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Be FAIR to students: Four principles that lead to more effective learning†

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Abstract

A teacher is a professional not a technician. An understanding of some basic principles about learning can inform the teacher or trainer in their day-to-day practice as a teacher or a trainer. The FAIR principles are: provide feedback to the student, engage the student in active learning, individualise the learning to the personal needs of the student and make the learning relevant. Application of the principles can lead to more effective learning – the poor teacher can become a good teacher and the good teacher an excellent teacher.

Be FAIR to your students

A professional teacher does not operate using a cookbook approach, blindly following a set of rules or procedures. Good teaching, just like any other field of professional endeavour, is best delivered when there is an understanding of the underlying process. Educational researchers have devoted a lifetime to studying education and have described a variety of theories and factors that influence learning. The work in educational psychology described in educational textbooks is often more associated with the experimental laboratory than the reality of practice in the classroom. There are, however, some general principles about learning that can inform what we do as medical teachers.

A comprehensive study of educational theory is unlikely to be of interest or relevance to the reader. We have distilled key principles about effective learning to which teachers can relate in their day-to-day practice (Laidlaw & Harden 1987). If applied, these principles can improve the effectiveness and efficiency of learning for students or trainees. Most learners in the healthcare professions are capable learners and should have little difficulty in achieving the expected learning outcomes providing they are given some help from their teacher or supervisor.

We have used the acronym FAIR. Be FAIR to your students by providing (Figure 1):

- *Feedback:* Give feedback to students as they progress to mastery of the expected learning outcomes.
- *Activity:* Engage the student in active rather than passive learning.
- *Individualisation:* Relate the learning to the needs of the individual student.
- *Relevance:* Make the learning relevant to the students in terms of their career objectives.

Practice points

- Provide appropriate feedback to students.
- Make learning active not passive.
- Individualise the learning to the personal needs of the student.
- Ensure the learning is relevant to the expected learning outcomes.

Feedback

Feedback is information communicated to the learner that is intended to modify his or her thinking or behaviour in order to improve learning. Feedback provided by the teacher to the student:

- Clarifies goals: It highlights what is expected of the learner.
- Reinforces good performance: It has a motivating effect on the learner and may reduce anxiety.
- Provides a basis for correcting mistakes: It enables learners to recognise their deficiencies and helps to guide them in their further study.

Knowledge of the extent to which the expected learning outcomes have been achieved will lead the student to more effective and efficient learning. It will provide for learners an insight into their performance that they might not otherwise have. Feedback is part of a two-way communication between a teacher or trainer and the learner. Feedback should be regarded as an essential teaching activity.

It has been demonstrated that academic achievement in classes where effective feedback is provided for students is considerably higher than in classes where this is not so. As Hattie and Timperley (2007) demonstrated in a review of

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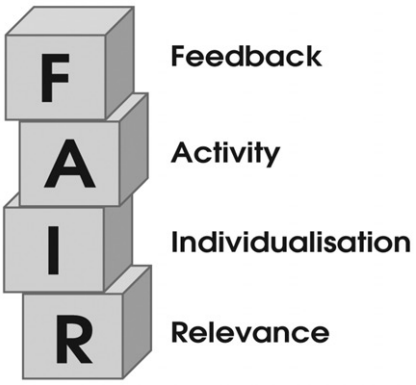

Figure 1. The FAIR principles that lead to effective learning.

university students, the most powerful single thing that teachers can do to enhance achievement of their students is to provide them with feedback.

Satisfaction studies carried out both with undergraduate students and postgraduate trainees have revealed that one of the commonest complaints students have is that they do not receive meaningful feedback. Too often feedback is omitted or, if provided, is not seen to be helpful.

How to give constructive feedback has been identified by teachers as one of the core competences thought to be important in their work as a teacher. Much is known about how effective feedback can be provided. It is a skill that can be learned. Here we provide eight evidence-based practical guidelines:

- *Give an explanation*

  In providing feedback, give learners an explanation as to what they did or did not do to meet the expectations. Simply giving a grade or mark in an examination or indicating that learners are right or wrong is less likely to improve their performance. The aim is to help the learners reflect on their performance and to understand the gaps in their learning.

- *Ensure the feedback is specific*

  Provide learners with feedback about their performance against clearly defined learning outcomes. Informing learners how they compare to their peers or informing them in general terms that they lack competence in an area has little value.

- *Feedback should be non-evaluative*

  Feedback should be phrased in as non-evaluative language as possible. It is not helpful, for example, to inform learners that their performance was 'totally inadequate'.

- *Feedback should be timely and frequent*

  Feedback is more effective when learners receive it immediately rather than when it is delayed and provided in a later class or session. We have found that providing students with a feedback session immediately following an Objective Structured Clinical Examination (OSCE) is a useful and powerful learning experience.

- *Prepare adequately in advance*

  Ensure all the evidence is available with regard to the student's performance before an attempt is made to provide them with feedback. The teacher should be in a position to provide feedback from first hand experience with the student.

- *Feedback should help learners to plan their further study*

  Assist learners to plan their programme of further learning based on their understanding of where they are at present. This may involve giving them specific reading material or organising further practical or clinical experiences appropriate to their needs.

- *Help the learner to appreciate the value of feedback and how to interpret it*

  A small number of learners may find it difficult to accept and act on feedback provided. One strategy that can help is to ask the learner, before the actual content of the feedback is considered, to reflect orally or in writing on their attitude to being given the feedback.

- *Encourage learners to provide feedback to themselves*

  Feedback is usually thought of as something that is provided exclusively by teachers. Students should be encouraged to assess and monitor their own performance. Ask the learner what they think they have done well and where they think there are problems. Learners can be provided with tools to assist them to assess themselves. Following an OSCE, for example, students can be given a copy of their marked OSCE checklist, a video of their performance and a video demonstrating the expected performance at the OSCE station.

Activity

A second strategy that has been shown to enhance achievement is active engagement of the learner. Good teachers incorporate active learning into their teaching and learning programmes. The principle of active learning is implicit in many of the changes that have taken place in the medical curriculum. These include student-centred approaches, the use of small group work and problem-based learning.

The traditional lecture has been criticised in that the learning is all too often passive with information passed from the lecturer's notes to the student's notes without going through the brain of either. Evidence demonstrates that where a learner is actively involved in the learning process, the achievements will be significantly enhanced. Learners should be challenged to think and review what they are studying and how new information and skills can be incorporated into their existence knowledge base and skills repertoire. The active learning results in a deeper and more meaningful processing of the learning material with information being stored in the long-term memory. What we need to guard against is 'inert knowledge' – information transmitted to the student that is not used and usually forgotten.

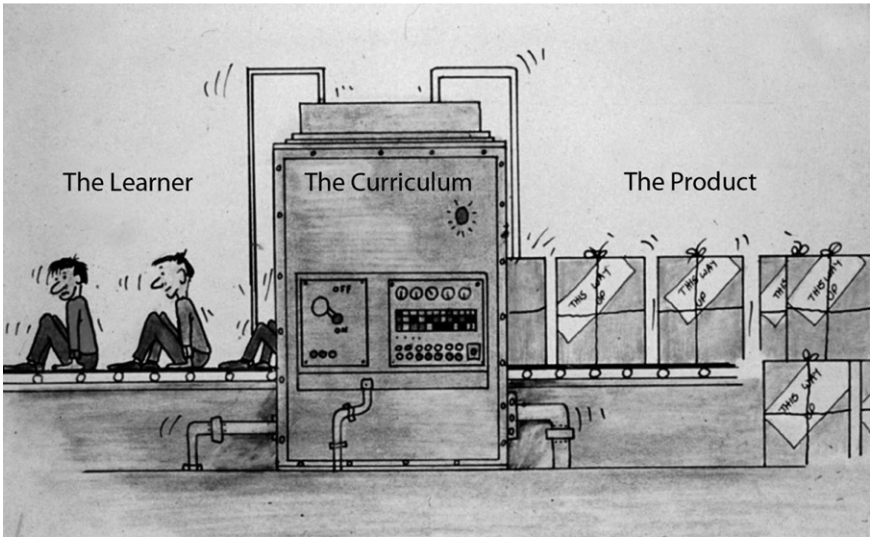

Figure 2. In the traditional approach students pass through a standard curriculum.

Some learning methods such as simulation and portfolio learning, by their very nature, actively engage the student while others such as the lecture or printed text are frequently associated with passive learning. Almost all learning situations can be transformed from a passive to an active one. Here are some examples:

- Where lectures are scheduled, engage the audience to reflect on and respond to what is being discussed. An electronic audience response system or coloured cards can be used.
- Small group teaching, by its nature, is more interactive but guard against it regressing into mini tutorials. Learners should actively engage with other group members and with the teacher who acts as the facilitator of the discussion rather than the presenter of information – 'the guide on the side rather than the sage on the stage'.
- In the clinical context ensure that learners are not simply passive observers. Learners can be given specific roles and be encouraged to be actively involved in a patient care activity.
- Independent learning resources recommended for use by students, whether in print or online, should be interactive. Available texts or resources can be enriched by the teacher through the addition of meaningful activities that actively engage the student.
- The use of technologies such as models and simulators can contribute to active learning. To assist the learners to make full use of the resources, it is useful to provide support material and guidance in the form of print, audiotapes, video tapes or computer programmes. Activities may be programmed into the simulator.
- Ensure that portfolios involve an active reflective process and are not simply a log or rote documentation of activities carried out by the learners. They should not be seen as a chore with no attempt made to distil general principles or practice points. Learners should reflect on the task and document what they have learned in the process.

Whatever the context, whether in the lecture theatre, small group situation, practical laboratory clinical setting or independent learning, scheduled activities should be designed to be meaningful. Clicking to turn a page in an e-learning programme is an activity but it does not contribute to the student's learning. It is important that the teacher and students grasp the purpose or function of an activity and how it contributes to a mastery of the learning outcomes.

The development of student activities can be time-consuming but at the same time it is rewarding. The associated cost and resource implications can be justified more easily where the object of the learning is a complex task or a difficult concept, such as gaining an understanding of acid/base balance.

Individualisation

In the present consumer culture, the needs of the individual are being increasingly recognised whether it is in relation to planning a holiday or purchasing a computer. The same should be true of education. We all have different learning needs and learn in different ways.

Teachers have had to cope in medical schools with large classes of students and have had to design the learning experiences and programmes accordingly. As illustrated in Figure 2, students, like the raw material entering a factory, pass through a standard process emerging as a product with a uniform specification. There has been little opportunity to cater for the needs of the individual student. Students have different requirements in terms of:

- personal capabilities,
- motivation and what drives their learning,
- learning goals and career aspirations,
- mastery of the course learning outcomes on entry to the course,
- learning styles,
- the place of learning – on campus or at a distance and
- the time of learning.

Students are now less willing to accept teaching and learning opportunities that do not match their needs and help them to achieve their personal learning goals. With the availability of new learning technologies, we need to work towards an 'adaptive learning' programme where the experience offered to students adapts to their personal needs as they work through the programme. Of the four principles mentioned in this section, individualisation is probably the most difficult to apply. It is the one in the next decade where we are likely to see the most change.

Today, faced with the challenge of individualising learning, the teacher has a number of options:

- The issue of individualisation can be ignored with the teacher and the education programme addressing the needs of the body of students as a whole. This has disadvantages as illustrated in the following example. An analysis of the examination results in a medical school showed that two thirds of the class answered questions on a specific topic incorrectly. As a response to this finding, a decision was taken to restore a number of lectures on the topic which had previously been omitted from the curriculum. This may or may not address the performance problem with regard to the students who had given the wrong answers to the questions. It penalised however the third of the class who had mastered the subject and for whom the revised lecture course was not appropriate.
- A range of learning opportunities can be provided from which students can select those which best suit their personal needs. The teaching programme may be arranged so that students can choose to attend a lecture on a subject, view a podcast of the lecture, engage in collaborative problem-based learning with their peers or work independently using an online learning programme. The extent and range of learning opportunities included in the menu for the students will depend on the time and resources available. A move in this direction is supported by the increasing availability of e-learning resources.
- Learning resources or learning opportunities can be adapted or prepared so that the students' learning experience, as they work through the programme, is personalised to their individual needs. If students answer incorrectly a question embedded in a learning programme, or if they indicate they have difficulty understanding the message being conveyed, a further explanation and additional material that addresses the aspect of the topic is provided immediately.
- When learning experiences are scheduled in the programme, such as a session with a simulator, the time allotted for an individual student is not fixed, but is the length of time necessary for the student to master the required skills. Some students or trainees will take longer to master the skills than others.
- With the expansion of medical knowledge and the danger and problem of information overload, students can no longer be provided with in-depth learning in all aspects of medicine. Time can be scheduled in the learning programme when students have a greater element of choice in the subjects studied. Up to a third of the curriculum time may be allocated for electives or student selected components.
- Portfolio assessment encourages students to create their own learning programme and to demonstrate their learning in relation to the core and other areas they choose to study.

Relevance

A major criticism of much of medical education in the past has been a lack of relevance of the subjects taught particularly in the early years of the medical course. This was highlighted in numerous reports on medical education published throughout the twentieth century. Particular concern was expressed about how the basic sciences were taught with a common criticism that the subjects as taught lacked relevance to the training of a doctor.

Pressures to constantly examine the relevance of what is covered in the curriculum include:

- the rapid expansion of medical knowledge and concerns about information overload,
- the introduction of new subjects such as genetics and telemedicine and
- important learning outcomes which have been previously ignored such as communication skills and professionalism.

Relevance is an important consideration in curriculum planning, in the preparation of a teaching programme, and in the creation of assessment tools for a number of reasons:

- If students understand why they are addressing a topic they will be more motivated to learn. Adding relevance to teaching creates a powerful and rich experience. In general, students learn more rapidly if they are motivated and realise that what they learn will be useful to them in the future.
- More effective learning results when the student is engaged in applying theory to practice. This requires the student to reflect and think about why they are learning a subject which in turn dramatically improves the effectiveness of their learning. Inert knowledge that is not applied remains only in the short-term memory.
- A set of clinical cases or presentations used as a framework for the curriculum provides a scheme around which students, from the early years of their studies, can construct their learning in the basic and clinical sciences.
- Relevance can be applied as a criterion to inform a decision as to whether a topic or subject should be incorporated in the curriculum. More has to be learned but the time available in the curriculum remains constant.

The engagement of medical students in more authentic learning experiences offers many advantages, but there may be associated difficulties. Teachers in the early years of the curriculum may be equipped to tackle the subjects from the perspective of a basic scientist. They may not have practised as a doctor and may have difficulty in putting the topic into a clinical context.

The curriculum can be designed so that the students' attention is focused on the application of what they are learning to their future practice as a doctor. The following are examples of how relevant and meaningful learning contexts can be created:

- a vertically integrated curriculum with clinical experiences including attachments introduced in the early year of the course,
- a problem-based approach where students' learning is structured round clinical problems,
- the use of virtual patients where a student is presented online with a patient whose problem relates to the subject they are studying,
- a clear statement of expected exit learning outcomes and communication with the student as to how their learning experiences will contribute to their mastery of the learning outcomes,
- examinations designed to assess the student in the context of clinical practice. A short patient scenario may be used as the stem for an MCQ in a basic science question paper. Portfolio assessment can be designed to support relevance in the student's learning and
- new technologies such as simulators provide for the student a more realistic learning experience.

Reflect and react

Here are some suggestions to think about relating to your own teaching:

(1) Recognise in your own teaching the importance of feedback. Ask your students or trainees how they perceive the feedback provided by you. By paying attention to feedback, you can promote a culture of positive improvement in your learners.

(2) Look at your own teaching and assess the extent to which students are actively engaged in what they perceive as meaningful activities. Documentation in a logbook of the cases they have seen involves the students in an activity, but if the student does not perceive the benefit of the exercise, it can be seen as a waste of time.

(3) Individualisation and tailoring a learning programme to meet a student's individual needs offers many benefits but is difficult to achieve in practice. Can you adopt in your own teaching programme any of the suggestions in this section that might allow you to take into account the differing needs of your students or trainees?

(4) Feedback, activity and individualisation are all key ingredients of a teaching programme, but if relevance is missing your teaching is unlikely to be successful. Do you pay sufficient attention to ensuring that students recognise the relevance of their learning experiences?

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Further reading

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A classic text, which covers basic principles as well as providing useful hints for teachers.