
'I think the best way to structure your project is to follow the guidelines we discussed in the workshop.'	'Project structure not well-defined. Please follow the guidelines provided.'

Timing of Feedback

For feedback to be an effective learning device, students need to know how they have performed and what they require to improve before they move onto their next task. The timing of feedback is therefore a critical consideration for teachers and a factor that can have considerable influence on the effectiveness of feedback delivery. Students often have difficulty using feedback information if it is received late during the academic cycle (Carless, 2006) and frequently cite the timing of feedback as an underperforming metric in their courses (OfS,

2019). The frustration of students with delayed or overdue feedback is reflected in their comments in national surveys, for example, ''Why can work be returned late, but you are not allowed to hand it in late?' and 'After all, we get penalised for late submission, so what happens if they don't get it done?' (Williams & Kane, 2012). Deficiencies in the timing of feedback have been acknowledged for some time with the UK NUS including timing as one of the 10 guiding principles of good feedback (Porter, 2009). The UK Quality Code (QAA) advice on providing feedback states, 'Feedback comments are provided in sufficient time to enable students to enhance their performance in subsequent assessment tasks' (QAA, 2018).There is therefore a desire from students and academics to deliver timely feedback, despite apparent discrepancies in the reality and logistics of doing so.

Various studies have indicated that students are more likely to act on their feedback if it is returned in a timely manner (Haughney et al., 2020; Lynam & Cachia, 2018). However, meeting these student expectations is increasingly challenging because of rising student numbers and diminishing staff-student ratios (Robinson et al., 2013). Restricted time frames may also result in the depreciation of feedback quality (Hanmore et al., 2023). Therefore, the practicability of the assessment format needs to be considered in the first instance. For example, essays are considerably more time consuming to assess than MCQs or SAQs. Modifying existing long-format assessments to short-format assessments may provide a viable mitigation, and combining these with online quizzes or automated feedback tools enables students to receive immediate feedback (more on digital tools below). For summative assessments however, the format still needs to effectively meet the requirements of the evaluation and learning objectives, rendering such mitigation more challenging.

Options to address problems with late feedback also include group assessments and peer feedback (below). Both approaches, by design, minimise the impact on teacher time and effort in writing feedback. Although group assessment has its own inherent difficulties, including ensuring equitable contributions and avoiding freeloading, group work has the benefit of allowing students to acquire collaborative and communication skills (Bloxham & Boyd, 2007). Cohort or group feedback, rather than individual feedback, can also reduce the amount of marking and time taken to write feedback, thereby expediting the process (Gibbs, 2014). This may include group discussions on model answers, comparators or exemplars (Nicol, 2021), and feedback on a sample of work produced by the current cohort. Sample feedback could also include discussion or workshops related to questions or topics that student's share common difficulties. In-class feedback may also have the added benefit of providing immediate feedback, or at least can minimise the distance between submission and return of feedback, in addition to simplifying the feedback task itself.

Peer Review and Feedback

Peer review and peer feedback has received considerable attention elsewhere in the literature and therefore will not be a major consideration in this review. However, peer review has been championed by several educators, as it is considered to play a valuable role in student learning (Falchikov, 1995; Liu & Carless, 2006; Nicol et al., 2014). For example, when students actively participate in peer feedback, they engage in a reflective process that promotes critical evaluation and transfers the control of feedback to themselves as active learners. In effect, the student takes on the role of a tutor, while those receiving the feedback obtain multiple viewpoints on how to

approach a task or solve a problem. Although peer feedback is a useful device for enhancing student leaning, and for lessening academic workload in the long-term, some prior instruction on how students should effectively apply peer feedback should be given. This includes guidance on the marking rubrics or marking criteria for that particular assignment, which provides essential information about the purpose of the assignment and how it will be assessed (Cooper, 2000). Support should also be provided to foster an environment where students feel comfortable providing and receiving feedback on each other's work. A certain amount of reticence from both provider and receiver of peer feedback can persist without appropriate tutor input. Low risk, formative assessment can provide the necessary practice for students to gain confidence in the peer review process. With tutor persistence, valuable improvements in student learning and a deeper understanding of the requirements of performance can be obtained from peer assessment and feedback, which can even promote the potential for life-long leaning (Falchikov, 2013).

Formative vs Summative Feedback

The long-held view is that formative and summative assessments are distinct entities in higher education, serving different purposes in the learning process. Formative assessment is primarily to support student development through the provision of feedback and guidance, while summative assessment is performed at the end of a teaching unit to evaluate learning achievement. However, opinions and practices have evolved in recent years to acknowledge the potential benefits of integrating formative and summative assessments so that both facilitate learning and development (Houston & Thompson, 2017), particularly when implemented longitudinally or at a programmatic level (Thompson & Houston, 2020). The origins of formative and summative feedback are therefore linked to their respective assessments, with summative assessment and feedback often dominating university education (Lau, 2016).

There is strong evidence to suggest that formative feedback enhances student progress and learning and is an effective way to support performance in summative assessments (Hattie & Timperley, 2007; Nicol & Macfarlane-Dick, 2006; Shute, 2008). A recent systematic review by Morris et al., (2021) outlined the key studies in this area (Morris et al., 2021). It has been demonstrated that students who participated in formative assessments that were designed to support subsequent summative assessments performed better than those who did not participate (Cobbold & Wright, 2021), while assessment performances were higher for students that had undertaken a formative exam prior to a final exam (De Paola & Scoppa, 2011). A study by Francis et al., (2019) suggested that feedback dissatisfaction, could be alleviated by increasing formative opportunities prior to summative assessments, thereby allowing students to act on the feedback they receive (Francis et al., 2019). However, for formative feedback to be useful for students it is important to consider how formative assessments are scaffolded into the design of courses. The formative assessment should be aligned with the summative assessment and learning outcomes to enable students to address deficiencies in understanding and develop the necessary academic skills to succeed. Broadbent *et al.,* (2018) further argue that, 'for summative assessment to benefit learners, it should contain formative assessment elements' (Broadbent et al., 2018).

The timing of formative feedback to support summative work also needs careful consideration, and debate

continues as to the relative effectiveness and merits of early versus delayed formative feedback and the frequency in which feedback events should be provided. It maybe that enhancements in the quality of feedback are not sufficient to provide gains in student learning or performance, without due consideration to the timing and frequency, even if the emphasis is on formative feedback (Pitt & Quinlan, 2022). Several studies suggest that when students are able to engage with continuous feedback throughout a course or module, the effects on overall performance are positive (Alfalagg, 2020; Esterhazy & Damşa, 2019). Repeated and consistent opportunities to engage with feedback, as active participants, has therefore been demonstrated to be a successful strategy to help students adopt a more self-regulated, critical and deeper approach to their learning (Beccaria et al., 2019; Ilangakoon et al., 2022).

Although summative feedback may be considered redundant by some students, as it is received after a final submission (Vattøy et al., 2021), the value of summative feedback has been demonstrated in various studies. For example, one study on UK MSc students found that providing feedback on prior exam performance positively impacted future test scores (Bandiera et al., 2015). However, this effect appeared more beneficial for more able students. Glazer (2014) argued for the balanced provision of formative and summative assessments, particularly in the context of modularisation, coursework overload and constraints on teacher time and workload (Glazer, 2014). Further emphasis on improving feedback quality in this context was also provided, such as clear criteria, using descriptive comments, clear and specific explanations, engaging students and providing timely feedback. These are consistent with a structured approach to delivering effective formative and summative feedback that are integrated into a broader assessment scaffold across a programme of study.

Constructive Alignment and Marking Criteria

Constructive alignment is an approach to the design of curriculum whereby the learning outcomes of a course inform on the assessment method and, by association, the teaching activities are aligned to optimally assist students in attaining the course learning outcomes through assessment (Biggs, 1996). Therefore, the design of assessment should be considered at a programmatic level to align assessments between units of teaching (or modules), across a year of study and across a programme. Biggs et al., (2010) attest that, 'we need assessment tasks that tell us, not how well students have received knowledge, but how they can use it in academically and professionally appropriate ways, such as solving problems, designing experiments, or communicating' (Biggs & Tang, 2010). An important aspect of constructive alignment, therefore, is the synergy between formative and summative exercises and between individual assessment components across a programme so that students can build on performance. There is emphasis on the alignment of teaching and assessment methods with intended learning outcomes, to allow students to construct their own learning (Biggs, 2003).

The central tenet of constructive alignment is an integrated system of education that supports student learning (Biggs et al., 2022). Within this model, it becomes necessary to design learning opportunities so that students can successfully undertake assessments (Rust, 2002). Feedback plays a central role in enabling students to get to this point, by informing on how they can improve and enabling them to understand what they need to do to achieve the intended learning outcomes. There is often a discrepancy between staff and student expectations of academic

standards and assessment standards. One way to align assessments with the learning outcomes is through criteria-based rubrics (Biggs, 2003) and in so doing close the gap between actual performance and academic objectives.

The importance of providing marking criteria in preparation for effective peer review has been discussed. However, criterion-based rubrics are an essential component of any form of assessment, as they enable students to understand the requirements of the particular assignment and to gauge performance against academic expectations (Bloxham et al., 2011; Cooper, 2000; Sadler, 2005). In addition to any assessment information or guidelines, marking criteria should be made available to students in advance of the initiation of the task to allow sufficient preparation and consideration of the assessment and transparency of the academic requirements. From a tutor perspective, marking criteria ensure ethical practice, accountability and consistency, which are advocated by the UK Quality Assurance Agency (QAA), for example (QAA, 2018). Criteria-based marking further provides guidance and objectivity to the marking process, as long as those undertaking the marking adhere to the criteria, otherwise the process could be undermined by subjective judgements (Bloxham et al., 2011). Importantly for our purposes, marking criteria can also assist tutors to deliver feedback.

The study by Bloxham et al., (2011) rightly points out the danger of using criteria-based marking to exclusively justify tutor grades or to provide surface-level feedback (Bloxham et al., 2011). It is therefore important to direct student towards their learning, rather than their performance. Aligning feedback with the learning outcomes encourages students to focus on their learning. Therefore, tutors must be clear and transparent regarding assessment expectations. Marking criteria or rubrics can help tutors clarify these expectations and render the marking process more transparent, as they provide descriptors of both the qualities that are being assessed and the range of performance levels that students can use to judge their own work (Tierney & Simon, 2019).Criteria-based marking can also improve the consistency and timeliness of feedback. Several studies have also highlighted the positive impact that assessment exemplars have when used in conjunction with marking criteria. Exemplars can help student make their own evaluations of what is required in a particular assignment and can even improve their understanding of the marking criteria (To et al., 2022). Repeated use of exemplars that are scaffolded across a course or programme, exemplars taken from a variety of achievement levels and the opportunity for students to engage in a dialogic process, may have particularly positive impacts on subsequent performance (Carless et al., 2018; Hawe et al., 2021).

Digital and Artificial Intelligence Tools

The COVID-19 pandemic had a dramatic influence on the way higher education was taught and assessed, with a near universal shift to online delivery across the sector. Despite clear indications that the rapid transition to digital pedagogies had negative effects on student functionality and personal experiences, the digital transition acted as a welcome catalyst to modernise university education for the digital age (Watermeyer et al., 2021). Many of the digital pedagogies adopted by HE institutions during the pandemic remain in place, including online assessment formats and, importantly, digital approaches to providing feedback.

Online feedback systems are not new and software such as Turnitin, GradeMark, WiseFlow and Speedwell are in

widespread use. Virtual learning environments (VLEs), or learning management systems (LMSs), such as Moodle and Blackboard, are also established digital tools that provide an online interface for student learning and a valuable platform for providing effective feedback and positive learning experiences. In-built tools, including quizzes, interactive media, surveys and assignment applications are designed to facilitate the efficiency of feedback provision. Online feedback can also be automated, which has been shown to be as effective as manual feedback and has the benefits of reducing tutor workload (Cavalcanti et al., 2021). Familiar platforms such as Google Docs and Microsoft Teams are also valuable for establishing and cultivating interactions between tutors and students and streamlining group work and team communication, without traditional time and space constraints (Roberts, 2013). The use of mobile devices and applications has further transformed the potential ways in which teachers and students can interact, leading to the emergence of hybrid and mobile learning environments, including the provision of feedback via social media platforms (Pinto & Leite, 2020).

Most digital technologies are freely available and user-friendly, thereby liberating educators from the confines of traditional written feedback modalities. Certain applications, such as Mentimeter, Kahoot or Padlet, support in-person interactions, encourage the immediacy of formative feedback and may be particularly suitable for enhancing student learning in large cohorts (Egelandsdal & Krumsvik, 2019; Mohin et al., 2022). Audio and video feedback methods have also been successfully integrated into higher education teaching and assessment practices (Gould & Day, 2013; Sarcona et al., 2020). Evidence suggests that students perceive audio- and video-based feedback as more individualised and personalised than text-based feedback and easier to comprehend and act upon (Henderson & Phillips, 2015; West & Turner, 2016). Audio and video files can also be stored online and accessed by students at their convenience.

The rapid development of generative AI technologies, such as ChatGPT, Bard and Claude, has wide implications for assessment, teaching and the way students learn and prepare for assessments (Miao & Holmes, 2023). With increasing class sizes, continued pressure on staff resources and assessment anonymity, providing consistent, quality feedback is challenging. Automated feedback systems are one possible solution, examples of which pre-date generative AI tools. One example is Open Essayist (Van Labeke et al., 2013), which uses a subtractive summarisation and key phrase algorithms to provide feedback on student essay submissions. Open Essayist and other feedback tools, such as Grammarly, are useful for providing feedback on surface output but are unable to recapitulate the contextualisation and academic rigour of human markers.

Large language models (LMMs), such as ChatGPT, are also capable of providing feedback on submitted text. Feedback output more closely resembles human language, with comments on the advantages and disadvantages of the submitted work. Dai *et al.,* (2023) showed that ChatGPT generated feedback was fluent and readable, and achieved a high level of agreement with instructor feedback. However, it did not provide a reliable assessment of student performance and further training on model answers or additional directional prompts were needed to increase reliability (Dai et al., 2023). Inputting student texts into ChatGPT may also infringe certain privacy and personal information regulations and so caution must be exercised to ensure student inputs are secure and compartmentalised. Using LLMs to provide feedback may therefore require integration into existing digital learning platforms at an institution level, and student work would have to be precluded from public datasets, or

AI learning datasets, as a pre-requisite. However, LLMs demonstrate considerable potential to alleviate the load of manual feedback and as an assistant for student learning in this context (Baidoo-Anu & Ansah, 2023).

Embedding Student Feedback Literacy

Students and staff face several challenges regarding the effective use of feedback in higher education, with a need to align their expectations and understanding of the value of feedback (Henderson et al., 2019). For students to fully utilise the power of feedback it is essential they engage with it, process the information, use it appropriately and in a timely manner (Carless & Winstone, 2023; Hattie & Timperley, 2007). This is critical for the development of academic literacy and the improvement to the quality of learning. However, tutors also have to appreciate that students may not be well equipped in using feedback appropriately. Unless this is addressed through adequate guidance then the discord between tutor and student will persist. Conversely, research still indicates that students expect tutors to provide them with high-quality feedback without fully considering their own responsibilities on their learning process (Van der Kleij et al., 2019). Therefore, the challenge is multidimensional; how to empower students to engage with feedback, and how can teachers best inform students to do this effectively (Molloy et al., 2020). Often the failure of students to engage with their feedback is due to their limited understanding of the expert, cryptic or ambiguous language used in tutor feedback, the over-emphasis on negative remarks, or a failure to align feedback with the specific task (Orrell, 2006).

There is evidence to suggest that students have a desire to receive more interactive, in-person or face-to-face feedback (Henderson et al., 2019), although this has become increasingly challenging for teachers to deliver within the limits of mass higher education. Nevertheless, enabling better dialogue between students and teachers can cultivate a deeper understanding of the feedback provided and help improve student engagement. The use of appropriate digital technologies, such as recorded or asynchronous feedback, or delivering post-feedback workshops as a group exercise (sometimes referred to as debriefing) could alleviate time constraints while providing opportunities for dialogue and enhancement of feedback understanding (Bearman et al., 2019).

Studies on student preference for receiving feedback suggest they value the quality of written feedback, which can have a positive impact on performance and student outcomes (Higgins et al., 2002; Paterson et al., 2020). Student preference has been shown to be correlated with better engagement, while specific comments for improvement, facilitative feedback that promotes autonomy and personalized and conversational feedback were all found to be beneficial (Recep et al., 2018). However, others suggest that students with lower self-regulated learning skills may require more directive feedback. This suggests that the perception of feedback is diverse among different students, while addressing the needs of individuals should be considered for effective feedback to have a positive impact on learning outcomes (Atmaca, 2016).

Little *et al.,* (2024) argue that student feedback literacy can be influenced by prior experiences and exposure to different types of feedback (Little et al., 2024). Diversifying the type of feedback, providing marking criteria and familiarising students with the language of feedback can have positive impacts on feedback literacy. Importantly, tutors play an active role in facilitating the development of student feedback literacy, by guiding students to improve awareness of the context and purpose of feedback (Winstone et al., 2017). The provision of workshops,

dialogic discussion and the implementation of peer review have been shown to improve student feedback literacy. Encouraging students to become active participants in the feedback process, through self-assessment, peer dialogue, longitudinal portfolios, reflective diaries and reviewing exemplar assignments, have further positive impacts on improving feedback literacy and engagement (Little et al., 2024; Winstone et al., 2019). Furthermore, in-person discussions with tutors helped students to consider feedback as a collaborative effort and refine their expectations, particularly if students were encouraged to reflect on their feedback (Ducasse & Hill, 2019; Noon & Eyre, 2020). Studies on the use of digital platforms further suggested that collaborative and learner-oriented tools (peer feedback and assessment exemplars) could support feedback literacy in an online environment (Ma et al., 2021).

Discussion

The power and potential of feedback to improve student learning, performance and education experience is supported by the literature. This positive impact of feedback on student learning is highlighted by Hounsell (2003), who states that 'it has long been recognised, by researchers and practitioners alike, that feedback plays a decisive role in learning and development, within and beyond formal educational settings. We learn faster, and much more effectively, when we have a clear sense of how well we are doing and what we might need to do in order to improve' (Hounsell, 2003). The focus on attaining this ambition needs to remain a priority for teachers delivering feedback. Investigating the impact of separating grades from feedback on student motivation and learning outcomes, as well as exploring alternative approaches to providing feedback that focus on user needs and promote agentic engagement are areas that require further research.

One of the challenges for teachers is to engage students with their feedback and guide them on how best to use their feedback for future learning, development and improvement. Despite the increasing marketisation of university education (del Cerro Santamaría, 2020) and increased incidences of students challenging grades and academic judgements (Horne et al., 2021), it is important to maintain focus on the value of feedback as a feed forward mechanism, rather than a tool to justify grades. The challenges of increasing student numbers and mass higher education places further burdens on academic staff to maintain timeliness and quality of feedback provision. Future research on the effectiveness of student feedback should therefore consider the impact of large class sizes (particularly on quality, quantity and timeliness), divergent student needs and the growing internationalisation of student cohorts. These factors will have significant influence on teacher and student engagement with feedback processes and the implementation of effective feedback strategies.

Several systems for delivering effective student feedback have been proposed, although no one size fits all, as assessment formats and internal pressures can differ substantially between institutions, courses and modules. Individual preference, from both a teacher and student perspective, should also be considered. Adcroft (2011) further addresses the issues of differing perceptions of feedback between teachers and students, highlighting the dissonance between the two groups, the need for a shared understanding of feedback and the potential impact on learning outcomes (Adcroft, 2011). There is also a need to further understand the consequences of feedback on diverse student cohorts. For example, further research is required on the effectiveness of feedback for international

students or those from culturally diverse backgrounds, as well as neuro-divergent and students with disability.

Various perspectives exist among students and tutors regarding evaluation, grading and feedback procedures, suggesting that dialogue could be a constructive approach to address and alleviate potential dissonance (Carless, 2006). This has implications for improving student feedback quality, literacy and engagement. More research is required on how to measure feedback literacy, how to evaluate the effectiveness of interventions, and how to compare studies from divergent contexts. Feedback interventions tend to be task or subject specific and no consensus currently exists on which instruments should be used to assess intervention effectiveness (Little et al., 2024). There is therefore a need to examine the relationship between students' (and teachers) feedback literacy and their perceptions of assessment and feedback quality and consider how interventions can improve students' ability to understand and utilize feedback effectively.

Considering the societal impact of recently developed AI technologies, such as ChatGPT and Bard, the implications for higher education are far reaching (Pedro et al., 2019), while the impact on student learning is yet to be resolved. Although researchers are beginning to understand the potential benefits that AI may bring to the classroom, there is an urgent need to further explore the efficacy of digital and AI tools, particularly generative AI technologies, and how they can be integrated into existing digital learning platforms at an institutional level to support teaching and improve the delivery of feedback.

Divergent perceptions and expectations of feedback may also be exacerbated by teacher conflict between their pedagogical intentions and institutional requirements (Bailey & Garner, 2010; Haughney et al., 2020), further indicating the need for clear standards for quality feedback in higher education. This review highlights the key challenges faced by teachers and students relating to the delivery of effective student feedback and proposes several methods and approaches that teachers can employ to enhance the value of feedback as a means to improve student learning. Finally, there is a clear need for further research into innovative assessment and feedback practices across various disciplines within contemporary higher education.

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