

## Marks, remarks and feedback. Do we really need examinations?

### Abstract

This paper explores the role of marking and feedback styles in learning and discusses ways in which academics respond to student work using the analogy of an ‘educational control system’. It is argued that using this style of thinking can help assessors to refine their approach to assessment and feedback. In engineering terms, ‘control system events’ (in this instance, for example, exams, tests and feedback) act as inputs to the next stage of (student learning) development. This paper argues that activities themselves are feedback and that marks plus associated (feedback) remarks or comments together drive the student learning process and educational attainment. This process can be assisted by making assessment terminology and criteria clear. Research on meta-cognition suggests that students need to know about the learning process, that is, *what* is expected of them, as much as what they ‘learn’, and that thinking styles are as important as learning styles in all assessment processes, including coursework. Examinations should provide feedback as part of the educational control system. Suggestions are made to assist the use of feedback and remarks to enhance attainment.

### Introduction

This paper employs an engineering metaphor to consider how assessment and feedback drives educational attainment. Introducing students to these notions is argued to be central to their understanding of the differences between HE learning and their pre-HE experience. The ‘First Year Experience’ is an especially important part of the undergraduate programme. Ideally students and staff need to understand assessment terms and criteria so

that feedback comments are aligned and understood consistently in all assessed work. Engaging students with their own learning and being explicit about assessment criteria and feedback mechanisms at an early stage in their HE experience will help in the “scholarship of assessment” as defined by Rust (2007). Whalley (2008) argued that we still have a ‘Victorian educational system’ in the form and manner of assessment; we might call this the ‘University Challenge’ process. Points (module marks) are won by competitors and scaled according to the total gained year by year. Assessment in GEES subjects is still dominated by end of module examinations. However, for students in their first year (Level 1), university-style assessment is a new experience. Students find it hard to know what is expected of them and may not perform as well as they had hoped. This paper focuses on ways to inform Level 1 students about the university assessment experience so that they can maximise their achievements and learn from the process.

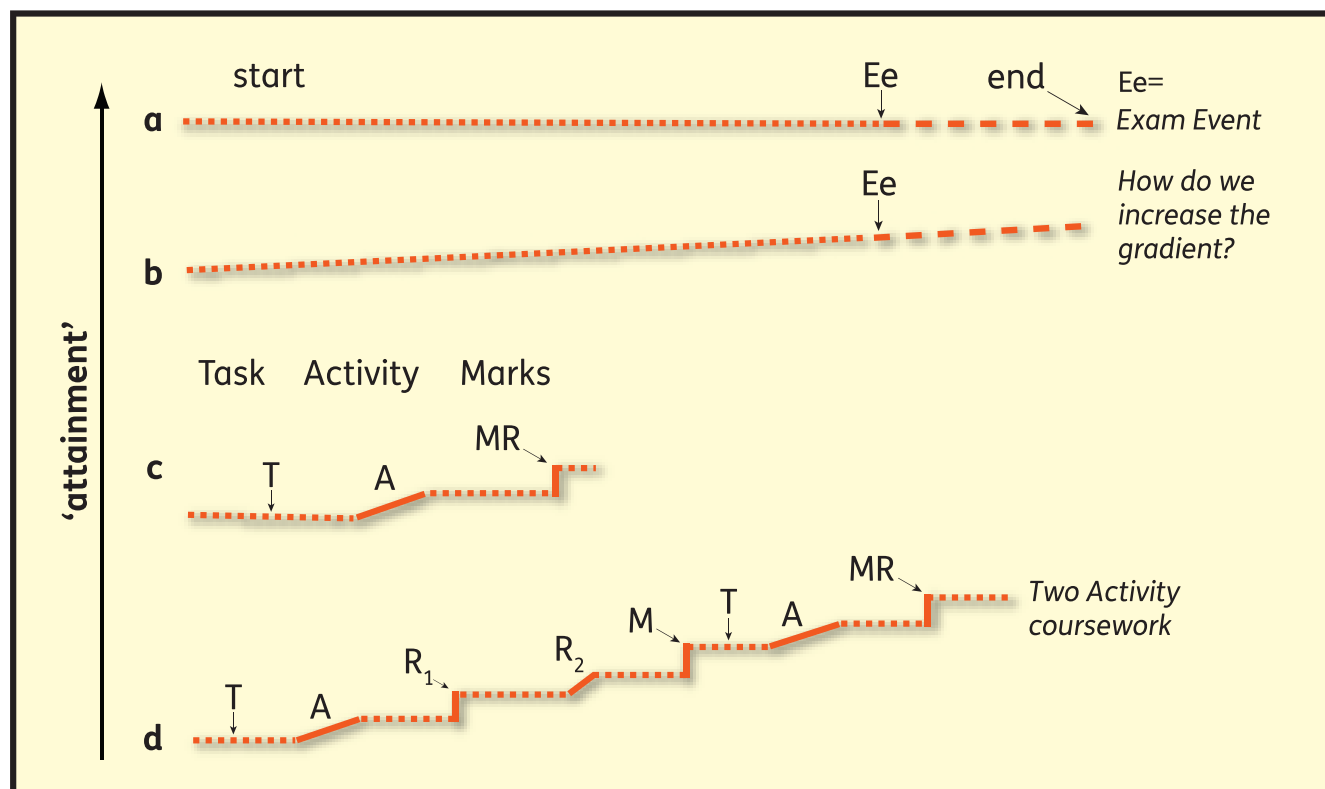
### An educational control system

The approach taken here is to look at learning in terms of an engineering ‘control system’ metaphor, in which the processes of feedback are designed into a module. Such a system helps academics to consider *where, how much* and *when* assessment processes are included in any learning experience.

A simple engineering control system has an input level of a variable, an output level, some form of reference sensor and a control mechanism. In a domestic central heating system, for example, a device heats the air in a room. The sensor determines what the temperature actually is, compares it to the reference and allows heating to continue if the

desired set-point (temperature) has not been reached. The term ‘feedback’, in an engineering sense, controls the desired output level. Positive feedback can be seen as a signal coming from a sensor that increases the set-point value. Similarly, negative feedback reduces the input signal to decrease the set point value. Introducing students to the notion of a

metaphorically parallel ‘education control system’ can help in developing their understanding of the difference between HE learning and their previous experience. For example, at school level, almost all information applied to the ‘system’ is positive feedback in terms of the student learning experience.



**Figure 1:** Simplified educational system. Attainment is an overall term for the educational advancement of a student. It can be applied to a specific task set (as in c) or over the length of a module, as in a, b and d, or as overall educational accomplishment. It incorporates experience and achievement as well as the marks gained for a piece of work but it is a general statement and is not quantified.

- a. A ‘flat’ curve in which the student achieves nothing, ie no educational attainment.
- b. The achievement is slowly ramped, e.g. by progressive memorisation of materials in the module. The educational need is to ramp the achievement to the highest level possible (by ‘deep learning’) by the end of the module. If an Examination event (Ee) occurs near or at the end of the module but no information is given until the marks arrive after the module has finished and no remarks are presented, then there is a lack of feedback within the module. This is the common, University Challenge, mode of examination setting.
- c. A portion of a module with a task (T) set. The achievement is ramped over the time the task is being done (the Activity, A) and feedback (ie information about the input level which provides positive feedback to enhance or amplify the output level) is achieved with the arrival of meaningful remarks (R) about the product as well as the marks (M). Note that the remarks are (here and ideally) more significant than the marks alone and can be given before the marks. In the case of examinations (or end of term projects), the remarks may not be provided by the end of the teaching period or contribute to the learning process rather late in the semester (as in b).
- d. A multi-phase enhancement of achievement as experiential learning in a module (or part module). This reads, from left to right:

- T – Task set by tutor
- A – Student does the activity and ramps achievement
- R1 – First remarks provided (perhaps to the class)
- R2 – Second set of remarks, perhaps individually
- M – Marks for first task
- T – Second task set
- A – Students does second activity
- MR – Marks and remarks provided for second task

Note that a task could be an examination; this does not have to be at the very end of the module.

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In the example of a simplified educational system shown in Figure 1, we do not want a flat curve (Figure 1a), as this implies that the student has not advanced educationally. So, how do we know the student has both gained in knowledge and understanding, and developed their learning and examination techniques? What are the signals that will ‘amplify the output level’? Generally, ‘assessment’ (marks) provides the sensing mechanism. The numerical value awarded can also act as a controlling signal, (lower marks potentially driving increased learning where there is motivation to get a higher mark). This signal can be either *external*, where the tutor recognises the value and makes a further input to the learning, or *internal*, where the student sees the value and decides to do better. However, this mark attribution process does not necessarily drive educational attainment upwards. The role of feedback (via comments rather than marks) on work is also relevant. Figure 1 refers to attainment, not specifically to marks. A lone exam event usually provides feedback marks at the end of the module, but this is rarely combined with students reviewing the remarks added to a script by the assessor (Figure 1b).

In this system, attainment can be related to learning affected by positive feedback that confirms the knowledge gained, and potentially adds to, reinforces or corrects it. In education as a whole, feedback is often used in a rather loose sense. If we fail to provide comments, or if comments are misunderstood, the incorrect understanding of a concept by a student might go uncorrected and in effect this may drive attainment down. The consequence may be that the

next activity is done less well than expected, although this would still be seen as positive feedback in system terms. Feedback comments therefore need careful thought. ‘You didn’t do a very good job of this’ is not only discouraging but it does not add to the understanding of the student. A remark such as ‘you did a good job of this task’ may also not be helpful, if the student does not understand what they did well. The lack of *any* attempt at correcting a misapprehension can act as a negative feedback in the system. Essentially, feedback must be meaningful and reflect the marks awarded: that is, remarks made to students through comments on scripts, oral or video feedback should aim to *drive up* the attainment curve (Figure 1c).

So, encouragement is worthwhile, but within what might be termed a ‘feedback sandwich’. Educational reinforcement and instructional design which focus on ‘outcomes’ (Fleming and Levie, 1993) can inform the assessment design process. For example, feedback comments to students can be separated into the following categories; confirmation, corrective, explanation, diagnostic and elaboration. Note that these all provide positive feedback via the input signal information and so are part of the educational system as a whole. In the same way that marks alone are not helpful, comments on the results (‘you did well’) are not as good as comments on the process by which the results were achieved: ‘Your paragraph structure has improved. You have focused on one argument per paragraph. Keep this thought in mind next time you review your writing’.

A purely encouraging comment might be less beneficial than an assessor expects, if it does not have accompanying contextual information and is not related to attainment levels for other assessment tasks (Kahneman *et al.*, 1992). The assessor needs to recognise that marks *per se* are indicators, or information, for the system feedback rather than the end-product of attainment, and that it would be helpful if students understood this concept. The most important assessment outcome is the provision of appropriate, positive feedback information, with an acknowledgement that overly substantial feedback (potentially overwhelming for the student) can have as negative an impact as too little feedback. This is why the confirmation, corrective, explanation, diagnostic and elaboration statements are relevant for assessors thinking about assessment protocols. It then becomes easier for both staff and students to distinguish between standards, “*for a 2i mark you should ....*” and criteria “*you were asked to interpret the graph*”. The latter is a specific statement tailored according to the task set. Achieving the criteria requested for an activity allows marks to be awarded accordingly. Marks plus appropriately specific and weighted feedback comments show how well the task has been achieved.

To be effective students need practice and experience of the mechanisms of assessment in HE, the style and role of feedback remarks from staff. Essentially this should parallel the practice and coaching processes that all athletes experience. Academically, this may be best achieved in a series of practicals or coursework activities aimed at enhancing achievement. Even where an example is worked through with students (and this may take a considerable amount of time), the new-found knowledge *and* experience needs to be practised to ramp up the attainment (Figure 1d). Confidence in performing activities comes with practice and tailored feedback (coaching) so that the activity becomes more or less subconscious.



## Meta-cognition and learning and thinking styles

A tutor’s style of feedback is also worth considering. For the already expert student, different styles of feedback should not be a problem. If a tutor passes a comment such as “*you need to be more critical*” this raises the question of what ‘critical’ means and what criticality entails. There is no simple answer to what is essentially a ‘value’ judgement in this instance. Shared understanding of criticality (between tutor and student) can become even more troublesome if the knowledge to be transferred is essentially tacit, or even assumed. Keysar and Barr (2002) illustrate problems of conversations with misunderstanding or recognition associated with the concept of anchoring. Anchoring comes in various forms and is associated with heuristics in problem solving; it relates to the human tendency to rely too heavily (or ‘anchor’) on what may often be the most obvious or commonly accepted statement or concept. Most tutors can show examples of ‘anchoring’ from student essays and examination scripts (“*glaciers covered all of Northern Ireland in the Holocene*”), but we also have to consider mis-matches of understanding between student and tutor, not just in subject knowledge, but also in our understanding of pedagogy. We need to make sure that there is a shared understanding of the concept and language of feedback between tutor and student.

Experiential learning has been related to learning styles. In the UK Higher Education system both the Honey and Mumford (1992) and VARK (Fleming, 1993) typologies of learning styles are widely cited. Students’ *thinking* styles are also important. Sternberg (1997) identifies global, local, internal, external, liberal and conservative thinking styles. These lead to differentiated approaches and responses to problem solving. For example:

**“I prefer tasks dealing with a single, concrete problem, rather than general or multiple ones”,**  
(Local style; Sternberg 1997, p 62)

**“When I’m in charge of something, I like to follow methods and ideas used in the past”**  
(Conservative style; Sternberg 1997, p 73)

Thus, when setting assignments through coursework or examinations, we need to consider what we want students to do and the ways we might guide them to produce their best results. Setting a range of questions that appeal to students with different styles would be more equitable than setting them in a single style.

### Constructing educational control systems: assessment in the system

The ideas discussed above suggest that the single module/ one assessment/ limited formative assessment model will lead to the flat curve 1a shown in Figure 1. The approach advocated in this paper involves the planning of activities and accompanying assessment and feedback at both module and programme level, as in Fig. 1 d. This planning would take into account that system feedback – the activity itself plus marks and feedback comments (with that feedback aligned with assessment criteria) – is the major factor in enhancing student attainment. The feedback should relate clearly to the nature of the tasks set, must be understood by all and, ideally, enhanced by criterion referencing, e.g. Fox and Rowntree (2004), Whalley and Taylor (2008). At its simplest, a single activity produces learning achievement by the accomplishment of the task and the next task is enhanced by the feedback received on the first task. This produces a step or ramp-up in the achievement.



Feedback comments need to be given soon after the activity is performed in order to be effective, like heating systems re-igniting a boiler when temperatures drop. The feedback should come as forms of advice that are confirmation, corrective, explanation, diagnostic and elaboration, and presented to the student individually or in a group. In practice, the ramps in the attainment curve can be increased in various ways: the very fact that students perform some activity within the module will act as positive feedback that improves attainment because it has provided an opportunity to practise.

Looked at in terms of the over-arching educational system, these arguments above suggest that a single assessment for a module is not a good idea, especially if the module runs up to an end-of-semester submission, because there is no opportunity for formative feedback (coaching) to inform a student's work. The situation is exacerbated in modules with 100% end-of-semester examinations. Churches (2009) suggests ideas for feedback from which a balance of emphasis can be created for each response:

- Developing a hypothesis (Evaluating)
- Experimenting (Evaluating)
- Planning (Creating)
- Designing (Creating)
- Judging and evaluating (Evaluating)
- Producing and making (Creating)
- Critiquing, reviewing and testing (Evaluating)
- Refining (Creating)
- Mixing and remixing (Creating)

These topics should aim to link with the meta-cognitive aspects of learning. Churches' critique concludes, "*These [topics] cannot be tested adequately in an examination or test*". It is possible to envisage them being part of an examination, as long as it is part of an enquiry-led, rather than mark achievement-led, approach.

## Conclusion and some suggestions

Directed feedback remarks or comments and numerical marks are necessary for constructive feedback and assessment. For Level 1 students, whose knowledge of academics' requirements for successful assignments is often poor to non-existent, academics should be cognisant of these issues in setting tasks and should aim to clearly show students the thinking behind the tasks and their accompanying assessments. It is imperative that good feedback comments are provided for as many stages as possible in the assessment process. Overall, the provision of marks and feedback remarks with the aim of increasing attainment is at least as important in module design as it is in the teaching.

Good assessments should be more than a test of memory. Assessments can be recast to solve problems via developing 'thinking styles' and be

aligned to enquiry-based outcomes and experiential achievement (Boud and Falchikov, 2006). Meta-cognitive ideas apply both to student approaches (for example, 'knowing about knowing', how to produce a 'good' answer), but also to tutor approaches to learning development (how do we know what we are asking of a student when we set an assignment?) These issues are particularly important for examinations when feedback provision is delayed (students leave campus after the summer exams), or absent (the departmental culture is not to provide feedback on examinations). With the wealth of possible assessments available, it could be argued that we do not need examinations, but where employed they should at least be effective in ramping up attainment (Figure 1). The challenge is to develop learning and assessment for student education so that it is more than a University Challenge question and recall response system.

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