

State of the science in health professional education: effective feedback

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BACKGROUND Effective feedback may be defined as feedback in which information about previous performance is used to promote positive and desirable development. This can be challenging as educators must acknowledge the psychosocial needs of the recipient while ensuring that feedback is both honest and accurate. Current feedback models remain reductionist in their approach. They are embedded in the hierarchical, diagnostic endeavours of the health professions. Even when it acknowledges the importance of two-way interactions, feedback often remains an educator-driven, one-way process.

LESSONS FROM THE LITERATURE An understanding of the various types of feedback and an ability to actively seek an appropriate approach may support feedback effectiveness. Facilitative rather than directive feedback enhances learning for high achievers. High-achieving recipients undertaking complex tasks may benefit from delayed feedback. It is hypothesised that such learners are supported by reducing interruptions during the task. If we accept that medical students and doctors are

high achievers, we can draw on some guiding principles from a complex and rarely conclusive literature. Feedback should focus on the task rather than the individual and should be specific. It should be directly linked to personal goals. Self-assessment as a means to identify personal learning requirements has no theoretical basis. Motivated recipients benefit from challenging facilitated feedback from external sources.

A NEW MODEL To achieve truly effective feedback, the health professions must nurture recipient reflection-in-action. This builds on self-monitoring informed by external feedback. An integrated approach must be developed to support a feedback culture. Early training and experience such as peer feedback may over time support the required cultural change. Opportunities to provide feedback must not be missed, including those to impart potentially powerful feedback from high-stakes assessments. Feedback must be conceptualised as a supported sequential process rather than a series of unrelated events. Only this sustained approach will maximise any effect.

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 INTRODUCTION

Feedback is central to supporting cognitive, technical and professional development. Effective feedback may be defined as feedback in which information about previous performance is used to promote positive and desirable development. Yet it is complicated. Cognitive theorists see feedback as focusing on actual performance compared with the intended performance level.¹ Highlighting the gap between a recipient's knowledge and the level of knowledge he or she needs provides a learning catalyst.² Behaviourists conceive feedback as a way to reinforce or modify behaviour.³ For example, reducing uncertainty supports recipients' achievement⁴ as uncertainty is unpleasant and distracts from desired goals.⁵ Yet in the health care education literature, feedback is often devoid of any theoretical basis.⁶

Health care education feedback is problematic, for both the provider and the recipient, as feedback settings are diverse and include small groups, practical skills training and bedside teaching contexts. Feedback provision is challenging as educators must acknowledge the psychosocial needs of the recipient while ensuring that feedback is both honest and accurate.^{7,8} The protection of professional standards, the self-esteem of the student and, in health care education, the rights and safety of the patient, must all be safeguarded. The subtleties required to maintain this balance may explain why teachers believe that they give feedback regularly but students do not always recognise it.⁹ Despite these challenges, feedback has been described as 'the cornerstone of effective clinical teaching'.¹⁰

This paper is a critique of the current literature on feedback and its effectiveness with a particular focus on its relevance to health care education. It does not represent a systematic review but extends to saturation in its breadth and depth. The paper tries to summarise and highlight for the reader the key areas of a vast literature, from which it is often challenging to reach clear conclusions about the extent to which feedback is effective, if at all. The paper presents the current state of effective feedback research under three main headings: the provision of feedback; the influence of the recipient, and, ultimately, the impact of feedback. The paper challenges the practical models that have arisen from this literature as reductionist and argues that only feedback seen along a learning continuum within a culture of feedback is likely to be effective.

 THE PROVISION OF FEEDBACK

While accepting that feedback is not something that is simply delivered to a willing and grateful recipient, many studies have focused on the provision of feedback. This first section summarises the literature under three headings denoting the type, structure and timing of feedback.

Type of feedback

Many studies explore the types of feedback that can be used to support learners. Feedback is described as having either a directive or a facilitative function. Directive feedback informs the learner of what requires correction. Facilitative feedback involves the provision of comments and suggestions to facilitate recipients in their own revision. As well as its function, feedback can also vary in its specificity. Specific feedback appears to be beneficial for initial performance change. However, it may discourage recipients from further exploration and therefore undermine subsequent learning and independent performance in the longer term.¹¹ Specific feedback may support performance in that task but not the transfer of knowledge to other tasks.¹² Less specific feedback may lead to uncertainty, which in turn leads to a reduction in learning.²

Whether it is directive or facilitative, feedback can also vary in its structure. Feedback may simply indicate whether the answer is right or wrong (verification) or it may facilitate the recipient to reach the correct answer (elaboration). Elaborative feedback is described as being of five types.¹³ Of these, response-specific feedback appears to enhance learner achievement. The facilitator focuses on the responses and describes why an answer is either correct or not.¹³

Clinical teachers will be aware that they use many of these types of feedback interchangeably, but rarely with a conscious knowledge of their appropriateness. An understanding of these types and an ability to actively seek an appropriate approach may support the effectiveness of feedback. Guiding principles are that feedback should be specific, but both verifying and elaborative feedback may be effective.¹⁴ Facilitative feedback enhances learning for high achievers, but may not do so for novices.¹⁵

Structure of feedback

As well as being of various types, feedback can be structured differently; it may be written, verbal or

numerical. Its format is likely to be related to the context in which it is generated. Feedback arising from a written assessment may sensibly be written, but this feedback could be better supported. The response-specific facilitation of written feedback generated from a written examination may increase its effectiveness.

Feedback can also come from a variety of sources. It may be generated from colleagues as and when interactions take place or as part of a systematic approach, known as multi-source feedback (MSF).¹⁶ An additional source of feedback unique to the health professions is represented by patients. Patient feedback may be more influential in changing health professionals' performance,¹⁷ but its validity is far from assured. Patient feedback rarely correlates well with feedback from other sources.¹⁸

All feedback is ideally discussed face-to-face in a context that is supported by a trained facilitator.¹⁹ Discussing feedback with anyone who will listen has no impact.²⁰ Written feedback is important, but negative comments again require support to produce positive outcomes.²¹ Such facilitated written feedback may contain challenging information and this may be further complicated by its length and complexity. Complex feedback is likely to be ignored or its main messages lost. Scaffolding may help to guide learners through the potential maze of complex feedback by providing cues, prompts, hints and partial solutions, as well as direct instruction.²² Scaffolding involves motivating the learner, deconstructing the task to make it more achievable, providing direction, identifying differences between the learner's achievement and that which is expected, reducing risk and defining goals. The aim, though, is to slowly remove the scaffold as students learn.

Timing of feedback

Facilitating complex feedback is time-consuming and requires planning. The timing of feedback may independently influence its effectiveness.¹³ Evidence appears to suggest that efficacy and timing are related to the focus and difficulty of the task.²³ Delayed feedback may be better for supporting transfer of knowledge, whereas immediate feedback may be more effective in the short-term and for supporting the development of procedural skills.²³ High-achieving recipients undertaking complex tasks may benefit from delayed feedback. It is hypothesised that learners are supported by reducing interruptions that occur during the task.²⁴ Bangert-Drowns *et al.*¹⁴ concluded that 'feedback can promote learning if it is

received mindfully'. The converse argument helps to illustrate the concept. Mindless feedback might include the provision of answers before the recipient has had time to think, when the challenge is too easy or too complex, or when the process is random or inconsistent.

The type, structure and timing of feedback are diverse in their descriptions and inconclusive in their impact on effectiveness. However, there are some guiding principles within this section that can help shape feedback to high achievers in varying clinical settings.

It is clear that even ideally structured feedback that is well supported and appropriately timed does not always achieve the desired effect. Feedback must not be seen as passive information passed on to an individual who either does or does not respond. The individual is the focus; the feedback is a modality. Understanding the individual in the context of the feedback exchange is therefore central to its effect. This is the focus of the next section.

THE INFLUENCE OF THE RECIPIENT

This section explores the individual at the heart of the feedback interaction in terms of three aspects of the individual–feedback interaction: the self; acceptability, and goal setting.

The self

It is often hypothesised that involving the recipient in comparative self-assessment places him or her at the centre of the process and therefore must improve effectiveness. Most studies in the health professions explore the personal assessment of performance as an ability to identify one's own strengths and weaknesses in relation to other peoples' views.²⁵ However, with this approach self-assessment is described as poor,²⁶ and as shaped by culture²⁷ and gender²⁸ rather than as representative of a shared reality. There is no evidence for the effectiveness of self-assessment using this approach.⁶ It is methodologically flawed.²⁹ Social psychologists view self-assessment as flawed because our behaviour and performance are informed by our unconscious minds.³⁰ This unconscious self is focused on self-preservation. It helps explain why feedback that threatens self-esteem or contains nothing more than unconditional praise may be less effective.² Similarly, recipients of negative feedback blame external factors and reject personal responsibility; this is known as *fundamental attribution error*.³¹

Personality theorists are more interested in self-efficacy, which refers to the belief structures around one's capability to manage future situations. Self-efficacy is shaped by self-beliefs about one's skills within a specific context. By this very interaction self-efficacy will and should change in a manner that is dependent on the context.

It is therefore inappropriate to continue to pursue 'accurate' self-assessment. We should each seek the views of others who represent reliable and valid external sources.³² Many individuals will need to be supported in their motivation to seek external feedback as they move from individualised, internalised self-assessment to *self-directed assessment seeking*.³³ In this process, feedback becomes a pedagogic activity, which is active, not passive. By learning about our abilities, not ourselves, through external feedback we are then able to better self-monitor. Self-monitoring is the ability to respond to situations shaped by one's own capability at that moment in that set of circumstances, rather than being governed by an overall perception of ability. Eva and Regehr³³ argue that the 'health professional community should predominantly be concerned with identifying contextual factors that influence self-monitoring behaviours in the moment of action rather than worrying about the accuracy of generic and broader self-assessments of ability'. However, the ability to respond to external feedback is still influenced by the learner.³⁴ Individual receptiveness is complex and is related to self-awareness, demographic similarity and acquaintance, and reduces with age. Recipients who have high emotional stability are more likely to be motivated, those with high levels of responsibility feel obligated to use feedback, and those with high sociability are more likely to seek additional feedback.³⁵

At this juncture it is worth highlighting the role of reflection as the term 'reflection' is often used interchangeably with 'self-assessment' in the literature. Boud *et al.* describe reflection as 'a generic term for those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to a new understanding and appreciation'.³⁶ Reflection is therefore a conscious and deliberate process that focuses on understanding events and processes to bring about self-improvement and to move from the status of novice to that of expert.³⁷ This is clearly important and may be part of self-monitoring,²⁹ but although it is intuitive, there is little evidence to support the idea that by reflecting we come to understand ourselves better,³⁷ as is the preoccupation of the self-assessment literature.

Acceptability

The ability to shape capability through self-monitoring with self-directed assessment seeking requires an individual to accept the feedback provided. Appearing to learn nothing new about one's abilities or receiving feedback from sources that one does not value undermines the effectiveness of the feedback. Inconsistent feedback may have a negative effect by making the feedback appear inaccurate.³⁸ Acceptability is increased if the relevance of the feedback can be demonstrated, namely by goal setting.

Goal setting

Goal setting can support the acceptability and therefore the impact of feedback by demonstrating its relevance.² Goals should be personally meaningful and easily generated. Control theory argues that as individuals we try to match our behaviour to goals and standards.³⁹ We therefore reflect and then try to modify behaviour or seek training, including external feedback, in order to improve our standing.³⁹ Goals may be learning- or performance-orientated. Learning orientation is associated with a desire to develop new skills and master new situations in the belief that intelligence is malleable. Performance orientation reflects a desire to demonstrate competence to others and to be positively evaluated by them in the belief that intelligence is innate. The two types of goal orientation influence how recipients respond to task difficulty and failure. Those who are learning-orientated continue despite failure, use more complex learning strategies and pursue challenges. Those who are performance-orientated are characterised by a tendency to give up more easily and have less interest in difficult, challenging tasks in which success is less likely. As might be expected, learning orientation is associated with more positive outcomes.¹³ Feedback is one way of supporting recipients to become more learning-orientated.

Given the complexities of feedback provision and its interaction with the individual recipient, can feedback ever be effective? The next section explores the evidence for the impact of feedback in health professional education.

THE IMPACT OF FEEDBACK

The individual

Veloski *et al.*⁴⁰ published a *Best Evidence Medical Education* review looking at assessment, feedback and

doctors' clinical performance. They identified 41 studies fulfilling their inclusion criteria, which required the studies in question to focus on the performance of practising doctors in a clinical setting, not to be confounded by other interventions and to ensure the doctor was the centre of focus. They concluded that feedback can change clinical performance when it is systematically delivered from credible sources. Multi-source feedback, which was not included in this study, currently lacks robust evidence that it can support substantive performance change.⁴¹

The organisation

Feedback is normally and understandably focused on the individual, but if the provision of feedback is part of a cultural change within an organisation, it may have other benefits, including the informing of training programmes. Davies *et al.*,⁴² for example, identified a specific learning need around report writing in a national cohort of pathology trainees, leading to a specific training initiative. Overall supportive and supported feedback may be beneficial to staff morale and retention.⁴³

Negative impact

As we have seen, the provision of feedback does not necessarily result in a positive change in performance.² Indeed, receiving negative feedback may lead the recipient to believe variously that the feedback is useless, burdensome, critical or controlling.⁴⁴ For example, Sargeant,⁴⁵ exploring the emotional responses to feedback of a group of doctors, found that those who received negative feedback often responded negatively and in such a way that demonstrated the feedback to be paralysing. The response was often strong and long-lasting. The author concluded that recipients must receive appropriate facilitated support at the time of feedback and if necessary in the longer term.

THE PRACTICAL MODELS

It is clear that feedback is a complex interaction between format, focus and recipient. A complex intervention in the complex environment of medicine understandably drives a desire for practical solutions. Medicine centres on personal clinical interactions. To support the oral provision of feedback in this setting, a number of models have been developed. Three are briefly discussed here.

Personal preservation is at the centre of the 'feedback sandwich'. Facilitators deliver the more critical feedback 'sandwiched' between the positive. This model shields both recipient and provider by balancing or avoiding perceived injustice. However, this is likely to reduce any potential positive response by the recipient to justifiable criticism. The facilitator balances feedback with the psychosocial needs of the recipient, ensuring *interactional justice*.⁴⁶ Pendleton's rules⁴⁷ build on the feedback sandwich to include a more two-way process which allows the recipient to respond to feedback first. Accommodating an emotional response is increasingly recognised as important; the ECO model encourages an *Emotional response* prior to exploring *Content* in order to establish *Outcomes*.⁴⁸

A NEW MODEL FOR FEEDBACK: CULTURE AND CONTINUUM

These practical models are limited by their reductionist approach. They remain embedded in the hierarchical, 'diagnostic' lens of the medical profession's positivistic paradigm. There is an acknowledgement in later models of the importance of two-way interactions, but feedback remains an educator-driven, one-way process. The health care professions have so far embraced feedback on their own terms. It is constrained by the classic medical hierarchical model, in which the expert supports the novice. Feedback has also focused on diagnosing 'problems' for individuals to have cured, yet rarely is a therapy offered. Feedback provision is often seen as an afterthought, which is then frequently overlooked in busy, time-constrained clinical settings.

Feedback is complex and contextual. As well as removing complexity, most current models remove context. A good practice framework, embedded in the literature, may be a more robust approach that can then be applied depending on the context of the recipient, focus and format. The literature is vast and often contradictory, but if we accept that medical students and doctors are high achievers we can draw on some guiding principles to inform a framework.

Feedback should focus on the task, not on the individual.⁴⁹ Overall feedback should be specific¹⁵ and high achievers may benefit as much from simple verification feedback (correct or not). It should be directly linked to personal goals. Feedback should

not undermine self-esteem, but should not simply consist of praise.² Its delivery can be delayed from the event to which it refers but the information that informs the feedback should not be recorded retrospectively. Motivated recipients benefit from challenging facilitated feedback from external sources.

This summary may support individual feedback events, but it struggles to take the argument beyond the top-down approach.

A CULTURE OF FEEDBACK

To achieve effective feedback, the health professions must nurture recipient reflection-in-action.⁵⁰ This needs to be built on self-monitoring informed by external feedback. A re-conceptualisation of self-monitoring informed by external feedback is pedagogical and outward-looking.³³ Learners need to be supported in these skills, but educators also need to be supported in developing strategy-focused approaches, rather than engaging in a diagnostic process that focuses purely on problem identification. The way to achieve such an integrated approach must be to develop a feedback culture, in which feedback is embedded implicitly and explicitly in all activities and in which students feed back to teachers as well as teachers to students. Early training and experience such as with peer feedback may over time support the required cultural change. Feedback opportunities must be actively sought and encouraged.

There are already many opportunities to provide feedback which should not be missed. The artificial dichotomy between summative and formative feedback often distracts from generating potentially powerful feedback from all assessment. For example, we often give little feedback from high-stakes written examinations, especially to those who are successful. The death of a patient does not always end his or her care. The post-mortem examination may be unpopular in modern western society, but, when appropriate, it has always been seen by the medical profession as an important last stage in the care of the patient. High-stakes assessment even for an exit examination should provide feedback to the learner. Assessment, viewed as if it were a post-mortem examination, represents an opportunity to benefit learners' education, not only their progression. Assessment otherwise is disassociated from the continuum of lifelong learning. But do educators translate these philoso-

phies into practice and do students' learning outcomes change?

THE FEEDBACK CONTINUUM

The authors of a recent Cochrane review⁵¹ concluded that the impact on doctors of audit and performance feedback data could be effective in improving professional practice but that the effects were generally small. The relative effectiveness of the process appeared to be linked to initial adherence to proposed change and to the intensiveness with which the feedback was delivered. Facilitation is therefore central to feedback success in that it can take potentially damaging negative feedback² and use it to create positive outcomes.²¹ Feedback must be conceptualised as a supported sequential process rather than a series of unrelated events. Only this sustained approach will maximise any effect. Contexts in which a series of individuals each provide such feedback to students, trainees and colleagues cannot facilitate this continuum. This requires established, longer-term professional relationships. An apprenticeship model is no longer sustainable in many clinical settings,⁵² but most health professional education programmes increasingly advocate forms of supervision for supporting individuals. Supervisors appear to be well placed to collate sources of feedback to provide a profile of and for an individual. This profile from many different sources provides an *organisational memory* of performance for development and, when required, decisions. More importantly for the individual, it becomes a resource to inform reflection supported by challenging but non-threatening facilitation.

This relies on an expectation that some individuals are trained and resourced to provide the high-quality facilitative support needed to make feedback effective. If the health professions are serious about effective feedback, an evidence-based cultural shift will also be required. Both are great challenges yet to be realised in medical education, a century on from Flexner's report.⁵³

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