

## Learning-oriented Assessment: Principles, Practice and a Project

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### Abstract

Learning-oriented assessment represents an attempt to reconcile formative and summative assessment and focus all assessment on the development of productive student learning. Learning-oriented assessment comprises three interlocking dimensions: assessment tasks as learning tasks; student involvement in assessment; and the closing of feedback loops. The Learning-oriented Assessment Project was an institutional attempt to promote and disseminate useful assessment practices: its strengths were in its international profile and publications, whilst its limitations included a lack of sustained impact on assessment at course and programme levels. Barriers such as accountability and distrust are considered and some possible ways forward for learning-oriented assessment are suggested.

**Keywords:** *Learning-oriented assessment, assessment feedback, feedback loops, assessment learning tasks*

### Introduction

Assessment is beset with tensions and compromises. As Boud (2000) remarked, assessment has to do 'double duty'. It is about grading and about learning; it is about standards and also invokes comparisons between individuals; it communicates explicit and hidden messages; it is both a technical matter and one that impacts on students' emotional lives. Assessment needs to be principled, yet also practical. It must be justifiable to lecturers themselves, students and management.

The need for assessment to carry multiple functions is a major challenge to the improvement of its practice. These multiple demands make its reform difficult to achieve, but in view of the centrality of assessment to the student experience, it is crucial that the area be handled well. Table 1 summarises some of these tensions without elaboration as many of them have been illustrated both in this conference and elsewhere. Negotiating these dilemmas is often a tall order.

**Table 1: Some tensions in assessment**

Assessment for productive learning; about students learning better	Assessment as judgment; summarising student achievements; assessment for accountability
Assessment as technical (validity, reliability etc)	Assessment as emotional (e.g., Falchikov & Boud, 2007); particularly in its impact on students (and sometimes on staff)
What is important and worth assessing (cf. validity)	What is easy to assess and/or can be reliably measured
Students are judged against standards	Students are also judged (to a lesser or greater extent) against peers (Sadler, 2005)
Assessment communicates explicit messages	Assessment communicates hidden messages
Assessment as principled	Assessment as pragmatic
Quality assurance and associated lack of trust (Carless, 2009)	Innovative assessment thrives in an atmosphere of trust (McDowell, 1995)

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'Good' assessment may be or appear time-consuming	Time is at a premium
Assessment needs to cater for intended learning outcomes (e.g., Entwistle, 2005)	Assessment needs to develop emergent learning outcomes (Hussey & Smith, 2003)
Assessment is about what students can do now	Assessment needs to prepare students for the future, in other words sustainable assessment (Boud, 2000)

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A further challenge is with the image of assessment. It often invokes negative images of stress, unfairness, or from a tutor perspective the drudgery of marking seemingly endless papers or examinations. The accountability aspects of assessment and evaluation may also contribute to this negative image and prompt some staff to resist its technology. This may be one barrier towards the evolution of assessment practice. James (2003), based on a study in Australia, suggests that the quality assurance of assessment lags behind other aspects of teaching; that assessment is probably one of the least sophisticated aspects of university teaching; and that there is an overemphasis on the sorting and certification role of assessment in higher education.

Yet assessment, if appropriately reconfigured, could be a positive force which steers student learning in productive directions. The overall aim of the chapter is thus to review how assessment might be reconfigured to best support productive student learning, and through examining relevant work in the field outline some avenues for further exploration. A central feature of the chapter is to discuss what I call 'learning-oriented assessment'. Whilst learning-oriented assessment certainly cannot mitigate all the tensions above, it does seek to focus all assessments on a primary goal of stimulating productive student learning. I also briefly reflect on the Learning-oriented Assessment Project (LOAP), a teaching development project carried out in the Hong Kong Institute of Education. I then touch on issues of accountability and trust in relationship to assessment. In the final main section of the chapter, I outline some recent developments in order to sketch some possible ways forward for learning-oriented approaches to assessment. Through these steps, I draw together various bodies of assessment literature and it is hoped that this in itself can form one of the contributions of the chapter.

### Learning-oriented Assessment

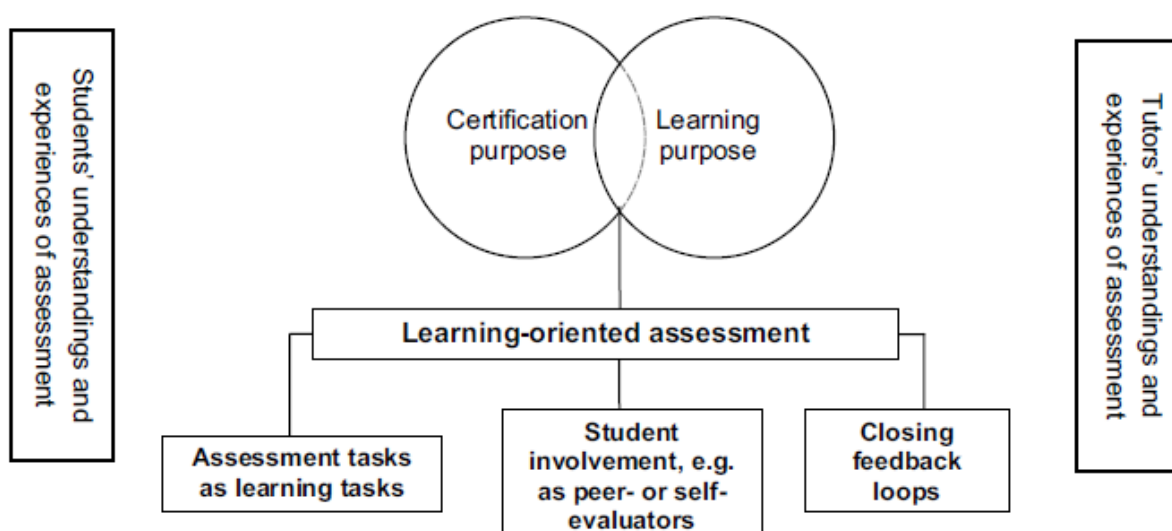
Learning-oriented assessment holds that for all assessments, whether predominantly summative or formative in function, a key aim is for them to promote productive student learning. This section describes the main features of learning-oriented assessment; it involves a re-working and up-dating of material, some of which appears in different forms in Carless, Joughin, Liu, and Associates (2006), Carless (2007a), and Carless (2009).

#### Learning-oriented assessment framework

Figure 1 below, based on a synthesis of relevant literature, summarises the main aspects of learning-oriented assessment. The starting point of the figure is the two main purposes of assessment, the certification element which focuses principally on evaluating student achievement, and the learning element. The intersecting circles indicate that when assessment is functioning efficiently, there should be substantial overlap between these two functions. The aim of learning-oriented assessment is strengthening the learning aspects of assessment, and it is hoped that this can be achieved through either formative or summative assessments as long as a central focus is on engineering appropriate student learning. For formative assessments that learning purpose is an inherent characteristic, for

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summative assessments it is suggested that they have potential to develop productive student learning when certain features discussed below are present.



**Figure 1: Framework for learning-oriented assessment (Carless, 2007a; Carless, Joughin, Liu & Associates, 2006)**

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The three strands of learning-oriented assessment are intended to be seen as a unified whole, rather than composed of discrete elements. For example, assessment tasks are most effectively focused on learning when they incorporate student involvement and how feedback loops can be closed; feedback is likely to be more effective when students are cognisant of criteria and are monitoring their progress towards the stated standards. Impacting on these strands are staff and student perspectives on assessment, represented at the right and left of the figure, as part of contextual influences impinging on the assessment process. For example, tutors' capacity to implement learning-oriented assessment may be constrained by their own limited experience of different assessment formats. Students may be initially reluctant to accept innovative assessment methods unless their rationale and potential advantages to them are clear. There is inherent conservatism in staff and student views of assessment formats which results in examinations and essays remaining the dominant forms of assessment.

### **Assessment tasks as learning tasks**

Assessment task design is a fundamental component of learning-oriented assessment, or what Carless et al. (2006) call "assessment tasks as learning tasks" (p. 9). Task design is obviously a key factor impacting on the kind of learning required of students. The notion of assessment tasks as learning tasks encompasses a number of features and holds that assessments with these features are most likely to facilitate productive student learning.

Tasks should be constructively aligned with curriculum objectives and content in a way that maximises the potential for the achievement of worthwhile learning outcomes (Biggs & Tang, 2007). Assignments are generally preferred to examinations on the grounds that the latter tend to be over-reliant on factual recall and the reproduction of information. Related to this, assessment should engage students with work over time rather than being one-shot (Gibbs, 2006).

Other relevant features of task design include: a relationship between assessment tasks and more authentic real-world tasks; and co-operative rather than competitive assessments, for example, through group work or project-

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based learning (Keppell & Carless, 2006). Tasks should motivate students to produce their best performance, so some degree of student choice may advantageously be built into tasks (Gibbs, 2006).

Assessment tasks should mirror the kind of learning we wish to promote, so as to stimulate complex learning, fulfilling the demands required in the contemporary workplace (Knight, 2006). Assessment tasks should facilitate student involvement through self-monitoring and peer critique (see also student involvement below). Tasks should be sequenced and planned so that they facilitate feedback that is timely and can be acted upon (see also closing feedback loops below).

### **Student involvement in assessment**

Learning-oriented assessment also predisposes that student involvement in assessment (Falchikov, 2005) through peer and self-assessment is crucial. Assessment processes should involve students as much as possible. In the same way as students need to be actively involved in constructing understanding of content, they need to develop the same skills in relation to assessment. Dialogues with students about assessment processes can also facilitate transparency and enhance mutual trust. Because of its key certification role, students are focused on issues in assessment and such conversations can help them to understand better the assessment process, their role in it and the “rules of the game” (Carless, 2006).

Rather than peer assessment involving student grading, I view *peer feedback* as being a particularly valuable process by which students learn from each other, reflect on standards achieved, and begin to self-regulate their own learning (Liu & Carless, 2006). Peer feedback can be allied with self-assessment (e.g., Boud, 1995) to support students in decoding assessment criteria and applying them to exemplars, their own work and that of their peers. Where feasible, students should be engaged in identifying, drafting, summarising, or using assessment criteria (e.g., Orsmond, Merry, & Reiling, 2002). These processes sensitise students to the required standards and provide the first step towards student self-monitoring of their own performance. Students also need to engage with exemplars. In association with the previous points, this can help to raise student awareness of standards and how their performance may differ from that exhibited in quality exemplars (Sadler, 2002).

The ability to self-evaluate is probably the most important skill that we can foster in our students. Self-assessment within the context of participation in practice is a key element of sustainable assessment (Boud, 2000) which holds that assessment needs to be tenable for current purposes, whilst also equipping students through their active involvement in the assessment process with the necessary dispositions for lifelong learning. In other words, students need to be able to self-evaluate for the purpose of current assignments whilst also developing this skill for future use in the workplace.

### **The closing of feedback loops**

Recent student surveys in both the UK and Australia have indicated that students view the provision of prompt and useful feedback as one of the least effective aspects of the student experience. The literature on formative assessment (e.g., Wiliam, 2007) points out that information provided to students is not feedback unless it leads to some current or future student actions which enhance learning. This is a sobering statement and indicates that much of what we view as feedback does not really qualify as feedback because it is information which is not used, in other words the feedback loop is not closed. By closing the feedback loop I mean providing feedback which is acted upon by the student to enhance their learning and that the giver of feedback is able to identify the extent to which the recipient has acted on it. This is a tall order within current structures, but clearly something worth striving for in view of the centrality of feedback to student learning (Hattie & Timperley, 2007).

A link from the previous section is that self-assessment facilitates understandings of feedback, in that for feedback to be effective students need to be developing an awareness of required standards and how they can “close the gap” between current and desired levels of performance (Sadler, 1989). Gibbs (2006) outlines a number of features of good feedback processes, including: feedback focuses on learning rather than on marks or on students themselves; and feedback is acted upon by students to improve their work or their learning. Key issues include the comprehensibility and timeliness of feedback (e.g., Carless, 2006) so that students can make sense of feedback and have prompt opportunities to use it.

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Too often feedback in higher education comes after modules are completed and too late to be of much use to students (Gibbs, 2006). We may need to consider refiguring our assignments, so that students can get earlier feedback and make better use of it. Technology can be a way of providing more timely feedback, for example recent research into podcasts (Ribchester, France & Wakefield, 2008). For the feedback loop to be closed, feedback needs to be acted upon and so timeliness is a key dimension. We should strive to maximise opportunities for students to act upon the feedback: two-stage assignments; feedback that promotes self-monitoring; and “quick and dirty” oral feedback are the kind of modes which are generally most timely and forward-looking. In marked terminal assignments, feedback on generic issues is likely to be more useful and forward-looking than feedback on assignment-specific points. More provocatively, in view of the limitations of feedback on terminal assignments, perhaps we should try to devote less time and energy on it, at least to some extent. This may permit more time to be devoted to more productive types of “closing the loop feedback”.

### **Summary of learning-oriented assessment**

The above framework of learning-oriented assessment can be summarised by three deceptively simple principles:

Principle 1: Assessment tasks should be designed to stimulate productive learning practices amongst students;

Principle 2: Assessment should involve students actively in engaging with criteria, quality, their own and/or peers’ performance;

Principle 3: Feedback should be timely and forward-looking so as to support current and future student learning.

Coherence may be achieved between the three principles, for example, when an assessment task design explicitly addresses the issues of student involvement and supports the closing of feedback loops.

In sum, learning-oriented assessment seeks to contribute to the reconciliation of formative and summative assessment tensions by focusing on good assessment principles potentially applicable to both. It is predicated on an integration of appropriate task design; the involvement of students in the assessment process; and feedback that can be acted upon to improve student learning in current and/or future assignments. It is hoped that this can facilitate student progress towards worthwhile learning outcomes.

### **The LOAP project**

Now I undertake a brief reflective analysis of LOAP, noting that further details are also provided in Carless (2007a). The principal aim of this section is to share some of the project processes which could form the basis of ideas for other similar projects seeking to enhance assessment in higher education.

The main objective of LOAP was to identify, promote and disseminate good practices in learning-oriented assessment in higher education in Hong Kong. The 4-year project was based in the Hong Kong Institute of Education, the largest provider of teacher education in Hong Kong, but also involved collaboration with other universities and participation of overseas consultants. I was the principal investigator for the project from September 2002 until August 2005 before I moved to the University of Hong Kong, when my role was ably filled by Gordon Joughin. The first stage of the project sought to identify current learning-oriented assessment practices used by Hong Kong Institute of Education staff. Our first modest product was thus a collection of summaries of useful assessment practices via a short user-friendly pro-forma. The summaries were posted on the project website and provided a means of publicising the project and involving staff in a way that was neither time-consuming nor onerous.

By later extending the call for contributions to other universities in Hong Kong and developing the learning-oriented assessment framework above, we laid the groundwork for a practical collection of teaching techniques relevant to learning-oriented assessment practices (Carless, Joughin, Liu, & Associates, 2006). This sourcebook contains chapters reviewing key challenges and progress in assessment; outlines the conceptual basis of learning-oriented assessment; and showcases 39 short accounts of assessment practice, each including commentary and further suggestions. These accounts are grouped around nine generic learning dispositions: researching; higher order thinking; communicating using technology; communicating orally or in writing; working in teams; evaluating peers;

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learning autonomously; evaluating oneself; and processing and acting on feedback. A Chinese language sourcebook was also published (Leung & Berry, 2007) containing some translated contents from the English version and also some original material.

In accordance with a project aimed at developing lecturer capacity in assessment practice, we believed that practical sourcebooks of this nature would represent useful resources for teachers in higher education to access and to adapt ideas to their own discipline and teaching context. We believed that practical assessment ideas of this kind were not particularly well-represented in the existing literature (cf. Hounsell, McCulloch, & Scott, 1996). From the contributors' viewpoints, the sourcebook also provided an opportunity for a publication within the scholarship of teaching and learning, something staff could gain credit for in the relevant appraisal processes.

LOAP also set up action research teams to explore selected themes in collaborative developmental work. We believed that action research was a suitable strategy as it involved staff in a bottom-up way whilst also providing structure and resources from LOAP. Action research processes have been seen to be a particularly suitable strategy for exploring the renewal of assessment practices in higher education (e.g., Hui & Grossman, 2008; McDowell & Sambell, 1999; Swann & Ecclestone, 1999). Five themes were addressed by action research teams: self-assessment (Mok, Lung, Cheng, Cheung, & Ng, 2006); peer assessment; technology-enhanced assessment (Keppell, Au, Ma, & Chan, 2006); performance assessment; and the assessment of field experience (Tang & Chow, 2007), the latter being a particularly important issue in a teacher education institution. Whilst naturally some action research teams were more productive than others, these teams involved around 30 colleagues in direct action within the project and were a major focus of ongoing activity. The action research processes included working gradually towards tangible products, including interim presentations at two one-day LOAP conferences (June 2004 and June 2005) and the subsequent publication in 2006 of a special issue of *Assessment and Evaluation in Higher Education*, guest edited by three members of the LOAP team: David Carless, Gordon Joughin, and Magdalena Mok.

One of the most productive strategies in the project was the deployment of overseas consultants as scholars in residence, conducting a series of short intensive visits. These consultancy visits formed the basis of the LOAP lecture and seminar programme, helped to establish a high profile for the project and provided valuable insights, both with respect to views of assessment and thoughts on how the project could be managed to maximise its impact. The consultants also acted as advisers to the action research teams and provided invaluable input on the development of publications for the project, including both the sourcebooks and the special issue referred to above.

In projects such as this, there is sometimes a trade-off between wider impact through international publications and more local impact through developmental work with colleagues. LOAP had solid achievements in both of these areas but probably more in terms of its publications. Planning for publication early in the project was a significant factor in achieving different kinds of output, in other words those more practical (e.g., the sourcebooks) and those more academic (e.g., the special issue of *Assessment and Evaluation in Higher Education*). The prospect of achieving quality publications was also a way of motivating and sustaining involvement in the project. The final publication from the project was initiated by Gordon Joughin through a LOAP Lecture Series and resulted in the publication of an edited book (Joughin, 2009).

Of course, there were also a number of areas in which the project might have achieved more. There might have been more successful engagement with middle management, for example, through a case study of assessment change in a specific department or unit. The project could have been more successful in having a sustained impact on changing the institutional assessment culture. LOAP might have made a stronger contribution to the development of assessment guidelines in the institution. The usual constraining factors of time, human resources, and institutional cultures often limit what a single project can reasonably achieve.

In sum, LOAP achieved a strong profile both institutionally and further afield, through its activities, academic products and engagement with high-profile international consultants. For a variety of reasons, its medium-term impact on the institution did not go beyond those who had participated actively in its processes and publications. It was, however, regarded highly favourably both by senior management in the Hong Kong Institution of Education, and by its participants and sponsors.

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## Assessment Challenges and Opportunities

### Learning-oriented assessment, accountability and trust

An obvious challenge to a learning-oriented perspective of assessment is the power of accountability forces on education and the associated concern that there is too much assessment and evaluation. Accountability derives some of its impetus in lack of trust, a perception that without regulation standards may drift. Accountability, of course, also has positive elements: it guards against irresponsibility and provides checks or controls which can enhance the quality of procedures (Sztompka, 1999). There is a danger that in the contemporary world of higher education, cultures of surveillance and accountability sometimes distract staff from their core roles as teachers and researchers. O'Neill (2002) puts it as follows, "the new culture of accountability provides incentives for arbitrary and unprofessional choices" (p. 56) or what she terms "defensive teaching" (p. 50).

In Carless (2009) I discuss how distrust can act both as a barrier to learning-oriented assessment and an impediment to wider attempts at assessment reform. Here I provide three examples relevant to the learning-oriented assessment framework. First, in terms of assessment task design, the spectre of plagiarism, in other words a lack of trust in the integrity of students, may contribute to a reversion to examinations as the main method of assessment, despite widespread evidence that examinations tend to encourage short-term memorisation or surface approaches to learning (e.g., Ramsden, 2003). Second, with respect to student involvement in assessment, concerns about "freeloaders" and the difficulties of awarding reliable grades in group assignments may act as a barrier to some forms of peer- and self-assessment. Third, for formative feedback to flourish it is necessary for students to be willing to reveal their own partial conceptions: in other words to invest trust in the teacher. Conversely, "faking good" (Gibbs, 2006, p. 26) occurs when students present themselves as knowing more than they actually do, for fear that revealing their weaknesses may be used against them. Staff members also need to trust students to engage actively with their comments, and frequently heard reports of students failing to collect terminal assignments can have a negative impact.

Trust and distrust have been discussed in detail in literatures such as sociology and organisational management, and merit further consideration in relation to assessment. Distrust risks undermining the integrity of assessment practices, and may be a particular impediment to current emphases on the need for assessment to stimulate a productive student learning experience (Carless, 2009). We need to work towards building trust in various ways so as to develop assessment systems which can contribute effectively to the further development of student learning. Are there concrete strategies that can be used to minimise the negative impact of distrust on assessment practices, or is lack of trust sometimes too pervasive to be tackled adequately? Would greater openness, transparency and collaboration play a role in reducing distrust, and reducing some of the mystique that sometimes surrounds certain assessment practices? Further investigation of the role of trust or distrust in the renewal of assessment practices is well worth undertaking.

### Possible ways forward

Ways forward are clearly far from straightforward. The assessment tensions sketched in the introduction are going to remain difficult to deal with. Our goal is assessment which stimulates desired learning outcomes, the kind of dispositions that students need in the workplace and beyond. In this vein, Knight (2006) summarises research into what employers look for in university graduates:

- Imagination, creativity;
- Adaptability/flexibility;
- Willingness to learn;
- Independent working/autonomy and taking responsibility;
- Working in teams;

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- Managing oneself and others;
- Time management and working under pressure;
- Good oral communication;
- Communicating in writing for varied purposes/audiences;
- Attention to detail;
- Planning, co-ordinating and organising.

Obviously many traditional assessments do not adequately develop these attributes but it is hoped that the notion of learning-oriented assessment can contribute to the development of desired learning outcomes. With this in mind, I now return to the three elements of the learning-oriented assessment framework and outline some recent developments in these areas.

The design of assessment tasks is clearly critical to the development of productive student learning. What kinds of learning tasks are most likely to develop the kinds of dispositions noted in Knight (2006)? Portfolios, projects and other integrated tasks seem particularly promising. By facilitating the collection of evidence over time and incorporating peer feedback and reflective thinking, the portfolio is primed to stimulate desirable learning outcomes. A further advantage of the portfolio is that it can be used to represent claims of achievement in authentic tasks and settings (Klenowski, 2002). Portfolios represent many of the features of the notion of assessment tasks as learning tasks sketched earlier in the course: students work at them over time; student choice is enabled; there is a relationship with real-world tasks; and the portfolio facilitates constructive alignment. Whilst portfolios can represent difficulties for students in coming to terms with what is required, there is evidence (e.g., Tiwari & Tang, 2003) that over time students become accustomed to what needs to be done. Portfolios also present challenges for establishing reliable grading practices but there are strategies to minimise these concerns (see Johnston, 2004; Smith & Tillema, 2008). Perhaps crucially, portfolios have potential for marrying a formative process with an eventual summative judgement, in other words developing productive synergies between formative and summative assessment.

E-portfolios appear useful in marrying technology with the portfolio process and are likely to be attractive to technologically savvy students, but may also increase student workload (Gulbahar & Tinmaz, 2006). They remain cumbersome and time-consuming to mark so are perhaps best implemented as stepping stones to another assessed task, such as an oral presentation summary of what has been learnt through the e-portfolio.

The patchwork text (Scoggins & Winter, 1999; Winter, 2003) is a further innovative task design with potential to stimulate worthwhile student learning outcomes. The essence of a patchwork text (Winter, 2003) is that it consists of a variety of small sections, complete in themselves, which are finally “stitched together” with a reflective commentary. It involves writing in a variety of genres which suit the aims of a particular course and discipline. The development of the patchwork text involves dialogue with peers, reflection and provides opportunities to close feedback loops. The final assessed aspect for the patchwork text involves the student developing a unifying framework for the collection of pieces and submitting a selection of revised writing (Scoggins & Winter, 1999). Both portfolios and patchwork texts involve bringing together the formative and summative functions of assessment, thus mitigating one of the key tensions referred to in the introduction. They are not panaceas, however, as they invoke other challenges: less familiar to staff and students; generally more time-consuming to implement; more complex to monitor and grade; and often involving heavier workloads for staff and students.

Turning to the second and third components of the learning-oriented assessment framework, student involvement in assessment and the closing of feedback loops may perhaps best be seen as integrated elements. There is a danger that assessment encourages students to attend too much to views of others and pay insufficient heed to developing the self-evaluative capacities that they need for lifelong learning (Boud & Falchikov, 2006). Related to this, for students to be able to make use of feedback, they need to be actively self-regulating their performance. A recent model of feedback and self-regulated learning is helpful in making those connections explicit (Nicol & MacFarlane-Dick, 2006). That article points out the limitations of transmission modes of feedback and suggests seven principles of good feedback practice. Possibly the most important one for the current discussion is that good feedback provides opportunities to close the gap between current and desired performance.

There is a need for more conceptualisation of feedback (e.g., the dialogic notions proposed in Beaumont, O'Doherty, & Shannon, 2008) and here I sketch some key elements. Stronger feedback loops are required, so that the giver of feedback is able to identify the extent to which the recipient has acted on it. In other words, tutors need to be able to see how their feedback has been utilised by students. One way in which the feedback loop may be closed is through what I call pre-emptive formative assessment (Carless, 2007b), defined as teacher actions which attempt to clarify student understandings before misconceptions have resulted in ineffective learning outcomes and/or loss of marks in assignments or examinations. This kind of pre-emptive intervention is designed to counter the problem that much feedback arises too late for students to act upon it and suggests that timing and student engagement are two key issues. Another analogous strategy is to see guidance and feedback as an integrated whole (Hounsell, McCune, Hounsell, & Litjens, 2008) rather than as is sometimes the case singling out only feedback for attention; the study showed unsurprisingly that within course anticipatory feedback and troubleshooting is more effective at closing the loop than "traditional" post-hoc feedback. A final area worth further exploration is sustainable feedback, analogous to Boud's notion of sustainable assessment. Sustainable feedback could be defined as feedback which can support the student on the current task whilst also not compromising the ability to self-regulate performance on future tasks. This notion would be congruent with Nicol and Macfarlane-Dick's (2006) model and bring together again the concepts of feedback and self-regulation.

### Concluding Summary

In this chapter, I have illustrated some of the tensions which constrain the development of productive assessment practices. I have outlined a framework for learning-oriented assessment comprising three integrated strands: assessment tasks as learning tasks; student involvement in assessment; and the closing of feedback loops. I have sketched the role of accountability and distrust as a constraint to learning-oriented assessment practices and a barrier to assessment reform. I have outlined recent work which contains promising developments relevant to these three areas including: portfolios and patchwork texts; the relationship between student self-regulation and feedback; and the closing of feedback loops.

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