Pearson

Providing Educational Feedback

Higher Education Services

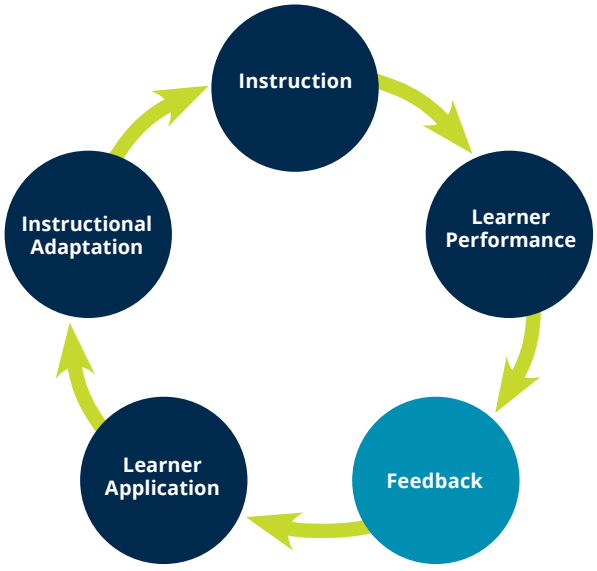
WHITE PAPER

What is feedback?

Feedback in educational contexts is information provided to a learner to reduce the gap between current performance and a desired goal (Sadler, 1989).

The primary purpose of feedback is to help learners adjust their thinking and behaviors to produce improved learning outcomes (Shute, 2008). This definition of feedback differentiates it from other types of information that might be provided to learners such as a summative evaluations or praise.

Feedback is a critical component of an ideal instructional cycle. Feedback is a consequence of teaching and a response to learner performance. Typically feedback is provided by an external agent (e.g., teacher or peer) but can also be self-generated in response to learner self-monitoring. Although feedback is generally perceived as information provided to learners in order to improve their performance, an equally powerful function of feedback is to cue the attention of instructors to errors or weaknesses in their teaching methods that might be improved (Hattie, 2011).



Why is feedback important in online instruction?

Feedback is widely touted as one of the most important elements for promoting successful student learning (Bransford, Brown, & Cocking, 2000; Chickering & Gamson, 1987). Decades of research on the topic of feedback have supported this view and have found it to be one of the most effective methods for improving student achievement. In an extensive meta-analysis of more than 100 factors influencing educational achievement, Hattie (2009) found the effect of feedback great enough to place it in the top 5 of all in-school influences studied.

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Feedback is widely regarded by researchers as crucial for improving not only knowledge acquisition but learner motivation and satisfaction (Espasa & Meneses, 2009; Narciss & Huth, 2004). In addition, the development of self-regulatory learning skills depends on receiving adequate feedback during the learning process (D. L. Butler & Winne, 1995; Nicol & Macfarlane-Dick, 2006). In particular, feedback can be a major influence regarding students’ goal orientations—a factor found to significantly influence student success and effort in school (Dweck & Leggett, 1988; Hoska, 1993).

However, despite its overall positive effects, feedback is characterized as a doubled-edged sword and has been found to have negative effects on learning outcomes in roughly a third of all research studies (Bangert-Drowns & Kulik, 1991; Kluger & DeNisi, 1998). This variability in feedback effects precludes any simple recommendation to increase feedback as a way to improve learning. A major focus of contemporary feedback research is investigating the factors that influence and moderate the effectiveness of instructional feedback.

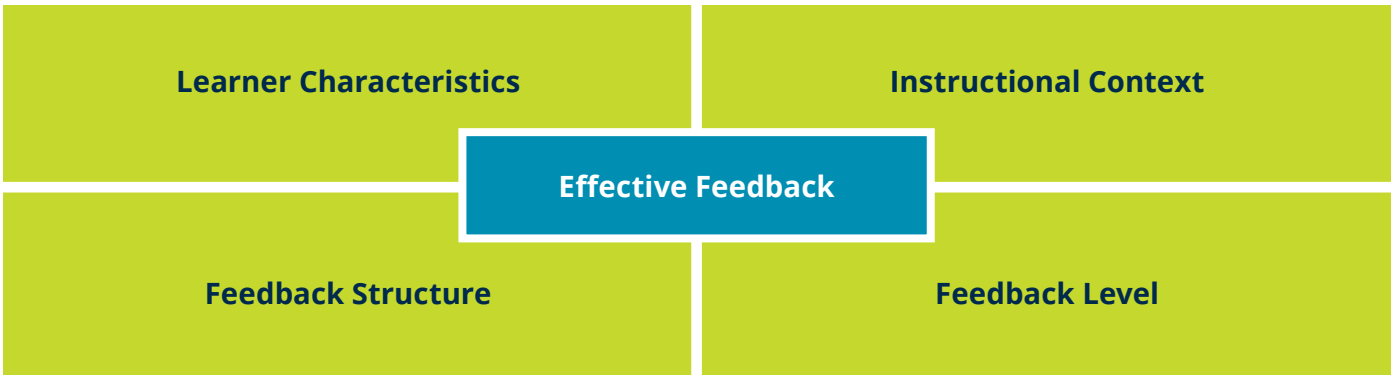
What makes feedback effective?

Feedback effectiveness has been found to be mediated by a multitude of factors. Successful feedback interventions must take into consideration learner, instructional, and structural characteristics to avoid ineffective or even detrimental effects to learner outcomes (Narciss & Huth, 2004). Listed below are four factors that have been found to robustly influence feedback effectiveness as well as a brief discussion of some major findings related to each.

Learner characteristics

The skill and prior knowledge of learners has been found to powerfully influence the effectiveness of feedback interventions. Novice learners working on simple tasks benefit strongly from immediate feedback while more skilled learners, often tackling higher cognitive-level questions, can profit from delayed feedback that allows greater time for processing (Clariana, Wagner, & Roher Murphy, 2000; Shute, 2008). Low-achieving learners find greatest gains from directive feedback that is scaffolded (i.e., given only enough information to progress), while research has found that high-achieving learners are often best supported by simple response verification and facilitative information such as hints and cues (Shute, 2008; Wiliam, 2005).

Learner beliefs about the learning process and goal orientations have also been found to strongly influence learner receptiveness and perceptions of received feedback (D. L. Butler & Winne, 1995). Ideally feedback should encourage mindfulness about learning through self-referencing of learner performance, an emphasis on the incremental nature of the learning process, and by stressing the positive relationship between effort and achievement (Hoska, 1993; Mory, 2004). Conversely, feedback emphasizing normative or comparative measurement (e.g., grades or rankings) encourages an ego-involving focus and results in reduced learner effort, self-efficacy, and overall achievement—an effect that persists even when provided in conjunction with more elaborative feedback (R. Butler, 1987; Chan & Lam, 2008; Narciss & Huth, 2004).



> Feedback should provide forward-looking suggestions for improvement and be used to inform revised goal targets that are at, or just beyond, learners' current abilities.

Instructional context

Effective feedback must include next steps for learners, indicating a clear path forward, rather than simply addressing past errors and performance (Nicol & Macfarlane-Dick, 2006; Wiliam, 2005). Feedback should provide forward-looking suggestions for improvement and be used to inform revised goal targets that are at, or just beyond, learners' current abilities (Hattie & Gan, 2011; Locke & Latham, 1990). Additionally, benefiting from feedback requires instructional opportunities for applying received feedback through practice efforts or the design of assignments that build toward comprehensive course projects (Ambrose, Bridges, & DiPietro, 2010; Narciss & Huth, 2004). Too often feedback is provided only in conjunction with terminal summative assessments which deny learners the opportunity to improve their performance.

Good feedback reduces learner uncertainty regarding current performance level and a desired goal (Bangert-Drowns & Kulik, 1991). Clear and challenging academic goals, in conjunction with frequent feedback, are crucial factors in sustaining the levels of learner engagement and interest required for high achievement (Black & Wiliam, 1998; Kluger & DeNisi, 1996; Locke & Latham, 2002). Feedback provided in an instructional context characterized by unclear or trivial goals, however, is likely to be confusing, misunderstood, or simply ignored by learners (Hattie, 2011). Furthermore, positive learner response to critical feedback, in the form of increased effort and persistence, has been found to depend on learner commitment to academic goals, largely determined by their perceived meaningfulness, and an instructional climate that embraces failure and error (Hattie & Yates, 2014; Kluger & DeNisi, 1996).

Feedback structure

Feedback should be designed to avoid cognitive overload and be as minimally complex as necessary to convey needed corrective or elaboration information (Kulhavy, White, & Topp, 1985; Sweller, Merrienboer, & Paas, 1998). The amount of feedback information a learner receives should be limited and focus on a few critical areas of improvement while avoiding more tangential or trivial corrections that might divert learner attention (Ambrose et al., 2010; Narciss & Huth, 2004). In addition, feedback should be clear and specific in communicating the criteria by which a learner's performance has succeeded or failed in order to avoid frustrating or confusing learners (Moreno, 2004). Evaluative information without clear links to relevant success criteria are likely to lead to poor learner performance and self-handicapping (Lipnevich & Smith, 2009; Thompson & Richardson, 2001).

Elaborative feedback, which provides how, when, and why information in response to leaner performance, is generally superior to corrective or answer-until-correct feedback (Bangert-Drowns & Kulik, 1991; Shute, 2008). Verifying the correctness of an answer or giving students the opportunity to select answers until identifying the correct solution does not provide enough information to address misunderstandings and can interfere with successful encoding of knowledge (Mason & Bruning, 2001). It is also the case that positive feedback effects are mitigated if students are given the option to view answers prior to submitting a response, for instance by "peeking ahead" (Bangert-Drowns & Kulik, 1991).

Feedback level

Feedback information can be targeted at the task (e.g., "Yes, that is the correct answer."), process (e.g., "It looks like you used the wrong strategy for step two."), regulative (e.g., "What would happen if you changed variable X?") and/or self level (e.g., "Great job!") (Hattie, 2011; Kluger & DeNisi, 1996). The first three feedback levels approximate a continuum that roughly corresponds to the natural learner progression from beginner to expert. Task level feedback is beneficial for novice learners working on simple tasks but is not readily generalizable or transferable beyond the specific tasks being taught. Process and regulative feedback, however, is extremely valuable to more skilled learners working to develop deeper understanding and broader meta-cognitive skills that can apply across a field of study (Hattie & Yates, 2014).

However, feedback directed at the self level, which involves no substantial task-related information, should be avoided. Providing learners praise or more tangible rewards has consistently been found to hinder achievement, intrinsic motivation, and learning outcomes (E. Deci, Koestner, & Ryan, 2001; Kessels, U., Warner, L.M., Holle, J., & Hannover, B., 2008). Even including praise alongside substantive feedback, often as a way to mitigate critical comments, has been found to effectively erase feedback's positive effects (Hyland & Hyland, 2001; Wiliam, 2005). Feedback should be task-related and avoid any possible reference to a learner's self-image or esteem.

An important conclusion to take from these studies is that there is no single type of feedback appropriate for all learners in all instructional situations. Although feedback can powerfully improve learning outcomes, designing effective instructional feedback requires taking into consideration a number of different factors in order to meet desired learning objectives.

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Designing effective feedback in online instruction

Designing effective feedback for online instruction is a significant challenge given time and resource constraints. Yet there are a number of simple and practical changes supported by the available research to improve the impact of feedback in online learning. For lengthier discussions of many of the ideas discussed below, see the excellent papers by Nicol & Macfarlane-Dick (2006) and Hoska (1993).

- Provide opportunities to apply feedback by requiring that students submit drafts of papers, designing assignments that incrementally build to larger course projects, and offering frequent practice opportunities.
- Ensure learners are provided clear goals and success criteria through the use of rubrics, model assignments, and worked examples while specifically referencing these elements when communicating learner performance gaps. Avoid general feedback directed to the entire class, as it is generally ignored by students who believe it doesn't apply to them.
- Avoid associating feedback with grades, praise, or comparative measures that significantly undermine its effectiveness.
- Use feedback to encourage a learning orientation among students by incorporating opportunities for resubmission, low-stakes quizzes, and providing grades only after students have responded to received feedback.
- Facilitate student efforts to become self-regulating and mindful learners through feedback that employs peer grading, reflection activities, and self-evaluations.
- Ensure that any feedback provided to students minimizes cognitive load by limiting the number of assessment criteria, prioritizing areas of learner improvement, presenting complex feedback in sequential steps, and focusing on two or three important suggestions.
- As an instructor, use feedback to inform ongoing instructional choices by identifying common learner misunderstandings and topics that cause students to struggle.

Where can I learn more about feedback?

For an excellent summary of different feedback types, as well as a helpful list of feedback dos and don'ts, see the review by Shute (2008). Several important meta-analyses of feedback have been conducted over the last several decades. Many of these have also been associated with attempts by their authors to synthesize the vast body of feedback research into unified theories. For the most influential, see Bangert-Drowns & Kulik (1991); D. L. Butler & Winne, (1995); Kluger & DeNisi, (1996); Kulhavy & Stock, (1989). For an excellent summary of several of these, see Mory (2004). For accessible introductions to the complex and often contradictory literature on feedback, see the chapter, "Using Feedback to Promote Learning" Hattie & Yates (2014) in the freely available APA report, as well as the chapter on feedback in Ambrose et al., (2010), which includes numerous suggestions for instructors.

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