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Feedback That Improves Student Performance

All the feedback strategies listed here are based on the research findings on feedback presented in the articles listed in the References section at the end of the article.

Feedback is not a simple “information transmission” process, where written directives are easily decoded by students and turned into effective corrective action. Students need help developing self-assessment skills so they can interpret and act on feedback. They need to understand the learning goals or outcomes, be able to evaluate how their work compares to the learning goals, and figure out in practical terms how to overcome the gap (Nicol, undated). In other words, for feedback to be effective, students must know:

1. What constitutes good work
2. How their current work compares to good work
3. What to do to close the gap between the two.

Feedback should help students become self-managing learners who are aware of their own most effective strategies for learning and be able to use them independently.

Feedback should be forward-looking, about things that students will use in future assignments or assessments. Consider whether students will know how to do what is suggested (e.g., will they know how to “Be more discursive?” “Write more clearly?”). Feedback should be specific (e.g., “see Jones, 2010, chapter 6” rather than “read the literature”).

Setting Things Up for Feedback to be Effective

Have a mix of assignments and tests. Have enough assignments to facilitate the application not only of knowledge and skills, but of the lessons learned in their application as well. Students have to spend sufficient time on activities related to the important course concepts (time on task) to really learn them.

Engage students in productive tasks, appropriate to the discipline. Assignments should be worth doing from the student’s point of view. Solve problem sets to learn problem-solving skills; do lab work to learn how science, engineering, or biology are done; practice using the discourse of a discipline through writing assignments; apply skills through scenarios, role plays, and case studies.

According to research, even low achieving and “at risk” students can learn to become more self-managing learners (Nicol, 2007, p. 205). This can be facilitated by making the learning processes explicit through dialogue and assignment organization. For example, have many, low-stakes assignments, and provide “early-and-often” feedback, at least in the early stages of courses when students are mastering the basics. Have larger assignments submitted in stages, where earlier planning documents and drafts receive guided feedback that can be implemented in subsequent and especially the final submission.

Encourage students to try things and make mistakes, because learning from mistakes is one of the most effective ways to learn.

“Students need to understand why they have got the grade or mark they have and why they have not got a higher (or lower) grade. Criteria need to be explicit and understood by students, and demonstrably used in forming grades. Often criteria are not accompanied by standards and it is difficult for a student to tell what standard is expected or would be considered inadequate. Much of the literature on the use of self- and peer-assessment is about the reliability of such marking, and assumes that self- and peer-assessment is primarily a labour-saving device. But the real value may lie in students internalising the standards expected so that they can supervise themselves and improve the quality of their own assignments prior to submitting them.” (Gibbs, 20)

Functions of feedback: Feedback serves to correct mistakes and develop understanding through explanations; generate more learning by identifying further study tasks; promote the use of generic skills as concepts are applied to complete the assignment tasks; help students understand their process of learning (metacognition); and encourage further study (Gibbs, 19 & 20).

Seven Principles of Good Feedback Practice:

Effective feedback (Nicol, 2007, p. 205):

1. Clarifies what constitutes good performance, making reference to learning outcomes, criteria, and expected standards;
2. Helps students develop self-assessment (reflection) in learning;
3. Gives high quality information to students about their learning;
4. Encourages instructor and peer discussion about learning;
5. Encourages positive motivational beliefs and self-esteem;
6. Provides opportunities to improve work quality and close the gap between current and desired work quality;
7. Provides information to teachers that can be used to help improve feedback, assignments and assessment.

Details on the Seven Principles

1. How Feedback Can Clarify Good Performance

Considerable research evidence shows that significant mismatches often occur between instructors’ and students’ understanding of learning outcomes, assessment criteria, and expectations (Nicol, 2007, p. 206). Most academic tasks are complex, multidimensional and difficult to describe. They often have associated tacitly understood components that students have difficulty deciphering. Written documentation and verbal descriptions are a necessary but insufficient condition for student understanding. Studies show that big differences exist between instructors’ view of feedback helpfulness students’ views, with instructors much more likely to overrate the impact of detailed feedback. Feedback is often not understood or read at all (Gibbs, 10). Some suggestions:

- Provide examples of good work.

- Provide grading rubrics that describe the characteristics of good work.
- Discuss the criteria with the class well before the assignment due date.
- Try small-scale, in-class exercises that students mark (their own or other) according to the criteria and standards.
- Involve students in assignment criteria-setting.

The last three incorporate increasing levels of the development of student self-regulation.

2. Feedback That Helps Students Develop Self-Assessment Skills

A possible approach to helping students make judgements about how their work relates to the assignment standards is to provide opportunities to evaluate and provide feedback on each other's work. This provides practice in make objective judgements against standards in wider contexts than one's own work, and students can transfer these skills to evaluating their own work (Nicol, 2007, p. 208).

Other ideas:

- Have students request the kinds of feedback they prefer.
- Have students provide a self-assessment of their work (identifying its strengths and weaknesses in relation to criteria or standards) along with their work submission.
- Near the end of a course, ask students to review their assignments and select work for a portfolio.
- Near the mid-point of the course, ask students to reflect back on their progress and then list the next steps forward in meeting course outcomes.

3. What Constitutes High Quality Feedback

Feedback should be "timely" (CETL surveys of students indicate that they consider a week timely or, failing that, in enough time before the next assignment or assessment that they can apply the feedback). It should focus not just on strengths and weaknesses but also offer corrective advice. It should direct students to higher order learning goals, and involve some praise alongside constructive criticism (Nicol, 2008).

Give feedback quickly for new or complex tasks that students are just beginning to master. As students gain experience, delay feedback and make it broader in scope (more focused on the learning goals and less on the specific task). For high-achieving learners, consider delaying feedback at an earlier stage. For low-achieving learners, provide immediate feedback for a longer period than for others (Shute, 179).

Good quality feedback gives information that helps students troubleshoot their own performance and self-correct.

If grading rubrics are used, there is such a thing as "too much information:" too many criteria items (more than 10 in first and second year undergraduate courses) may result in students seeing them as checklist items rather than an integrated whole.

“Scaffolded” feedback (“just-in-time, just enough”) is helpful. Limit the amount of feedback so that it is actually used. This may require addressing only the first few, most pressing items of concern in the first round, waiting to address other issues in work submitted later (“stepped feedback”).

Another option is to ask students to specify a specific part of their assignment on which they want feedback and give feedback on that and nothing else.

4. How Feedback Can Encourage Instructor and Peer Discussion About Learning

The point is that back-and-forth discussion about feedback helps students refine their understanding of what is required and thus get further down the road to becoming self-managing learners. This is a challenge in large classes. Some suggestions:

- Have small-group breakout discussions of feedback in class, after students have received written comments on their individual assignments.
- Use student response systems to aggregate responses to in-class questions (often multiple-choice questions) in a pictogram. This aggregate feedback can be used as a basis for peer discussion (e.g., “convince your neighbour that you have the right answer”) and instructor-led discussion in large classes.

Peer dialogue may increase students’ sense of self-control over learning:

- Students who have just learned something are often better able than instructors to explain it to their classmates in everyday language.
- Peer discussion exposes students to alternative perspectives on problems. Alternative perspectives enable students to revise or reject their initial ideas and construct new knowledge and meaning through negotiation (back-and-forth discussion).
- By commenting on the work of peers, students develop more objective judgement about work in relation to standards, which they can transfer to the assessment of their own work.
- Peer discussion can motivate students to persist, a necessary component for successful concept mastery (Nicol, 2007, p. 211).
- It may be easier for students to accept critiques of their work from peers rather than instructors.

Other strategies include:

- Review feedback in tutorials, asking students to read feedback comments they have received, and discuss these with peers. Ask for suggestions for improvement.
- Ask students to select feedback comments that they found useful and to explain how they helped.
- Have students give each other descriptive feedback on their work in relation to learning outcomes or assignment criteria to be incorporated before submission.
- Have group projects in which students discuss criteria and standards before doing the project work.

5. How Feedback Can Increase Motivation and Self-Esteem

Students pay more attention to feedback that consists mainly of comments focused on outcomes, especially when provided on its own, without a mark (Gibbs, 11). Giving only grades with few or no comments is demotivating to students who view ability as fixed (about 1/3 of university undergraduates in one study) (Nicol, 2007, p. 212). Such students interpret a low mark as meaning they don't have the capacity to learn this subject, so they tend to give up. The alternate view is that ability can increase with increased effort.

Praising effort and work/study behaviours, combined with feedback on progress towards learning outcomes, leads to higher achievement than praising attributes such as ability or intelligence. The former focuses on the learning process, whereas the latter focuses on the student. Use praise sparingly—it shifts the focus from learning to the self. Our aim is “self-efficacy” in students—the sense of accomplishment resulting from successfully completing a task.

Students need to see that feedback is an evaluation of the work, not the person. This holds true whether the feedback derives from an external source or is generated through self-assessment (Nicol, 2007, p. 212).

Other strategies include:

- Providing marks only after students have responded to feedback comments.
- Letting students rewrite and re-submit selected pieces of work, or make assignment submissions a two- or multi-stage process in which drafts may be submitted for feedback.

Low performing students benefit from immediate feedback that gives the correct answer if wrong, and elaborated feedback (explanation of what is wrong and where to find related information). Higher performing students benefit from delayed, “try again,” verification feedback (results—score, indication of right/wrong). There seems to be no difference for middle ability students (Shute, 166).

6. Feedback That Helps Close the Work Quality Gap

“Unless students are able to use the feedback to produce improved work by, for example, re-doing the same assignment [or in future assignments], neither they nor those giving the feedback will know that it has been effective” (Nicol, 2007, p. 213).

Feedback should help students recognise the next steps and how to take them. This works best when a course has many low-stakes assignments or assessments that result in feedback geared to providing information about progress and achievement (especially early on in a course, when students are mastering basic skills), rather than high stakes summative assessments that give only information about success or failure or about how students compare with peers (Nicol, undated).

The ideal situation is to build opportunities for iterative feedback into the assignment (e.g., a group assignment with peer interaction, or a computer simulation with guided feedback, or breaking the assignment into components, each with its own feedback, or make assignments multi-staged, where feedback on stage one helps improve stage two).

Model the strategies in class that students should use to close a performance gap.

Provide specific “action points” alongside the strengths/weaknesses feedback.

Put students into groups and task them with identifying their own action points in class after they have reviewed their assignment feedback.

7. Use Student Reaction to Feedback to Improve Assignments and Feedback

From such things as assignments and assessments, questioning students in class and by observing students as they make class presentations, instructors learn the extent to which students have mastered learning outcomes and identify areas of difficulty. They can use this information to tailor their teaching accordingly (Nicol, 2007, p. 214). Ask yourself: “What do I as the assessor believe that students are doing in both formal and informal settings, and to what extent are these beliefs concordant with the actual students’ experiences?” (Yorke, 496). Look for evidence and data that support or contradict your assumptions.

To get such information in large classes, try “one-minute papers”—questions that are posed to students before a teaching session begins, and responded to at the end of the session, such as, “What was the most important point in this lecture? What question remains uppermost in your mind now at the end of this teaching session?” These help students develop the ability to think holistically and to identify gaps in understanding, and to begin managing their own learning (Nicol, 2007, p. 214). And the papers generally are anonymous and not marked, can be skimmed quickly. Ensure students see the papers’ value by referring to them in subsequent lectures as the issues and concerns are addressed.

Have students request the types of feedback they would like when they make an assignment submission (e.g., in a list).

Have students indicate areas of difficulty on work submitted for assessment.

Ask students in groups to identify “questions worth asking,” based on the current lecture or presentation, which they would like to explore for a short time at the beginning of the next class or tutorial (Nicol, 2007, p. 215).

Engage Students at Their Level

Feedback must engage learners at, or just above, their current stage of intellectual development (Hattie, 55). For reference, see the following summary of Perry’s Stages of Intellectual Development (Rapaport):

Dualism: There is a right and wrong to everything, experts know what they are, all problems are solvable, and the student’s task is to *learn the right answers/solutions*.

Multiplicity: Some “answers” conflict with each other. So some problems are solvable and others aren’t. The student’s task is to *learn how to find* the right answers.

Relativism: Stage 1: Most answers conflict with each other, most problems are solvable in multiple ways, so just pick one, *they're all equally valid*. Stage 2: Some answers/solutions are better than others, depending on the context. The student's task is to *evaluate solutions* based on context-specific criteria.

Commitment: Reflection on personal experience produces convictions about the best ways to proceed in any given set of circumstances. The student's task is to *generate effective ways to solve problems or resolve issues* in order to achieve overarching goals that fit the context.

Ideally, one would recognize the stage of intellectual development in which a student is operating and craft feedback to that level, yet provide challenges that help move them to the next level.

Engagement with the task requires that students draw upon prior knowledge and motivational beliefs to create a personal interpretation of the task, from which they create their own goals which may be the same or different from those provided by the instructor. They then apply strategies and tactics to achieve their goals, and engage in internal feedback. This internal feedback may lead to a re-interpretation of domain knowledge, of the task, or to adjustment of strategies and tactics. It is to this internal process that the instructor's feedback seeks to connect (Nicol, undated).

Students **need to see assessment not as an end in itself** (a mark to help get a credential) but as an accountability system that enables learning. **Knowing and being able to do worthwhile things is the end goal.**

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