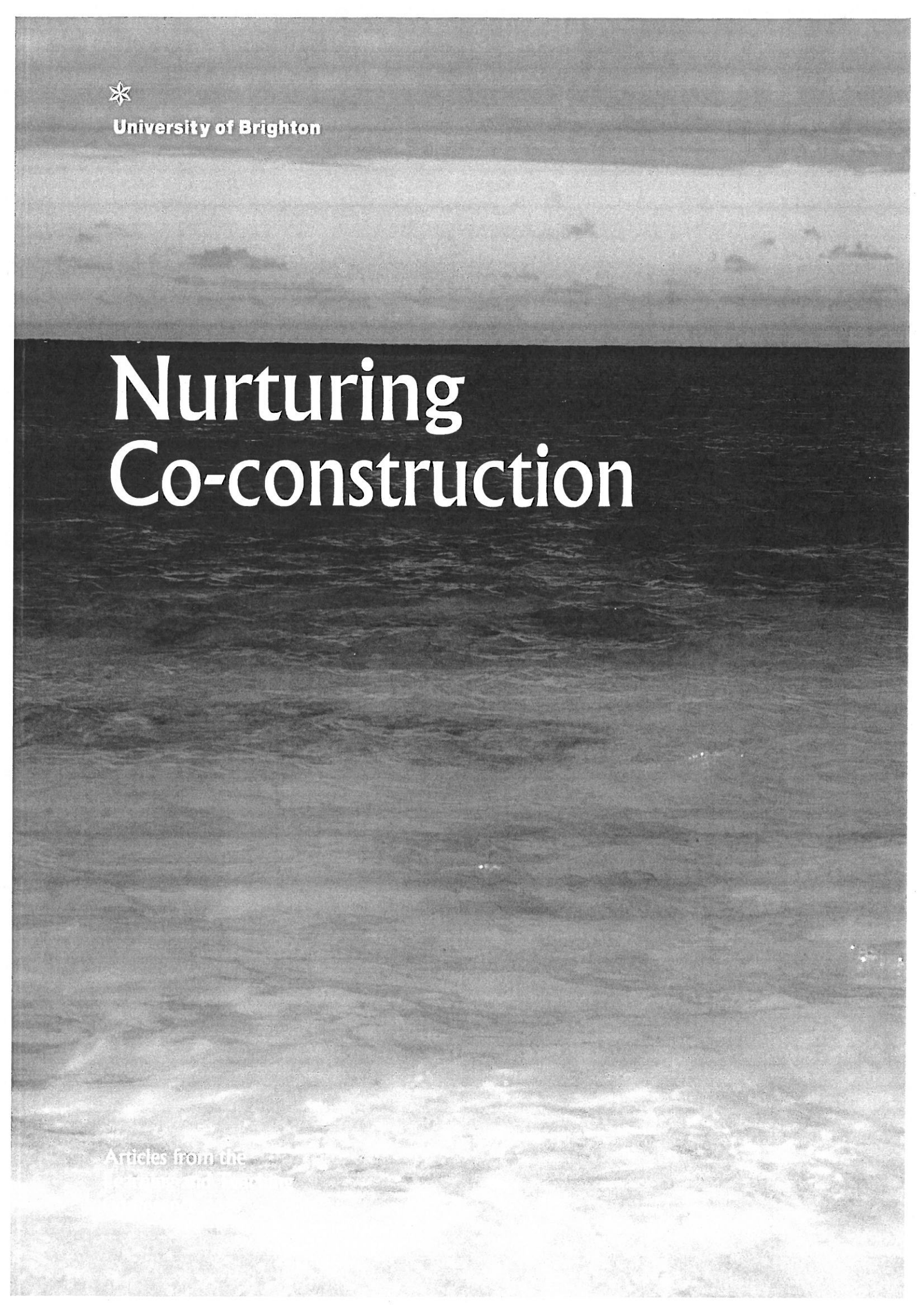
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Acting on feedback over assessment, an iterative spiral of improvement for both students and lecturers

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Abstract

The research presented, studies, explores and dissects the much discussed notion for feedback and grading on some form of assessed work. It is by no means clear to academics or students alike, the exact form that this should take. However, what both sides of the debate (students and academics alike) know, are the expectation of what purpose evaluation serves in the learning process. The final equilibrium position is one where student expectation is matched against that of the tutor within the framework of competence and degree description of the institution or controlling body.

Introduction

Repeatedly and unsurprisingly the habitual bugbear of students (and academics) is the question of feedback and feed-forward. Feed-forward (Race 2014) simply means feedback to permit the student to improve on the quality of their submission (Asonitou 2015). Feedback generally refers to the indication of extent or presence of points of excellence or weakness and inadequacy in a piece of assessed work; with no option for improvement on that piece. Colloquially both terms are used interchangeably. Feedback is a subject often least well received by the student body in the National Student Survey (NSS). The NSS has been instrumental in providing academic institutions with performance and student perception-related feedback. Students value feedback immensely and routinely 'grumble' about it across all institutions, where levels of satisfaction rarely top the 65 per cent mark (Howard and Maxwell 1980; Williams and Cappuccini-Ansfield 2007). On the contrary, satisfaction with tutors and courses is very seldom below 80 per cent. In 2016, chemistry students in The School of Pharmacy and Biomolecular Sciences (PABS) reported a 100 per cent or full satisfaction with their BSc degree. Despite this glorious evaluation, feedback was still considered a 'bone of contention.' Large cohorts can be particularly prone to an individual's 'poor' perceived feedback because of the burden of marking and grading, which means it is often less detailed and voluminous than the student expectation. Recently, chemistry tutors offered year two students a two-hour feedback session of exam paper questions. Students were surprised to see the small amount of annota-

tion of exam answers by staff. This is not entirely surprising given the 140-180 student cohorts and the pressure to collect marks without routinely showing them to students, quite unlike coursework. This work is both a study and an exploration of feedback and assessment, which are inseparable and entwined.

The Deming Cycle

The Deming Cycle (or Plan-Do-Check-Act (PDCA) Cycle) represents an ideal way of reinforcing and fragmenting a process into manageable tasks (Figure 1, below). The cycle is used widely in manufacturing industries and engineering (Deming 1950). However, the cycle is also applicable to the ideal simplified way of writing or managing a composition or assessment, and bears a striking resemblance to the pedagogic steps discussed in a *Model of Experiential Learning* (Kolb 1984); used widely to promote deep learning strategies over surface learning. The process is made of four steps starting with, i) a Plan (of key attributes), moving through ii) enacting (Do), then via iii) checking and marking (Check) to iv) acting on feedback or feed-forward information (Act). Parts (i) and (ii) can be considered the dominion of the student and parts (iii) and (iv) brought about by the tutor. Notably, in the case of the student the information provided in step (iv) is used to formulate another plan and therefore used to refine work or future efforts.

The ideal simplified way of writing or managing a composition or assessment (Deming 1950) and a Model of Experiential Learning (Kolb 1984)

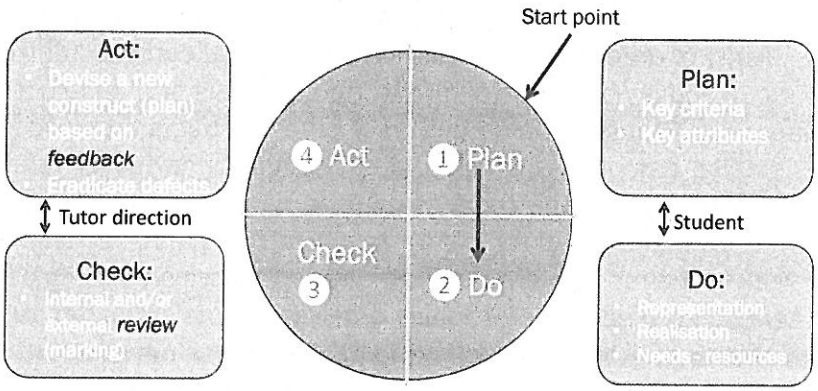

Figure 1. The Deming Cycle - Plan, Do, Check, Act

The learning process

Assessment for a learning process is discussed in some elegant detail by Brown (2004-05), who states that the ideal form of assessment should be based around a fundamental 'Simplicity.' Other authors add that a simplistic approach (without being cursory or trivial) is the best approach to obtain, convey and propagate (Figure 1) meaningful feedback to students (Baume et al 2004). This of course, depends on the nature of the desired feedback (Asonitou 2015). The two types are:

A. Feedback: Undertaken after being marked. Designed for future attempts of different work. Detailed ideally.

B. Feed-forward: Formative role for current attempt. Undertaken prior to summative assessment on the same work. Detailed ideally.

In both cases, detailed feedback is needed to get the most out of the exercise. So, in this way we must decide whether the exercise is formative (aids skill generation) or summative (results in an estimation of ability or skill i.e. a grade). Given that some detail is required the next question is based on the ideal form and characteristics of the feedback.

Feedback form and character

Types of feedback and feed-forward are discussed at some length by Hesketh and Laidlaw (2002). They discuss two basic types, firstly verbal, which can be direct and indirect, or individual sit-down sessions, which are seen as open and productive (Hill 2007). There are also more traditional routes such as the seminar or tutorial and these also work very well. However, one asks, how do you provide feedback to struggling students who do not attend regularly?

The second, non-verbal method can range from annotation of work to seminar and discussion forum group work. The simplest forms of feedback cover aspects such as, basic mark, grade, percentage and can be typed on a pro forma or handwritten. Alternatives include, electronic or automated responses, button-click programs and formulated auto-email. Old-fashioned formats are often written in brief annotations and symbols, direct points of weakness, points of commendation and points indicated *in* situ. However, newer formats can mean an extensive managed pro forma and highly categorised classifications, for example (i) two things to improve this work and (ii) style or grammar, clarity of argument and scientific or technical content, for the sciences. Intensive group activity based on summary and synopsis of the assessment and its complexities, significance or value has great potential but is time consuming and necessitates smaller group sizes. Lastly, there is a significant role for referential feedback by reflecting on 'institutional/professional' grade boundary indicators e.g. definitions of A+/E (Lapiņa and Ščeulovs 2014), as indicated in Table 1 (below and over). Academic work in the modern era is usually graded in terms of its excellence with regard to a series of pre-determined values or attributes, as indicated for first class work and unsatisfactory or failing work in Table 1.

UNDERGRADUATE GRADING DESCRIPTORS (levels 4, 5 and 6*)	
80-100 A+ First class/Distinction	
All learning outcomes/ assessment criteria have been achieved to an exceptionally high level	An **outstanding** response to the task The work demonstrates most or all of the following characteristics beyond that expected for work at the given level of study within the discipline: • Exceptional display of understanding, exploration, insight and/or research • All specifications for the assessment task, including word limit/time limit where appropriate, have been adhered to • .....

*General Examination and Assessment Regulations for taught courses: University of Brighton: University Marking/Grading Descriptors: Undergraduate: June 2012.

30-39 E+ E E- Fail	
One or more of the learning outcomes/ assessment criteria have not been met	An **unsatisfactory** response to the task The work may display some strengths but these are outweighed by several weak features in relation to the expectations for the given level of study within the discipline, such as:
	• Limited understanding and/or exploration of major ideas with very little insight and/or minimal research • Some significant inaccuracies and/or misunderstandings • .....

Table 1. A 'Taster' of University of Brighton Grading Criteria: An abbreviated sample of two extremes

Assessment and learning

Rather like the chicken-and-egg concept, as trainers, we frequently ask ourselves 'does assessment drive learning' or is it vice versa? (Baume et al 2004) There are a multitude of behaviours (Table 1), with some students taking either a 'learn-for-passing' and 'learn how-to-pass' approach (they discuss this online in fora, such as Facebook). This is without learning, meaning, the context, value, reason and significance in a 'bigger picture', which is very often missed. Ironically, it is the latter that gives meaning to the facts and makes it harder to learn. Notably, some students 'loathe and fear' assessment (Hanrahan and Isaacs 2001; Neuderth et al 2009) and based on this surprisingly, some students resent the course and tutors that grade them (Grow 1991).

For the universities now preoccupied with student surveys and what this can mean for funding and therefore course viability, some students (Lowe and Cook 2003) that 'get stung' with low marks (McClure et al 2011) look for a means of giving 'scorn' in feedback such as 'module and course evaluation documents' or 'rate your lecturer' surveys, alongside genuine grievances. Colourful examples of the trivialisation of this informative role reduced to scorn include:

- *'Dr X has the worst notes in the uni'* (vague with the true meaning and motive unclear)
- *'Dr X is a poor lecturer'* (vague with the true meaning and motive unclear)
- *'Dr X is unhelpful'* (vague with the true meaning and motive unclear)

Comments of this type cannot really be used, and this is a pity since it is unclear what the student is technically trying to say. Is the lecturer not good at lecturing or unentertaining and rather desultory or half-hearted? In addition, these comments can act as a demotivator for staff, as one staff member commented, 'people get immune to over-negative feedback.' Once students realise that assessment is a 'crude' but necessary means to grade (approximate) understanding and learning, it possibly becomes less intrusive and annoying to them.

Standardising evaluation

University course evaluation is not standardised despite numerous attempts to do so, but can it ever really be standardised when the students and staff have such different viewpoints? (Lowe and Cook 2003). In course development boards tutors talk about 'standard feedback' (Table 1) but this is impossible to do at some level because people have different ways of interpreting information and its complexity. Two good illustrative points may be:

- Minimalistic approach: *'Dr X just fills in the margin with the odd word'*
- Dr X is keen for positive feedback and gives *'copious feedback'* but then *'annoys colleagues by causing a delay in passing on exam papers and coursework'*, when colleagues see marking and double marking within tight deadlines as the real priority.

There is a balance to be struck here in terms of a moderate volume of appropriately detailed feedback that applies to both large groups and yet satisfies the burden of the assessor. Students report dissatisfaction with feedback (Baume et al 2004; Rust et al 2004), which can be either unhelpfully positive or demotivating and exceptionally negative. Pertinent examples might include examples from students, such as:

- *'I did not like the comments made and they were not encouraging'*
- *'Feedback did not show me where I had done the right things'* (Miller 1990)
- *'Feedback is only needed to show me my errors'*
- *'I only need feedback to show me how to get a better mark'*
- *'The feedback did not show me the right answer'* (Chinn and Hertz 2002).

The other problem with giving out answers as wanted by the student but seen by the examiner as inappropriate, is that of facilitating rote learning and the inability to reuse questions, since answers are conveyed among students or posted online.

One PABS academic stated 'if you provide lots of positive and critical feedback' students will undoubtedly want more. This could become untenable as staff usually do teaching, research and outreach and must craftily divide up their time. Consequently, the real point is in the nature and quality of feedback itself (Roach 2014). Just how much is 'just right' or what is 'too little and too late?' The amount is related to the number of students, yet takes into account provision of sufficient information (Table 1) to improve the quality (and mark) that the work would obtain. Inevitably, 150 student essay papers take longer to mark than ten and the feedback given might vary depending on workload.

In the great debate over feedback, some things are forgotten: not all subjects are equal. A failure to accept a subject skill difference (Ecclestone 2001) can result in disappointment. For many of my students, often 'soft science candidates' for example, a variation in perceived difficulty of different modules, courses or themes persist, as do some predictable, clichéd sentiments that seem to prevail. The comments point at student thinking:

A. Module XX000 is *'really hard'* (typically mathematical or fundamental science in nature, exam forms a large percentage)

B. Module YY000 is *'really easy'* (typically non-mathematical, coursework seminar and workshop based)

In such a case the demands for feedback for anything to do with option (A) will undoubtedly be higher than for option (B), and this is obvious since an apparent ability to master the rigorous and difficult earns more commendation. Somewhat anecdotally, these kind of trends can be seen with PABS students. Evidence suggests that 50 per cent of students pick the most popular exam-based elective module (and this seems low given the student enthusiasm to the subject), yet 25 per cent of students pick an elective module with no exam, with no evidence of success and limited familiarity with staff (and this seems to point at the lack of exam being important). Notably, 0.7 - 2.1 per cent of students pick a choice of electives with 'soft' chemistry (largely recall-based topics and non-interpretative in nature) basis with popular staff and this again seems low.

What is very clear, whatever the subject matter, is the desire from students for feedback on a case-by-case basis (Lowe and Cook 2003; Wass et al 2001). Additionally, in modern higher education (Baume et al 2004) and with student-surveys weighting an institution's potential funding, there is also a need to keep the 'troops' happy and drive good appraisal. However, one queries the need for giving feedback to all because institutional rules say so, since many students (35 per cent+) just want a grade (Mashoko 2016). The level of marking or workload seem closely related with numbers (course n=10 vs n=170), from an academic's perspective, a larger cohort size drives brevity of feedback (Ecclestone 2001). One remedy is to have timetabled sessions for feedback, but then, uptake can be poor for the following reasons:

- Students have got their mark, so why bother to turn-up (Hill 2007)
- Fighting against apathy or misconception, students say *'show me and I'll do it, I don't care about why'*
- Planning content of sessions and resisting the impatient mindset: *'simply give me content that I need to pass the exam'* (Lowe and Cook 2003)

The solution is to give an indication that feedback has formative value – but how and what metric do you choose (Dent and Harden 2013) to convey this? Again, the answer possibly lies in showing evidence or proof that heeding feedback leads to a general increase in scores. For example, an undergraduate thesis moving from a mark of 58 per cent to a mark of 63 per cent is not uncommon after incorporating suggestions from a supervisor in 'feed-forward' mode.

Feedback sampling and methods

Moving on to cover study, which is tied-up with assessment requirements and expectations, it is worth reflecting on the composition of the student body. For a student cohort (sample population) of roughly equally mixed proportions according to age, the younger end (18-21 years) dominates, as might be expected with 46 per cent, followed by 29 per cent for 22-25 years, and 24 per cent for 26+ age bands. The stu-

dent body were of equally mixed ethnicity of, 33 per cent Asian, 27 per cent White, 24 per cent Black, and 3 per cent Mixed types (the remaining 13 per cent of students did not provide ethnicity data), and there were roughly double the number of females to males (71: 29). A third of student respondents came from the final year of a four-year programme of study (34 per cent). The staff base was roughly 60 per cent White, 20 per cent Asian, 10 per cent Black and 10 per cent Mixed ethnicity. Students were surveyed by questionnaire and interview, however, academic staff were only surveyed by interview.

Feedback findings

Key findings for students, which support other studies (Rust et al 2003), and those of staff are presented in Table 2 (below). One of the most significant comments was the disconnect between staff and students in terms of expectations and role. In most cases, students wanted more feedback and staff were hesitant to provide this as it was seen to compromise self-evaluation and self-direction.

Having been faced with criticisms over the value of feedback to trainee and instructor as a tool for conveying information, a question of the effectiveness of (good) feedback remains. The question of what represents a good and poor example of feedback (Figure 2 over) sits squarely at the top of ideal pedagogic practice. What seems abundantly clear is that marks need to be discussed where there is misunderstanding, but once again there is a time element needed for this with large university cohorts.

Students *critique* on feedback	**Staff justifications on feedback**
1 Negative tone, being vague and level of ambiguity	1 The main purpose of feedback/ feed forward lies in gap-closing current and desired performance
2 Difficulty in adjustment: feedback was less directive than at school.	2 Recognised views are different between staff and students, meaning unfulfilled student expectations and the perceived ineffectiveness of feedback by student body (Lowe and Cook 2003)
3 Need for prescriptive feedback (Lowe and Cook 2003)	3 It was widely assumed by academics that feedback was clear and trouble-free (Ecclestone 2001)
4 Frustration at not being told **exactly** what improvements were needed (Brown 2004-05)	4 There was a need to engage both parties in dialogue
5 Perceived poor timing of feedback	
6 Best route for feedback/forward was via direct dialogue or via being shown specimens of good work (Roach 2014)	

Table 2. What students and staff said in summary about the feedback they either received or gave out

In the debate over good, mediocre and poor feedback or feed-forward, who really decides what is good feedback? In the final analysis, it is either the student or the

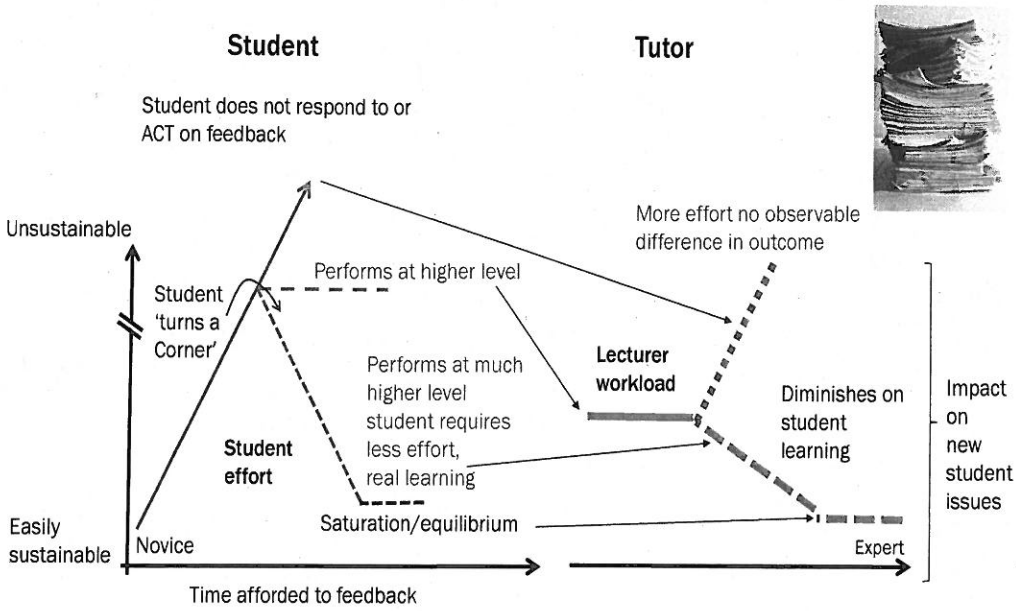

Figure 2. So what is good feedback?

The tutor's perspective	The students' perspective (Brown 2004-05)
▪ Facilitates student self-reflection	▪ Gets me high marks
▪ Encourages tutor and college peer dialogue	▪ Less effort required after initial outlay
▪ Helps clarify grading criteria, goals and standards	▪ Learn generic skills
▪ Provides opportunities for improvement	▪ Learn benchmark standards and expectations
▪ Delivers high quality information	
▪ Encourages motivation and self-esteem	
▪ Provides information which may be recycled for pedagogic use	
▪ Proportionate with balance of other activities and value of assessment	

Table 3. What students and staff expect from feedback

recipient of the student work that can say if the feedback advice and direction worked (Table 3, above). Again, there are two perspectives, the academic wants autonomy and self-reliance at university level (Figure 2, above) and the students want to learn or rather increasingly, merely pass exams and assessments (Table 3.)

The net effects of good feedback

At worst, feedback serves as a means of indicating to a student that the mark associated with the assessment has been well-considered and compared to a set of standards. However, at best, the point of feedback is to initiate the students into independent thought based on the development of news skills and insights within the framework of a comprehensive and constantly improving job done. (Figure 3, below).

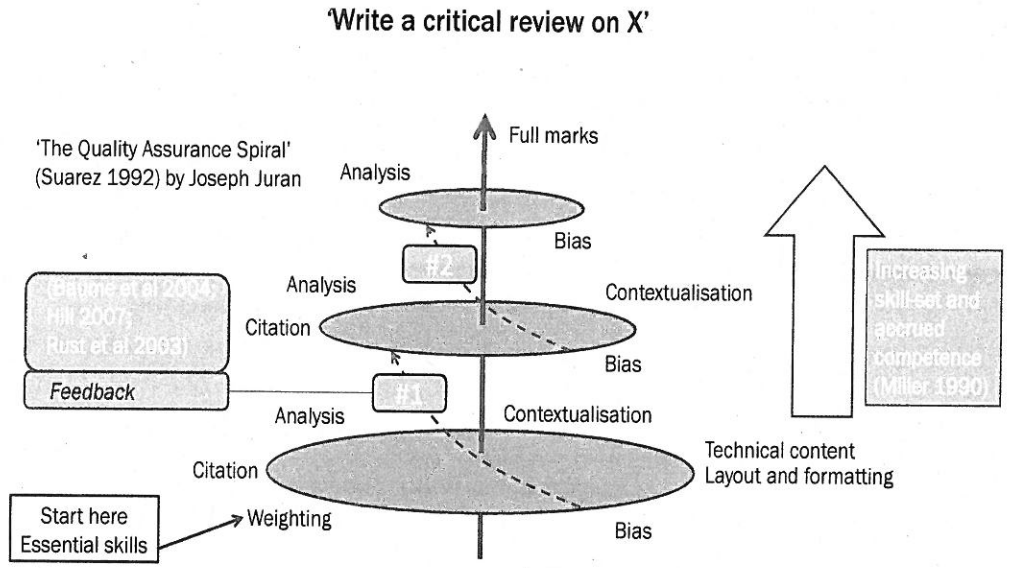

Figure 3. The net effects of good feedback: a spiral of improving quality and the assurance of quality

Conclusions

On close examination, what becomes clear is the complexity of the themes running through the issue of 'feedback.' The complexity of which has been likened to an interconnected non-symmetrical pattern, with the comment 'If it was simple it would have been fixed in no time.' What is patently obvious is the 'disconnect' between staff (university model) and students (school model) paradigms of the acceptable. Consequently, academic staff are happy with status quo but students are disaffected. Additionally, demands for feedback vary with the subject, cohort, age and stage of the degree programme. Some students seem more content with less feedback while others demand more and more. It becomes clear that there is a need to bridge-the-gap between student expectations and the perceived ineffectiveness of feedback or feed-forward routes.

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Biography

Dr Dipak Sarker started his academic life as a chemist and engineer before completing a PhD in Physics in 1995. After several years of post-doctoral and lecturing work at universities in France and Germany he took up a position in the School of Pharmacy and Biomolecular Sciences at the University of Brighton. His research activities at the University cover aspects of physics, nanotechnology, engineering and food technology. He has had a career-long interest in metrology, and in more recent years this has spilled into analysis of grading effectiveness and design of assessment methodologies for students. He is a Fellow of the Higher Education Academy and an Assistant Course Leader for the Pharmacy degree. Email: d.k.sarker@brighton.ac.uk