A large part of resuscitation education focuses on the attempts to improve retention of skills and knowledge that, in real life practice, will improve the quality of resuscitation and hence ultimately improve patient outcomes. The goal of any resuscitation training course is to impart a level of knowledge and skill in a relatively short space of time, which will result in candidates attaining a level of understanding and competence that is internationally accepted.

Whilst it is still not known exactly what relationship there is between resuscitation courses and ongoing knowledge and skills retention, the underpinning educational theory would lead us to believe that they should be effective. All of the major resuscitation courses have been designed with significant input from established educational experts. They have evolved over the years to update the teaching methodology and assessment techniques in line with current educational evidence. An example of this is the development of formative as well as summative assessment processes during the courses.

The process through which this learning is validated is assessment. The purpose of assessment has been defined as follows: “Assessment provides a framework for sharing educational objectives with students and for charting their progress” [6].

Assessment is not a one way process but rather a purposeful interaction between the instructor and candidate which guides both of them to achieve a positive outcome for the learner. It has been pointed out that “it can generate feedback information that can be used by students to enhance learning and achievement. This feedback information can also help teachers re-align their teaching in response to learners' needs” [6]. It can therefore be seen that the process of feedback is integrally linked to the process of assessment. Indeed, it has also been suggested that candidate ‘self-assessment’ should be integrated into feedback as well [8].

Whilst much of the research on assessment and feedback has been conducted in higher education it is also transferable to resuscitation education. This article will focus on feedback and introduce the concept of “feedforward”.

Feedback to feedforward

Feedback to candidates is a core part of the learning process. A meta-analysis of the research into assessment stated that “research shows conclusively that formative assessment does improve learning. The gains in achievement appear to be quite considerable, and are amongst the largest ever reported for educational interventions” [1].

If assessment has such potential then our focus should be on making it the best it can be. In the short space of time afforded to most resuscitation courses, getting feedback right is one of the most helpful ways of ensuring candidate success.

For students to benefit from feedback they must meet a number of conditions [9]. Students must:

- possess a concept of the goal/standard or reference level being aimed for
- compare the actual (or current) level of performance with that goal or standard
- engage in appropriate action which leads to some closure of the gap

In most educational settings, teachers provide students with information on the level of performance against the goal but fail to go further to enable them to engage in action which closes the gap. In resuscitation courses the candidates are made aware of the expected standard through demonstrations and continuous feedback during the course. In relation to the guidelines and use of guidelines the goal is clear and explicit. On the contrary, the behavioural component of assessment (i.e. the ability to lead a team) is less obvious and it might be argued that candidates are not therefore aware of the goal or standard expected of them.

Use of continuous assessment makes it possible for the instructor to measure the students’ performance against the goal. For example, in relation to the simulated resuscitation teachings, it is possible to compare the student’s performance to the expected outcome through the use of criteria. It is essential that this information is shared with the candidate so that they can identify the gaps in their performance. However this in itself is not sufficient to move the candidate forward towards achieving the final outcome of the
course and passing the assessment. This requires the instructor to offer appropriate suggestions and guidance to the candidate that they can implement in the remainder of the course to meet the standard.

Feedback is the means by which instructors help students identify the gap in their knowledge. Good feedback practice [6]:
1. Facilitates the development of self-assessment (reflection) in learning
2. Encourages teacher and peer dialogue around learning
3. Helps clarify what good performance is (goals, criteria, expected standards)
4. Provides opportunities to close the gap between current and desired performance
5. Delivers high quality information to students about their learning
6. Encourages positive motivational beliefs and self-esteem
7. Provides information to teachers that can be used to help shape the teaching

There are several different models of feedback, each with their own strengths and weaknesses [3]. The “Positive Sandwich” and the “Narrative Approach” are two variants that have been described.

The approach commonly used for feedback in resuscitation courses is a reflective variant based upon the work by Pendleton [7]. This approach is a four part process:
1. The candidate is asked what they did well
2. The instructor offers their comments on what the candidate did well
3. The student is asked what they could improve
4. The instructor offers their comments on how the student could improve.

If done well this apparently simple approach to feedback covers the majority of elements described above [6]. The candidate is engaged in a dialogue about their performance both with the instructor and within their peer group on the course. The candidate is encouraged to reflect on their performance specifically focusing on good rather than poor performance, often the most difficult thing for candidates to do. Providing that the candidates understand the standard expected of them, they can often identify the gaps in their knowledge.

Other components of the courses, such as lectures and practical stations, are further designed to provide candidates with constant reinforcement of the learning objectives.

The candidate’s reflection is then reinforced by the instructor clarifying what good performance is and what steps the candidate could take to improve or close the gap between their performance and the expected standard. Instructors must ensure that they focus on the candidate’s performance and not their personality.

It has been stated that “Literature on formative assessment distinguishes between feedback which tells students they are hopeless, or amongst the bottom 10% of students (a grade D, for example), and feedback which tells students exactly where they have gone wrong and what they can do about it. In contrast, feedback concerning content provides the student with options for action and is less closely associated with their ego – it is about their action rather than about themselves” [4].

For this reason information given to the candidate should be of sufficient quality to enable them to take appropriate action. Over the years we have seen many instructors struggle with the positive approach, confusing empty comments such as ‘you were great’ with genuine specific instructions delivered in a positive manner such as ‘your hand position was accurate, however your cardiac compressions would be improved by increasing the depth of compression’.

Furthermore, it has been pointed out that feedback on personal characteristics can have a negative effect on individuals. “Focus of critical feedback on personal characteristics can be demotivating and can negatively affect students’ self-efficacy or sense of competence” [4].

This is important because self-efficacy is strongly related to effort and persistence with tasks, is a good predictor of academic outcomes, and encourages students to adopt a deep approach to learning.

It is important that instructors have sufficient high quality information so that they can focus on each individual, giving them detailed feedback of the gaps in their performance. Using the criteria provided in the feedback forms available on resuscitation courses and relating the feedback
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specifically to the learning outcomes gives the student an understanding of where they need to make changes and allows the instructor to tailor their instruction towards those learning outcomes.

As an instructor and as a faculty it is important to pay attention to the student’s comments during feedback as they can highlight consistent errors that may need clarification for the whole group and not just one or two individuals.

This approach to feedback however can remain limited to identifying the gaps in a candidate's knowledge if it is not followed through with clear instructions on how to bridge the gap.

**Feedforward**

The proactive direction which enables the candidate to move forward is referred to as “feedforward” and is the natural extension of good feedback.

Feedforward has been described as follows: “Good feedback comprises not just commentary about what has been done, but suggestions for what can be done next. In particular, advice about how to improve the next element of work can be particularly helpful to students receiving feedback, especially when this advice is received during the progress of the work, so that adjustments can be made in an ongoing manner. It can be worth checking that enough such feedforward is being given, rather than merely feedback on what has already been done and often dealt with” [2].

In order to introduce feedforward into resuscitation courses, we must provide the candidate with explicit instructions on how to improve their performance. Whilst feedforward focuses on future performance it is important to note that it also reflects an important difference in how we communicate with candidates. There is a level of communication involved in feedback which goes beyond a straight forward linear model. Communication in these circumstances is complex and involves concepts such as authority, emotion, power, and identity; notions which can complicate the communication and how it is received.

There can be problems with communicating assessment feedback. “For example, the tutor’s expert position confers their ‘judgements’ with an elevated status, which enhances the power of these judgements to invoke feelings such as pride and shame within students” [5].

Using feedforward, we can concentrate on what the candidate can do to improve their performance rather than focusing on their past performance or their personality. This should lead to more effective communication between the instructor and candidate.

It has been stated that “feedback may need to be more dialogical and ongoing. Discussion, clarification and negotiation between student and tutor can equip students with a better appreciation of what is expected of them. Perhaps we need to shift the emphasis to ‘feeding forward’ into a piece of work, rather than simply ‘feeding back’” [5].

Building on the existing framework of feedback used in resuscitation courses, feedforward is a simple modification which can be introduced to create that meaningful dialogue and improve candidate outcomes.

**Conclusion**

Resuscitation courses utilising the four-stage approach to feedback can provide an effective means of assisting the candidate to improve their performance. On review of the four stages, it is noteworthy that the fourth stage stipulates that “the instructor offers their comments on how the student could improve.” The structure is therefore already present to integrate the concept of ‘feedforward’. Whilst “constructive feedback” may or may not include a strategy for the future, “feedforward” goes that extra step by ensuring that such a strategy is in place. Instructors need to emphasise what the candidate needs to do in the time available to enable them to achieve the specified goals.

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