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10

Guiding Principles for Peer Review: Unlocking Learners' Evaluative Skills

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Focus of the Chapter

Enhancing students' capacity to regulate their own learning, independently of the teacher, is a central goal in higher education. All learners can and do self-regulate; however, those more effective at self-regulation assume greater responsibility for their academic performance and produce higher quality work. A pivotal construct underpinning learner self-regulation is evaluative judgement. To regulate one's own learning calls on a sophisticated capacity to make evaluative judgements about the quality of academic work as it is being produced. This chapter identifies peer review as the most productive platform for the development of evaluative skills and hence for learner self-regulation. Peer review is defined as an arrangement whereby students produce a written assignment and then review and write comments on assignments produced by their peers in the same topic domain. This chapter synthesises recent research on peer review in relation to the development of evaluative skills and the elaboration of knowledge. From this, it proposes a set of guiding principles for the design of peer review and provides some practical suggestions as to how each principle might be implemented.

Introduction

This chapter is dedicated to Dai Hounsell, who has made a significant contribution to our thinking about assessment and feedback in higher education over many years (Hounsell 2003, 2007; Hounsell et al. 2008). Not only has Dai carried out important research in this area, which has helped reshape current conceptions of assessment and feedback, but he has also been particularly focused on the actual practices of assessment within and across disciplines. Indeed, in a recent paper, Dai synthesised large bodies of research on assessment and feedback in different disciplines so as to identify and catalogue innovative approaches that others might adopt or adapt (Hounsell et al. 2007). One aspect of Dai's more recent work has been to promote a greater role for students in assessment practices (Hounsell 2008), for example, in using teacher feedback, in formulating assessment questions, in actively using assessment criteria and in assessing their own learning progress. This chapter builds upon and extends this aspect by looking at how students' evaluative skills might be developed not through being assessed or by being given feedback by others, but by engaging in evaluative acts and by delivering feedback themselves.

The recent literature on assessment and feedback in higher education now, more than ever before, emphasises the need to develop students' self-regulatory abilities (Andrade 2010; Boud and Molloy 2013; Sadler 2010, 2013). Students must be equipped with the skills to think for themselves, to set their own goals, to monitor and evaluate their own work in relation to these goals and to make improvements to their work while it is being produced. They must also be able to carry out such regulatory activities in collaboration with others, for example, where performance goals and tasks are shared. It is also well-recognised by researchers that developing this capacity for self-regulation and co-regulation cannot be achieved through assessment practices that are solely carried out and controlled by teachers or where the primary conception of feedback is that of teacher transmission. Indeed, all contributors to this volume emphasise an active role for students in learning and assessment processes.

A pivotal construct underpinning the idea of self-regulation is that of evaluative judgement. The students' capacity to regulate their own learning

fundamentally depends on their ability to make valid and informed evaluative judgements about the quality of their own work, whether produced individually or in collaboration with others. There is a growing body of literature, both nationally and internationally, on evaluative judgement, and it is strongly represented in the chapters in this book. Also, a group of Australian researchers and academics in a recent document entitled *Assessment 2020: Seven Propositions for Assessment Reform in Higher Education* have proposed evaluative judgement as the building block for recasting assessment practices:

Assessment is the making of judgements about how students' work meets appropriate standards. Teachers, markers and examiners have traditionally been charged with this responsibility. However, students themselves need to develop the capacity to make judgements about their own work and that of others in order to become effective and continuing learners and practitioners. (Boud and Associates 2010, 1)

In my own work, I also have focused on assessment practices as the locus to develop students' capacity to make evaluative judgements. Indeed, in 2006, I reinterpreted the research literature on formative assessment and feedback in higher education and positioned it within a model of self-regulation that emphasised evaluative judgement (Nicol and Macfarlane-Dick 2006). This model places student judgement in the form of self-assessment at the centre of all learning events. There were two reasons for this positioning. First, students are always monitoring and evaluating their own work and generating inner feedback as they engage in academic tasks. Those more effective at self-regulation produce better internal feedback and/or are more able to use the feedback they generate to achieve their desired goals (Butler and Winne 1995). Second, even when feedback is provided by others, if it is to influence their current and subsequent learning, students must engage in acts of assessment themselves; they must evaluate the external feedback they receive and generate internal feedback from it (Nicol 2009). More specifically, they must decode the feedback message, internalise it and compare and evaluate it with reference to their own work. As Andrade (2010) puts it, students themselves are always the definitive source of all feedback processes.

Based on the model described in the preceding paragraph, over a number of years I have been researching ways of strengthening students' ability to

assess and become better at regulating their own learning. This chapter, while building on this earlier work, takes a slightly different stance. Instead of putting self-assessment centre stage, the focus is on the varied processes involved in peer review: a scenario where students evaluate the work of their peers and produce a feedback commentary. The purpose of this chapter is to provide some new insights into how evaluative judgement might be conceptualised and effectively developed through peer review.

As well as adding to the current theory and literature, the chapter provides two practical outputs. First, it presents a set of principles of good peer review practice for the development of evaluative judgement. Prior work has established the value of principles in making complex research findings accessible to busy practitioners who do not have time to read and interpret the educational literature. Second, it provides specific examples of how these principles might be instantiated in a range of different contexts. Earlier research has also shown that practice examples can provide useful entry points for practitioners who wish to implement principles within their own discipline (Nicol and Draper 2009). Elsewhere, I have provided a fuller discussion of the value of principles and examples (Nicol 2013c).

Evaluative Judgement and Knowledge Construction

The concept of evaluative judgement is receiving increasing attention in the higher education literature. Cowan (2010), for example, claims that:

... a more specific emphasis should be placed in undergraduate education on the explicit development of the ability to make evaluative judgements. This higher level cognitive ability is ... the foundation for much sound successful and professional development throughout education, and in lifelong development. (323)

Cowan maintains that evaluative judgement underpins both decision-making and reflective practice in the professions. He also highlights its relevance to the informal choices we make throughout life.

Cowan's notion of evaluative judgement brings into focus the idea of critical thinking – a skill and disposition that all university courses claim to develop. Bensley (1998, 5) defines critical thinking as 'reflective thinking involving the evaluation of evidence relevant to some claim so that a sound

conclusion can be drawn from the evidence'. In a similar vein, Halpern (2003) points out that the term *critical* in critical thinking describes thinking that emphasises evaluation. Evaluative judgement, it could be argued, is the cornerstone of critical thinking in all disciplines; it is involved in distinguishing arguments from assertions, finding the central question, appraising the form and qualities of evidence, making sound predictions from theories, generating good hypotheses, constructing convincing arguments, comparing the quality of different things – texts, arguments, objects – expressing one's reactions to texts, considering multiple perspectives and so on (Bensley 1998).

Sadler (2010, 2013) discusses the concept of evaluative judgement, which he calls appraisal, from a feedback perspective. His concern is that telling students about the quality of their work through the delivery of teacher feedback is not an effective approach to helping them become competent producers of quality work by themselves. For this, they need an appreciation of what high-standard work is, skills in judging the quality of the work they are producing against this high standard and a repertoire of tactics and moves that they can draw on to make improvements. Sadler (2010) claims that if we wish to develop students' competence in making evaluative judgements about academic work, then we should give them appraisal experiences similar to those of their teachers.

Boud's interest in evaluative judgement derives from his position that assessment and feedback in higher education should serve a long-term purpose (Boud 2007; Boud and Molloy 2013). Although these processes should help students perform better in the present, they should also prepare them for life beyond university and in future employment settings. Boud thus sees a dual role for assessment – it is both about informing students' judgements, as well as about making judgements of them. In order to develop students' capacity to make informed judgements, Boud advocates a greater use of self-assessment and a stronger role for teachers and peer communities in helping students calibrate their judgements.

Taking a wider radius, I have highlighted the role that evaluative judgement plays in the fostering of graduate attributes. In 2010, I analysed the documented attribute statements from a range of universities and showed that evaluative judgement is the underpinning process behind each attribute (Nicol 2010a). For example, students cannot develop ethical awareness by

being told about ethics; rather they must learn to evaluate situations from an ethical perspective and make ethical decisions. Similarly, students cannot develop communication skills by being told about them – they must learn to evaluate the quality of their own communications and those received from others. From this analysis, I argued that if universities focused their attention on developing the student's own evaluative capability, this would provide the foundation for almost all attribute development.

Giving students experience in making evaluative judgements does not just strengthen their evaluative capabilities, it also brings into play cognitive processes that usually result in their elaborating existing knowledge or in their constructing new knowledge in a specific topic domain (Chi 2009). When they make judgements, students interact with subject content, they process it, think about it, compare it with alternative content – real or internally generated – they take different perspectives on it and create new knowledge that was not contained in the material being judged. Moreover, depending on the circumstances and particularly the depth of mental processing, this new conceptual and procedural knowledge will be incorporated into existing knowledge networks and will become personal capital that can be used by students and adapted and applied to new learning contexts. Hence, the act of making evaluative judgements is actually a 'knowledge-building' process.

To elaborate further, the act of making evaluative judgements always involves comparisons of one thing with another, as there is no such thing as an absolute judgement (Laming 2004). In making judgements, one reference point for the comparison is always the evaluator's personal construct in the domain of the work to be judged. For example, when a teacher appraises the quality of the argument in a student's essay assignment, she uses her past experience of appraising similar assignments to make her evaluative response. This is also true even when she compares one student's assignment with another or against criteria. Hence, making comparative judgements usually involves the generation of new knowledge – for example, new insights about similarities and differences between the current referent and those experienced before – that will elaborate, confirm, add to or change the evaluator's personal construct. While this new knowledge will be internal to the evaluator, there are advantages to externalising these constructive outputs in writing (Chi 2009). One reason is that this is likely to result in deeper processing and

greater elaboration; the second is that once the judgements are externalised they become new materials that can be examined and from which further new knowledge might be inferred and constructed.

The research and theoretical frameworks discussed above provide the background for this chapter. The emphasis is on the importance of developing students' evaluative abilities and, through this, their knowledge and skills base. The sections that follow, drawing on my own research and other recent publications, identify why peer review is an ideal tool with which to develop these attributes.

Scope and Terminology

In this chapter, peer review is defined as an arrangement whereby students produce a written assignment and then review and comment on assignments produced by peers in the same topic domain. The assumption is that this written work is of a complex and open-ended nature, such as an essay, a report, a case study, a design and so on, and that the review response is also a written text. In many implementations of peer review, however, these written texts could be the output of prior peer or teacher–student discussions. So the basic peer review sequence is that students write an assignment, evaluate the assignments of others, produce a written feedback response and receive written feedback responses from others on their assignment. The criteria for the reviewing activity may or may not be provided in advance.

As described in the last paragraph, the focus of this chapter is squarely on peer *review*, not peer marking or peer grading. Peer marking and grading refer to scenarios where students assign a mark or grade to a peer's work and this mark contributes to the peer's overall results. The term peer assessment in the published literature is sometimes synonymous with peer marking or grading, sometimes with peer review and sometimes with both together, so, for clarity, it is not used in this chapter. Although I am assuming that students do not provide a mark or grade, the reviewing activity might be graded by a teacher to encourage participation or to help students learn to calibrate their judgements. It should also be noted that asking students to mark the work of their peers does not necessarily invoke the same cognitive and knowledge-building processes as when they are required to produce a feedback commentary. Marking can be carried out without deep analysis, whereas formulating

a commentary usually activates quite sophisticated thinking and writing skills. Caution about marking is also warranted, because research shows that asking students to mark their peer's work often undermines the benefits to be obtained from reviewing (Kaufman and Schunn 2011; Nicol, Thomson, and Breslin 2013).

Why Use Peer Review as the Platform to Develop Evaluative Judgement?

There are four key features of peer review – as implied by the definition provided above – that make it a suitable educational method for developing students' skills in making evaluative judgements.

First, reviewing the work of peers engages students directly in multiple acts of evaluative judgement; they scrutinise and evaluate a range of works of different quality that have been produced by fellow students to the same or a similar brief. Second, when students review the work of their peers, they invariably reflect back on their own work and consider ways of improving it (Nicol, Thomson, and Breslin 2013; Nicol 2013a, 2013b). Hence, reviewing others' work actually develops students' skills in evaluating their own work. This feature of peer review derives from the fact that, before reviewing the work of peers, students will have already spent considerable time producing work in the same topic domain themselves. This makes peer reviewing quite different from scenarios where students merely read and evaluate an academic paper or another topic-related text, as this would not necessarily elicit the same kinds of reflective processes. It also suggests that having students produce an assignment in the same topic domain as that to be reviewed is a crucial precondition in order to ensure maximum learning benefits from peer review. Third, in reviewing the work of their peers, students not only make judgements about others' work, but they also express those judgements through written feedback commentaries, as per the above definition. Providing such feedback explanations or justifications builds on students' knowledge, as it calls on them to revisit and rehearse their current understandings in the topic domain and to construct and reconstruct them, which adds to, and elaborates their existing knowledge base (Chi 2009; Roscoe and Chi 2008). Furthermore, peer review provides a platform for developing students' skills not just in learning to interpret criteria and standards provided

by others, but also in formulating criteria and standards by themselves. These latter skills are vital if students are to develop their own concept of quality and to have the confidence and conviction to make judgements about the quality of their own work and that of others (Sadler 2010, 2013). What follows is an elaboration of these points drawing on current research.

Exercising Judgement, Reflection and Learning Transfer

In a number of recent studies, I have shown that when students produce and review work in the same topic domain they engage in multiple and overlapping acts of evaluation, both about the work produced by others and in many different ways about their own work (Nicol, Thomson, and Breslin 2013; see also <http://www.reap.ac.uk/PEERToolkit.aspx>). When students evaluate the work of their peers, evidence shows that the main reference point for this evaluation is their own work. They compare the work they have produced or, more accurately, an internal mental representation of that work with the peers' work and they actively transfer ideas generated through this comparative process to inform their thinking about their own work. For example, students report seeing things in their peers' work – different approaches to the task, alternative arguments, perspectives or solution strategies, or errors or gaps – that they can use to inform and enhance their own work. Moreover, if they have an opportunity to update their own work, students will invariably do so, even before they receive feedback reviews from their peers.

However, in reviewing the work of peers, students not only compare their own work with that of peers, but they also, in situations where there is more than one peer assignment, make comparative evaluations across these assignments drawing on what is good from one assignment to inform their thinking and to comment on the other assignment, while at the same time always reflecting back on the work they have produced themselves (Nicol, Thomson, and Breslin 2013). This finding suggests that, up to a certain point, the more assignments that students are asked to review, the richer the evaluative processes they engage in and the more likely they are to be exposed to works of different levels of quality and to engage in productive learning transfer.

In many peer review scenarios, students are asked to comment on other students' work in relation to a set of criteria – a rubric – provided by the

teacher. This brings into play a third evaluative process relevant to the development of evaluative judgement: the comparison of each peer assignment against criteria and the production of a response. However, what is notable in peer review is that even while using teacher-provided criteria to frame their review responses, students still reflect back on their own work – that is, while they are applying criteria to others' work, they are also directly or indirectly applying the same criteria to their own work. This point is elaborated on further below.

Making Judgements, Commenting and Knowledge-Building

Recent research on peer review has shown that *producing* feedback reviews for peers might be more beneficial for students' learning and knowledge production than the *receipt* of feedback reviews from peers (Cho and MacArthur 2011; Cho and Cho 2011; Nicol, Thomson, and Breslin 2013). A critical consideration, however, is that to fully realise these benefits, student-reviewers must produce a written explanation for their evaluative judgements. Producing explanations is a constructive learning activity, which requires that reviewers generate and articulate ideas that go beyond the peer's text (Chi 2009). Indeed, Cho and MacArthur (2011) in a controlled study compared students' own written work after they had: (1) reviewed and commented on texts written by peers; (2) read some peer texts; or (3) read some unrelated articles. They found that students who had reviewed and commented on works written by peers outperformed those who had either simply read peer texts or read some unrelated articles. In other words, producing feedback explanations helped enhance and build students' own knowledge and understanding to the extent that there was consequential transfer. This finding is consistent with the extensive work of Roscoe and Chi (2008) on peer tutoring, which shows that when student-tutors produce explanations for peers, they revisit, rehearse, evaluate and improve their own understanding of the topic. It is also congruent with other research showing that asking students to make explicit the meaning of texts they are reading, by giving verbal explanation to others, promotes deeper understanding and knowledge production as, in doing this, students realise that there are gaps in their own understanding and they create new knowledge to fill those gaps (Chi et al. 1994).

Engagement with Criteria and Standards: Developing a Concept of Quality

Sadler has, over a number of years, been interested in how students learn to recognise and produce quality work and the role that criteria and standards play in such learning (Sadler 1989, 2010, 2013). In addressing this issue, he has recently drawn on studies of experts and analysed how they make evaluative judgements and make use of criteria and standards (Sadler 2010). Sadler observes that experts make holistic, multi-criteria judgements; they compare the work they are evaluating against an internal construct of quality, an internal standard, and when they produce an evaluative response they invoke criteria. This internal conception of what quality is develops through repeated experience in making judgements of many works of different levels of quality in a particular domain. Moreover, even when experts are provided with a list of criteria with which to inform their judgements, these are never used in isolation and instead are always combined with internal tacit criteria. Also, such internal criteria are not formulated in advance; rather, they emerge while experts are judging works, as they are born of an interaction between the experts' internal constructs of quality and their evaluation of the work being appraised. For example, in scrutinising any piece of work, even though multiple criteria will be brought to bear in parallel rather than sequentially, particular features of the work might still become more salient than others in evaluative decisions.

From his analysis, Sadler contends that if students are to develop expertise in making evaluative judgements, they must develop their own personal constructs of quality. He also notes that, given the complexity of the interactions between internal and external criteria, students will not acquire such constructs merely through being given statements of criteria by their teachers. Sadler (2013) identifies three requirements that would directly help students develop a personal construct of quality in any domain. First, students should be exposed to a range of works of different quality in that domain, where some are of a high standard. Second, they must gain practice in comparing these works with each other and with those of high quality, which will help refine their concept of quality. Third, they must express their judgements through feedback commentaries, as this will give them practice in formulating criteria

and in making tacit criteria explicit, which in turn will help them consolidate their quality constructs.

In my own studies (Nicol 2013a; Nicol, Thomson, and Breslin 2013), I have found that when students review the work of their peers and comment on these works, this calls on processes of judgement that replicate those of experts and that meet Sadler's requirements. As noted earlier, a key feature of reviewing is that students make direct comparisons of their own work with works produced by peers. This involves them in making holistic judgements using multiple criteria, with their own work acting as the initial standard. They also compare one peer's work against another and with their own, which enriches and multiplies their holistic experiences. In addition, in producing comments on each peer's work, students must formulate criteria to justify and express their judgements. Hence, the process of reviewing helps students refine and develop their own internal concept of quality standards, as well as giving them experience in generating criteria. These mental processes occur whether or not the teacher provides criteria, although they are more clearly evidenced when students are not given pre-formulated criteria. Where the teacher provides specific criteria, other processes come into play. In particular, engagement with teacher-provided criteria might either extend the range of the students' own criteria and/or it might help them to calibrate their own judgements. In Nicol, Thomson and Breslin (2013) we therefore conjectured that the benefits of reviewing might be twofold, with students generating 'richer criteria than those provided by the teacher but sounder criteria than those they might be able to formulate themselves' (17).

Receiving Peer Reviews and Evaluative Judgement

Finally, in discussions of peer review and its value in developing evaluative judgement, the focus is naturally on the act of reviewing. However, peer review is a reciprocal process where students both produce reviews and receive reviews from their peers. Historically, most research on peer review has been on the receipt of reviews and on the benefits that arise when students receive feedback from multiple peers (for example, Topping 1998; Cho and MacArthur 2010); these include a greater quantity of feedback than teachers can provide, feedback of a different type and in a language and tone that is often more understandable. However, the quality of the feedback received is

not the primary interest in this chapter. Rather the concern is with how the receipt of feedback from peers might develop students' evaluative competence. From that perspective, what is important is how students interact with, and respond to, received feedback. This point is returned to later.

Principles and Practice of Effective Peer Review

As signposted earlier, what follows below is a set of design principles for good practice in peer review (see Table 10.1). These are based on a synthesis of current research and logical analysis of reviewing processes. In implementing these principles, the aim is to give students experience in making evaluative judgements about the quality of academic works produced by peers that are in the same topic domain as those the students have produced themselves; that the works are in the same topic domain helps ensure that students will make inner comparative judgements of the peers' work with their own and that this will assist them to develop their own concept of quality (Nicol, Thomson, and Breslin 2013). However, this condition/requirement that the students review works within the same topic domain does not necessarily mean they must review exactly the same assignment. For example, students might produce work in the same topic area, but with different students focusing on different aspects of that topic, or the same topic might be tackled from different perspectives by different groups of students. The important point is that the assignment that is produced and that which is reviewed overlap in their subject content to the extent that students are likely to reflect back on their own work as a result of the reviewing process.

In the sections that follow, each principle is analysed in terms of its contribution to developing students' evaluative skills and to enhancing their

Table 10.1 Principles of good peer review design.

<p>Good peer review design should:</p> <ol style="list-style-type: none"> 1. encourage an atmosphere of trust and respect 2. use a range of different perspectives for the review tasks 3. give practice in identifying quality and formulating criteria 4. require well-reasoned written explanations for feedback responses 5. facilitate dialogue around the peer review process 6. integrate self-review activities into peer review designs 7. encourage critical evaluations of received reviews 8. provide inputs that help reviewers calibrate their judgements

disciplinary knowledge and expertise. As well as briefly commenting on each principle and on how its formulation has been informed by recent research, each section ends by providing some suggestions about how that principle might be implemented. These briefly sketched examples serve to amplify the meaning of the principle, while at the same time providing models for practitioners wishing to implement peer review themselves or to refine and enhance the practices they have already implemented in their own disciplinary contexts. The administrative burden associated with implementing peer review can be greatly reduced by using software such as the Workshop module in Moodle or PeerMark in the Turnitin suite. This is not specifically discussed here, even though many of the implementation approaches suggested below could usefully be supported by peer review software. Readers are referred to Honeychurch et al. (2013) for more information on peer software.

First Principle: Encourage an Atmosphere of Trust and Respect

This first principle is about setting the stage for peer review and about addressing potential student concerns. Peer review is not common practice in higher education. Hence, students might be unsure or concerned about what it involves and why teachers are implementing it. Some may initially think that it is a way of easing the teacher's burden in providing feedback reviews or marking. Others might be concerned about whether they, or their peers, are able to provide useful feedback, given their lack of expertise and experience. Still others might be concerned about sharing their good ideas with peers and, especially, about plagiarism. Peer review fundamentally upsets traditional power relations. In peer review, students become partners in assessment processes, and this shift in the balance of power, with the teacher giving up some authority, might not be welcomed by all. If peer review is to be successful, there must be commitment from students and a willingness to share and collaborate. Hence, academics wishing to introduce peer review are advised to invest time making sure students are clear about its purpose and to ensure that their early experiences with the process are positive.

Specific approaches might include: (1) explaining why peer review is being implemented and what students will get out of it; (2) illustrating how peer review operates in professional contexts and in life beyond university; (3) clarifying that reviewing is not about finding fault with, and undermining

the work of, others, also showing students examples of both constructive and less constructive feedback critiques; (4) emphasising that students will still learn even if they receive poor reviews, as it is the reviewing experience itself that matters; (5) dealing with concerns about copying by emphasising that learning, at its best, is a collaborative endeavour or by explaining how you have designed the activities so that plagiarism is not an issue; and (6) making it clear that you are not asking students to mark others' work. Many of these ideas might be more effectively introduced by organising workshops where students discuss the ideas themselves, rather than by simply providing written or oral explanations of them. For example, students in groups might identify and discuss the merits of producing and receiving reviews and discuss how these processes differ before engaging in peer review activities.

Second Principle: Use a Range of Different Perspectives for the Review Tasks

When teachers review assignments produced by students they normally comment on what is good and weak about them and what could be improved, with such comments justified through rational argument or evidence. In this approach teachers are essentially evaluating the quality of the students' work in relation to an assignment brief, which will usually have been specified in advance, often through a list of criteria. This scenario is normally replicated in peer review – that is, students assume the teacher's role and evaluate the extent to which the work of fellow students meets the assignment specification (Sadler 2013). While there is much to commend in this approach in terms of helping students develop a more robust conception of quality relative to a specific assignment brief, it does not capitalise on the full possibilities for learning and expertise development that peer review affords.

Peer review is about developing the students' capacity to make evaluative judgements and, through exercising such judgements, to build new knowledge and understanding. Both these aims require that students are given opportunities to evaluate peer work, not just from the perspective from which it was produced, but importantly also from other reference points and perspectives. Competent practitioners and experts are able to evaluate work from many different vantage points. They are able to do this because they have developed a highly structured and interconnected knowledge base which can be flexibly accessed depending on the situation or context of application

(deCorte 1988). Asking students to review peer work from a range of different perspectives will help them elaborate and refine their own knowledge networks, while at the same time enabling them to hone and sharpen their evaluative skills. Reviewing tasks should therefore, where possible, expose students to a rich range of perspectives, as well as give them practice in shifting perspectives. This might be achieved within a single review task or across a set of review tasks. It can also be achieved even where the interest is primarily in helping students improve the quality of their work relative to the assignment brief.

Five perspectives with possible variations are identified for reviewing with each affording different advantages in terms of knowledge elaboration and skills development. Readers will be able to build on these and identify further perspectives appropriate to their context. The first perspective, which I refer to as the 'holistic' perspective, involves asking students to review and comment on the work as a whole. Experts and teachers make holistic judgements about work and performances, yet arguably university students do not gain much practice in this (Sadler 1989). There are, however, many ways of addressing this issue; for example, students might be asked to summarise the work produced by peers, to identify hidden assumptions in the work, to identify and comment on the centre of gravity in the writing or the most compelling argument. The second perspective is the 'stakeholder' perspective, with students asked to take a particular role in reviewing or, indeed, more than one role. In nursing, for example, they might be asked to comment on the work from the perspective of the nurse, the physician, the hospital manager, the patient and so on. The third perspective is the 'reader-response' perspective, where students are asked to give their reactions to, and feelings about, the peer text as they read it (for example, 'My impression is that the introduction of this second issue clouded the argument'), rather than to make definitive judgements about it (for example, 'this argument is unconvincing'). Students are highly receptive to such non-judgemental comments, as they help them to grasp the difference between their writing intentions and the actual effects of their writing on others (Lunsford 1997). In this scenario it is important that reviewers acknowledge that their responses are subjective and offer no explicit suggestions for improvement. The fourth perspective is the 'graduate attributes' perspective, which can take many forms, depending on the

particular attribute that one wishes to develop. For example, the focus might be ethical awareness, in which case students might review the work of their peers from an ethical perspective. The fifth perspective is the 'contrastive' perspective, where, as the term suggests, students are asked to comment on an assignment from a vantage point quite different from that which guided its production – for example, from a different theoretical position. This would heighten possibilities for the construction of new knowledge and would bring into play quite new vantage points for evaluative judgements.

Third Principle: Give Practice in Identifying Quality and Formulating Criteria

Students must develop their own internal construct of quality if they are to produce quality work themselves and be able to judge the quality of others' work. Traditional approaches to helping students develop their understanding of quality range from involving students actively in interpreting criteria supplied by teachers to students negotiating criteria with teachers or even students developing their own criteria (Price and O'Donovan 2006). These approaches can be easily implemented within most peer review designs. However, valuable as they are, such approaches are not the most effective way to develop students' own conception of quality, nor their ability to produce or recognise high quality work, as they all assume that what constitutes quality can be externally codified and specified in advance (Sadler 2007).

Instead of focusing all our efforts on trying to develop students' understanding of teacher-provided or pre-specified criteria, the family of approaches advocated under this principle all focus on developing the students' own ability to make holistic judgements about quality and their ability to rationalise those judgements through the identification and articulation of criteria (Sadler 2013). The assumption is that criteria will emerge through formal consideration of the qualities of different works and that, through such processes, even tacit criteria will be elaborated. The essential conditions are that students have opportunities to make judgements of multiple works of differing quality in the same topic domain, with some works of a high standard, and that criteria are allowed to emerge from those judgements, rather than be specified beforehand. Given these conditions, I would like to suggest a number of possible approaches.

First, within practical limits, the number of reviews that students carry

out should be increased. This would extend the range of works to which students are exposed and would make it more likely that they would encounter some works of high quality. A second approach, which would secure a similar end, would be to insert an example or examples of high quality work produced by the teacher or students from previous cohorts into the set of assignments being reviewed and, after reviewing, engage students in discussions of these examples. The latter would help students externalise the basis of their evaluative decisions through criteria which would build their knowledge base. Third, if one wished to enrich the students' experience of making holistic judgements, they might be asked to compare a number of peer assignments, including their own, and to rank them in order of quality. If students were asked to explain their ranking decisions, this would call for discussions about both criteria and standards. A fourth approach that would enhance the production of criteria by students would be to require them to carry out reviews without giving them criteria to work from, but to identify and record the criteria that emerge for them during the reviewing task. The criteria that are recorded might usefully be compared afterwards with teacher-provided criteria. A further approach would be to provide students with examples of assignments from previous cohorts that all meet the required criteria and ask them to review and rank them and then discuss why some are still of a higher quality than others. This would make transparent the interplay between criteria and standards and analytic and holistic judgements.

Fourth Principle: Require Well-Reasoned Written Explanations for Feedback Responses

There are a number of reasons for requiring students to produce written feedback explanations to account for their evaluative judgements. First, as noted in the last section, providing explanations makes explicit the criteria – including the tacit criteria – which students have used to inform their judgements. Second, providing feedback explanations directly engages students in revisiting and rehearsing their current knowledge and in constructing new knowledge in the discipline (Roscoe and Chi 2008; Nicol 2013). Additionally, externalising explanations in writing creates new outputs that students can reflect upon and from which they might infer further new knowledge (Chi 2009). Lastly, producing explanations helps develop the students' own writ-

ing abilities and their acquisition of a disciplinary vocabulary and discourse, especially that associated with critical analysis, argumentation and reasoning.

A key question that arises is what kinds of written responses should be sought from student-reviewers. In most cases, what is required is that students provide an elaborated rationale to justify their evaluative judgements. The form of this will depend on the review perspectives and whether criteria are supplied or not. However, one would recommend that: (1) student-reviewers be advised that what is required is an extended written response, rather than a single word answer (for example, 'in a paragraph, comment on . . .'); (2) students be asked for a constructive commentary – for example, to provide suggestions for improvement or to highlight alternative perspectives or approaches, rather than a critique, where the latter means providing an account of what is wrong or deficient in the peer's work; (3) students carry out reviews in pairs or groups and provide a reflective report highlighting where members of the pair or group agreed or disagreed in their judgements – arguably, such discussions will trigger considerable knowledge elaboration; (4) the genre for the review output be varied so as to develop students' writing skills and their experience in writing for different audiences – for example, they might provide a newspaper article, a letter to the author or a non-evaluative reader response.

Fifth Principle: Facilitate Dialogue around the Peer Review Process

All aspects of the peer review process can be enhanced through dialogue, both peer dialogue and teacher-peer dialogue. Dialogue is a means of enriching both the evaluative and knowledge-building processes that are elicited through peer review activities (Nicol 2010b). Dialogue in such peer contexts involves students in constructing, reconstructing and co-constructing meanings together. For example, students might be asked to make judgements collaboratively, which will involve them in negotiating their evaluative responses. Such co-regulation of responses not only triggers knowledge elaboration, but it also helps students develop collaborative skills that are relevant to their future professional lives. Dialogue can also help bolster students' confidence when they make evaluative judgements, as they can check out and discuss their judgements and the reasons for them with others. Peer dialogue is especially valuable, as it can help attenuate the teacher's voice and

strengthen the students' voice during review activities. In effect, it helps shift responsibility for making judgements to the students themselves.

Dialogue can be harnessed at different points in the review process: before students begin reviewing (for example, to articulate the review criteria), when they produce the assignment for review (for example, the assignment could be a group task), when they construct the review commentaries or even after the receipt of reviews. It can be organised as a classroom activity or in an online context.

Specific approaches to integrating dialogue include: (1) asking students to produce the assignment as a group and then having individual students review a number of group assignments; importantly, this approach will increase the number of reviews each group receives; (2) the first approach could be followed up with groups writing a reflective account of how they responded to the multiple individual reviews they received; this would further enhance dialogue, as it would require that students discuss the received reviews; (3) asking students to formulate questions for the peer reviewer when they submit their assignment; the reviewer might then be asked to address the questions posed, as well as to provide their own review responses; and (4) sequencing the peer review activities so that later reviewers can see the comments of earlier reviewers when they add their comments; later reviewers might highlight where they agree or disagree with earlier comments, thereby enriching the range of review responses. Further ideas include getting students to work in pairs or groups to establish a particular perspective for the reviews or engaging students in post-review discussion with teachers about the quality of their reviews.

Sixth Principle: Integrate Self-Review Activities into Peer Review Designs

A key purpose of implementing peer review is to develop the students' capacity to make evaluative judgements about the quality of their own work, not just about the quality of the work of their peers. Peer review naturally builds this self-evaluative capability, as students cannot avoid comparing their work with that of their peers and reflecting on how their work might be improved (Nicol, Thomson, and Breslin 2013). Also, research has shown that students produce better quality work in the same topic domain after participating in reviewing activities (Cho and Cho 2011).

In the published literature, many researchers advocate self-review or self-assessment as a platform for the development of students' evaluative skills. The rationale is that students are already engaging in evaluations of their own work as they produce it and therefore it is only logical to try to strengthen this ability (Nicol and Macfarlane-Dick 2006). Possible approaches include making self-review an explicit requirement – for example, by having students review their own work against some specified criteria before submission. However, there are limitations with this approach; it is often difficult for students to make accurate or informed judgements about the quality of their own work, as they might not be able to take an objective stance on work they have just produced or to view it from another perspective (Eva and Regehr 2005; Nicol 2013). Peer review helps overcome these limitations, as it provides students with new inputs in the form of external reference points which can help them see their own work in a new light. In effect, reviewing the work of peers puts students in a position where they are likely to 'notice' aspects in their own work that require attention or that could be improved, rather than being told by others through the transmission of feedback comments (Sadler 2010).

Despite its limitations when used in isolation, self-review therefore still has a useful role to play in peer review implementations. In particular, when integrated into peer review designs, self-review can help ensure that the learning transfer that occurs through reviewing is consolidated and strengthened. For example, students might externalise their learning from reviewing others' work by subsequently reviewing their own work. The following are some approaches to the integration of self-review activities into peer review designs: (1) after completing a number of reviews, students are then asked to produce a written review commentary on their own work – this approach can give teachers insight into what students are learning from reviewing; it also helps to address concerns about plagiarism, as students are not asked to update their own work; (2) students produce an action plan stating how they will improve their future work after they have reviewed the work of peers; (3) students review their own work and then compare the reviews they receive from peers with these self-reviews and produce an account of what they have learned; and (4) students review works produced by peers by posing questions about those works, rather than by providing explanatory comments; peers then

provide answers to these questions before updating their work – answering the questions will activate self-review processes by the assignment producer.

Seventh Principle: Encourage Critical Evaluations of Received Reviews

This principle is about the receipt of feedback reviews from peers and the circumstances under which this would help develop students' evaluative skills and their knowledge networks. The core argument is that received reviews will only achieve this purpose when students actually process the feedback they receive by critically evaluating it and/or by producing a response to it. Making an evaluative response to received feedback might mean summarising it, contesting it, discussing it with others or it might mean using the information it contains to update the student's own assignment. Peer review is a natural context for requiring evaluative responses to received reviews, as invariably these are provided on draft work. This principle is, however, also highly relevant to teacher feedback. Indeed, the failure to implement this principle is arguably the main reason why there is so much dissatisfaction with teacher feedback in higher education, both by staff and students (Draper 2013; Nicol 2013).

Some approaches to using received reviews to develop students' knowledge and evaluative skills include the following: (1) asking students to respond to the multiple reviews that they receive from their peers by commenting on their quality – for example, by identifying the merits and limitations of each review; (2) asking students to preface their assignment submission with three questions that they specifically wish to receive feedback on, then getting them to comment on whether the feedback they received helped address these questions; and (3) when students submit a subsequent assignment, asking them to submit a cover sheet outlining how the feedback they received on the earlier assignments has informed the current submission (Hughes 2011; Draper 2013).

Eighth Principle: Provide Inputs that Help Reviewers Calibrate their Judgements

The role of the teacher in peer review is to design learning activities that develop students' ability to make their own judgements of quality and to provide inputs that help students calibrate the quality of these judgements.

By inputs, I mean external information that can be used by students as a comparison against which to evaluate the quality of their own review responses. The purpose of such inputs is specifically to heighten students' awareness of the standards that apply in their disciplinary area. One such input might be teacher feedback comments on the quality of the students' own feedback reviews. However, given that the definitive source of all feedback is ultimately the students themselves (Andrade 2010), teacher feedback will not suffice as the only, or the main, strategy for the calibration of students' evaluative skills. More will be achieved if, in designing peer review activities, students are given opportunities to engage with actual examples of work of a high standard and are also provided with the chance to compare and evaluate their own reviews of peer work with such examples of high quality reviews produced by others and particularly by experts (Molloy and Boud 2013).

The following are some approaches to ensuring that students learn to make sound evaluative judgements and to produce high quality feedback reviews: (1) provide feedback on the quality of students' reviews stating what is good and what might be improved, also noting alternative perspectives they might consider; (2) ask pairs of students to review the same peer assignment and then to compare and discuss their reviews and to produce an agreed response – then ask them to compare their response with a teacher-provided review or against selected high-quality reviews; (3) have students, in class, compare and discuss reviews produced by others, producing notes on their merits and weaknesses; and (4) scaffold the students' reviewing activities by providing them with a menu of teacher feedback comments or a menu of teacher feedback questions – the kinds of questions that the teacher would ask about the work; this will bring into play both teacher-produced and student-produced criteria and standards within the reviewing task.

Conclusion

This chapter has proposed and discussed a theoretical rationale for the development of students' evaluative skills through peer review seen *as an arrangement whereby students produce an assignment and then review and comment on assignments produced by peers in the same topic domain*. Drawing on recent research, it has also identified a number of guiding principles for peer review and has illustrated, through some practical suggestions, how these principles

might be implemented. As such, this chapter has both a theoretical and practical orientation: theoretical, in that it has synthesised the research to advance current thinking; practical, in that it has offered concrete ideas for practitioners wishing to implement new classroom activities centred on peer review, activities which themselves should generate further research data and lead to further developments of theory. This chapter is a contribution to a volume that celebrates a great scholar, innovator and practitioner, Dai Hounsell, whose own work has also bridged theory and practice and opened up new avenues of investigation. As ever, I look forward to discussing and developing these ideas and many others with Dai in the future.

Resources

Readers interested in peer review design can find further information and resources, including a peer review design toolkit (see <http://www.reap.ac.uk/PEERToolkit.aspx>).

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