Feedback: ensuring that it leads to enhanced learning

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Editors' note: This article is the first in a series of commissioned papers that will form a 'go to' resource for health professionals who teach in clinical settings. Professor David Boud of the University of Technology, Sydney, and Deakin University, Victoria, opens the series with an insightful article discussing new ways of conceptualising feedback, with an emphasis on how assessment and feedback can contribute to ongoing learning, and the need for feedback to influence what learners do rather than merely providing them with information. He emphasises that feedback should be an ongoing dialogue and that there is a need for repeated observation to ensure that learners respond to feedback and make changes in their performance.

Feedback involves much more than providing potentially useful information to learners about their work. The challenge is now about how to engage with learners in ways that are likely to result in discernable change, and the nature of the conditions necessary to ensure that feedback discussions are likely to be acted upon. The main aspects of assessment and feedback drawn on here are those that focus on how assessment and feedback can contribute to the continuing learning of students (and indeed all health professionals) and the need for feedback to actually influence what students do.

DEFINING FEEDBACK

Higher education programmes are more frequently criticised in student surveys for deficiencies in assessment and feedback than for any other aspect. This has resulted in renewed interest in what feedback is and how it can work effectively. In particular, it has led to the recognition that feedback in clinical settings, just like feedback in any other context, must be characterised not solely in terms of inputs that are made, but also by the effects that result. The definition of feedback in Box 1 highlights this change in thinking.[1] Teachers, or others offering feedback information, can therefore only confirm that learning has resulted from information provided if the students act on it to complete a feedback loop.[2]

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CHANGING IDEAS OF FEEDBACK

When used in its original disciplines, for example in systems engineering, feedback describes what happens when information from a system is reinserted into the system to regulate its behaviour. Determining whether feedback has occurred involves observing a change in the response of the system. Commonly, when the idea of feedback is transferred to the educational context, the notion of providing information with the intention of changing the system (in this case, the learner) is retained, but the notion of seeking to observe a change in output is often missing. It is assumed that the desired change will occur or that if students could pay sufficient attention to the input (such as comments from a tutor), then the desired learning outcomes will be produced. Without knowledge of the effects, teachers cannot be sure if the feedback loop is completed, and thus feedback – in the sense understood by engineers, for example – may not have occurred. They have no basis upon which to judge whether their input is worthwhile. A signal has been transmitted (input from teachers), but we have no knowledge that it has been received or acted upon (through a change in students). Attending to this input is a necessary but insufficient condition for 'feedback' to have an effect.

The basic idea of feedback: Feedback Mark 1

To ensure that feedback works for learning, we can start by making sure that there is evidence that the feedback loop has been completed. That is, information provided to students has been taken up and has led to some desirable change in practice. This idea of feedback has been termed Feedback Mark 1.[1] The implications of this simple application of what feedback means are substantial. In order to identify

an activity as feedback teachers need to detect that information provided to learners was first apprehended and subsequently that it resulted in some kind of change: that is, it has had an impact on their learning. For this to be identifiable, teachers must have knowledge of the subsequent performance of the student so that a change can be noticed. Feedback is therefore not an act that occurs at a single point in time, at the point of transmission of information from teacher to student, but is completed over time, when knowledge of subsequent work is communicated from student to teacher, or when the teacher observes the student again later.

Unfortunately, such a practice of following students' work over time cannot always be achieved, particularly in busy clinical environments and when students (and trainees) are moved frequently from one location to another. Indeed, in many clinical settings it is difficult to ensure that students are observed at all, let alone receive any useful information about their practice. Such settings may preclude the operation of any kind of feedback, and their inclusion as part of an educational experience must be justified in some other way.

Any reframing of feedback must also take into account the agency of learners and how they respond to the input of others. Recognising this active role of learners implies that for them to act effectively on the input of others, certain conditions must be met (Box 2).

A responsive view of feedback: Feedback Mark 2

A more sustainable view of feedback involves a more central role for learners: learners are no longer merely recipients of information, but are active agents seeking and using information from a variety of sources. This has been termed Feedback Mark 2.[1] Two-way interactions between the giver and the receiver and the involvement of peers, non-human sources and practitioners, as well as teachers, are required. Other parties are used not simply as information sources, but as a means whereby learners can calibrate their own judgements and create for themselves the expertise needed for further study and performance.[3] That is, how does a student's practice match that of an accomplished clinician, and what is needed to bring this up to the required performance?

This view sees feedback as a key feature of the curriculum that

responds to and drives learning. It is not separate, but is an integral part of all learning processes. Feedback becomes a design feature of courses and all clinical placements that enable sufficient practice to be had for feedback loops to be completed and effectiveness in self-judgement developed as a learning outcome. It is also a strategy that can be deployed by learners as and when it is needed for their own learning pathways. This dual nature of feedback acknowledges that there needs to be a disposition on the part of learners to use what is available to them in clinical settings, and that they develop the ability to realise the potential of the environment as a place of learning. The conditions needed for this can be identified from the need for learners to understand and attend to the input, and use it both to act in the current context and to develop their capacity to act further beyond the immediate situation (Box 2).

In most situations the clinician at hand necessarily makes the initial judgement call, no matter what their level of experience. Learners therefore need to quickly develop an understanding of what they know and what they don't know, and what they can and cannot do. They are helped to develop these skills of self-assessment (or self-evaluation) by teachers 'providing direct authentic evaluative experience for students'.[2] Students require opportunities to make specific judgements about particular work that they have undertaken (for example, in communication skills

training, students are asked for their opinion of their own performance and what they could change to improve). As in the development of any form of expertise, such skills have to be developed over time. Even multiple examples of self-assessment activity deployed from time to time may have relatively little influence. Students encounter new domains of clinical practice that require new behaviours, and these changes are disruptive. It is unlikely that without support their judgement will improve continuously as novel situations are encountered.

The role of feedback in the development of judgement is therefore particularly important.[4,5] Students need to have ways of knowing whether their judgements are realistic and to be able to assess these in the light of evidence. Through such calibration against the judgements of others (i.e. tutors, peers, practitioners and even patients), learners can identify the areas in which they need to improve and see shifts in their ability over time. In addition, learners need to be aware of the outcomes they are aiming at and the criteria (or standards) against which they are being assessed, leading to three requirements for feedback that influences learning (Box 3). Standards not only need to be explicit, and derived from statements of competencies included in curriculum and regulatory requirements, but students also need to appreciate how these standards are manifest in work of the kind in which they are engaged. Relating these standards to one's own work needs an ability to see

behavioural indications of achievement in one's own work. Finally, closing the gap requires opportunities for subsequent practice to show this knowledge translated into action.

A particular feature of learning and teaching to aid this process is for student judgements to be compared with those of experienced practitioners in the kind of work being considered. Noticing the qualities of work in one's own practice is difficult, and the availability of the judgements of others with respect to the very criteria needed to judge one's own work is important. In such situations discrepancies between the judgement of the student and that of the expert are important pointers for raising a student's awareness about what they need to do to subsequently improve their clinical practice.

CHARACTERISTICS OF GOOD FEEDBACK INFORMATION

The extent to which feedback information serves to reduce the gap between current and desired performance is partly dependent on the level at which the feedback operates.[6] Students respond in different ways to different types of information, so the information needs to be tailored to what students need to do with it. Some information and some ways in which it is framed are demotivating, and act to inhibit learning.[7] Hattie's model, derived from a strong evidence base, proposes that feedback can be directed at four different levels of operation of the student, and that feedback may well be ineffective if directed at an inappropriate level (Box 4).[6] The responses that students make are dependent in part on the focus and type of feedback that they get. If the focus is inappropriate to the needs of the student, the information can be ineffective because the student is unable or unwilling to transform the information into action

Students need to have ways of knowing whether their judgements are realistic

Box 4. Hattie's four levels of feedback[10]

- **Task focused**

Task-focused information emphasises how well a task has been performed, identifying when statements are incorrect or contestable, and suggesting that more or different information is necessary to complete the task or do it better. It is most powerful when learning problems involve faulty interpretations, and not a lack of information. Comments at the task level do not necessarily generalise to other tasks.

- **Process focused**

Process-focused comments are addressed to the processes used when completing tasks or to those used to make connections across tasks to broaden or expand tasks into new areas. In comments of this kind, learners are assisted to create meaning and relate to the connections between concepts, to how students' cognitive processes are being developed, and to their application to other more difficult or untried tasks. One mode of process-focused feedback tackles students' strategies for error detection, which can range from finding a different way to express an issue to self-diagnosis of misunderstanding by the learners. Comments at the process level can be more effective than at the task level for enhancing deeper learning. For example, asking a student to explain to a peer will sometimes trigger a realisation that they have omitted something important.

- **Self-regulation focused**

Self-regulation-focused comments have the greatest potential to influence what students do. Feedback is a two-way process and one that, under the right circumstances, should originate within the learner. Self-regulation-focused comments have at least six aspects that mediate the effectiveness of feedback: the capacity to create 'internal' feedback; the ability to self-assess; a willingness to invest effort into seeking and dealing with feedback information; a degree of confidence or certainty in the correctness of the response; attributions about success or failure; level of proficiency at seeking help. Self-regulation-focused input may take the form of posing questions rather than giving information.

- **Person (self) focused**

Person-focused-feedback is directed at personal attributes, such as understanding, intelligence and ability, and can often be the least effective. It usually contains little or no task-related information. Examples of person-focused statements are: 'You are so clever'; 'You have a very interesting approach to things'. For this reason, person-focused feedback is usually ineffective: it doesn't include information on matters that learners can see that they can change. Such praise on its own, although highly valued by many students, does not translate into more engagement with or commitment to learning goals, does not promote self-efficacy, nor leads to a greater understanding about learning tasks. Negative person-focused comments – e.g. 'you weren't being very professional there' – can potentially have a negative effect on learning. More considered person-focused feedback may, however, be used to build trust between the learner and a supervising professional.

where it is needed. A simple but regrettable example of this is the inadvertent humiliation of learners in the health professions.[8,9]

SUMMARY

In summary, the following points emerge from recent research and scholarship on feedback.

- Learning involves bridging the gap between desired and actual performance.

- Feedback comments must primarily be judged on their effects on learning and performance.

- It is necessary to look beyond the immediate task: acts of assessment must be designed to leave learners better equipped to learn further.

- Learners need to develop a view about what constitutes quality work if they are to demonstrate it for themselves.

- Feedback is not a unilateral act by tutors or trainers, but is a set of interlinked activities.

- Students need always to be positioned by tutors and other staff as pro-active learners who can initiate feedback-seeking behaviour.

- Knowledge of the desires and expectations of the learner is needed for effective input.

- Effective learning requires dialogue.

- The overriding purpose of feedback is the refinement of the learner's capacity to use information to judge themselves in similar situations.

- Inputs from tutors are important as they can open up or close down learning possibilities.

Feedback processes can make a substantial impact on learning, but only if they are understood in a more dynamic way than traditional recipes for feedback comments have implied.

REFERENCES

1. Boud D, Molloy E. Rethinking models of feedback for learning: the challenge of design. *Assessment & Evaluation in Higher Education* 2013;**38**:698–712.

2. Sadler DR. Formative assessment and the design of instructional systems. *Instructional Science* 1989;**18**:119–144.

3. Boud D, Lawson R, Thompson D. Does student engagement in self-assessment calibrate their judgement over time? *Assessment & Evaluation in Higher Education* 2013;**38**:941–956.

4. Nicol D. From monologue to dialogue: improving written feedback in mass higher education. *Assessment & Evaluation in Higher Education* 2010;**35**: 501–517.

5. Carless D. Trust, distrust and their impact on assessment reform.

Assessment & Evaluation in Higher Education 2009;**34**:79–89.

6. Hattie J, Timperley H. The power of feedback. *Review of Educational Research* 2008;**77**:81–112.

7. Shute VJ. Focus on formative feedback. *Review of Educational Research* 2008;**78**:153–189.

8. Lempp H, Seale C. The hidden curriculum in undergraduate medical education: qualitative study of medical students' perception of teaching. *BMJ* 2004;**329**:770–773.

9. Seabrook MA. Clinical students' initial reports of the educational climate in a single medical school. *Med Educ* 2004;**38**:659–669.

10. Jolly B, Boud D. Written feedback: what is it good for and how can we do it well? In Boud D, Molloy E, eds. *Feedback in Higher and Professional Education*. London: Routledge; 2013; pp. 104–124.

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