Integrative assessment: reframing assessment practice for current and future learning

Geoffrey T. Crisp

Routledge
Taylor & Francis Group

Integrative assessment: reframing assessment practice for current and future learning

Geoffrey T. Crisp*

Centre for Learning and Professional Development, University of Adelaide, Adelaide, Australia

The requirement to provide timely formative tasks that are designed to facilitate student learning and autonomy has provoked a wider examination of the role of assessment in higher education and encouraged further investigation of the alignment of learning, teaching and assessment in curriculum design frameworks. Many current authors have proposed that the primary purpose of assessment is to enhance current and future learning and that current practice tends to overemphasise the importance of assessment for progression and certification purposes. This paper proposes that a clearer distinction be made between assessment tasks designed to facilitate and test current learning through the use of formative and summative assessments, and those tasks primarily designed to enhance future learning, which could be better termed integrative assessments. This distinction would allow students and teachers to have greater clarity around the proposed outcomes and reward mechanisms associated with assessment tasks and feedback. This paper proposes that teachers should strive to incorporate four different types of assessment tasks throughout a programme of study, namely diagnostic, formative, integrative and summative tasks, and that the outcomes and reward mechanisms for different assessment types be explained more clearly to students.

Keywords: integrative assessment; integration; assessment; curriculum design

Introduction

Teachers are aware that they must prepare a variety of assessment tasks for students, the two most common types being formative (designed primarily to improve learning) and summative (designed primarily to judge learning). There has been a consistency in the evidence presented in the higher education learning and teaching literature over the past decade to indicate that student learning outcomes may be significantly improved through the provision of formative assessments that are coupled with timely feedback (Gibbs 2006; Nicol and Macfarlane-Dick 2006). Although summative assessments may still dominate the attention of many students because of their often high stakes consequences, higher education institutions are incorporating the requirement for formative assessment opportunities in their assessment policies (Chalmers 2007). This requirement to provide timely and informative formative tasks that are designed to facilitate student learning and autonomy has provoked a wider examination of the role of assessment in higher education and encouraged further investigation

*Email: geoffrey.crisp@adelaide.edu.au

of pragmatic ways to align learning, teaching and assessment in curriculum design (Joughin 2009).

Current ideas on assessment in higher education

Boud (2007) has recently proposed reframing assessment as if learning was its primary purpose; this reframing would include a requirement that students are able to make judgements about their own learning and to use those judgements to influence their approaches to future learning. For students to be able to form judgements about future learning, their teachers require a forward looking approach to describing the learning outcomes for a course (http://www.assessmentfutures.com). This 'assessment futures' approach to setting tasks for students, where the primary purpose of the task is to facilitate future approaches to learning, requires a more sophisticated perception of the purpose of assessment, especially in higher education.

Knight (2007) has introduced the concept of fostering and assessing 'wicked' or complex competences; these are student competencies that are often difficult to define and measure in a quantitative manner and are usually developed over a significant period of time. Such competencies are frequently described as 'soft skills' in higher education and are often included in the desirable employer or graduate attributes. Knight has classified these 'wicked' competencies into nine attributes: developing supportive relationships, emotional intelligence, group work, listening and assimilating, oral communication, professional subject knowledge, relating to clients, self-management (confidence and effectiveness) and 'taking it onwards' – acting on diagnoses. Knight also posited that a significant reappraisal of assessment practices in higher education would be required to accommodate the assessment of these 'wicked' competencies, especially in programmes that are designed for professional practice. Knight's proposed features for the required assessment tasks would include:

- a clear recognition that assessments are provisional judgements, based on current evidence;
- coherent work-integrated programmes that incorporate design principles for both learning activities and assessment tasks;
- engaging students as participants in assessment design;
- a recognition that feedback is essential to learning and comes from multiple sources and that students must be supported to use feedback effectively; and
- more public scrutiny of the curriculum design rather than the assessment tasks, since well-designed curricula should lead to good learning outcomes.

Wiggins and McTighe (2005) have proposed a framework for designing curricula, assessment tasks and performance standards that facilitate the development of deep approaches to learning in students. Their framework promotes the concept of designing for understanding using the six facets of students being able to explain, interpret, apply, have perspective, empathise, and have self-knowledge about a particular issue. Assessment rubrics have been constructed based on these six facets of understanding; the final facet, self-knowledge, can be aligned with metacognitive awareness, and includes an appreciation of what we do not understand and an ability to project current approaches to learning onto unfamiliar situations.

An example of an assessment rubric for the self-knowledge facet of understanding using the hierarchical descriptors – wise, circumspect, thoughtful, unreflective and

Table 1.　Hierarchical descriptors for the self-knowledge facet of understanding.

Wise	Deeply aware of the boundaries of one's own and others' understanding; able to recognise his prejudices and projections; has integrity – able and willing to act on what one understands
Circumspect	Aware of one's ignorance and that of others; aware of one's prejudices; knows the strengths and limits of one's understanding
Thoughtful	Generally aware of what is and is not understood; aware of how prejudice and projection can occur without awareness and shape one's views
Unreflective	Generally unaware of one's specific ignorance; generally unaware of how subjective prejudgements colour understandings
Innocent	Completely unaware of the bounds of one's understanding and of the role of projection and prejudice in opinions and attempts to understand

innocent – is shown in Table 1; these five descriptors could be adapted to correspond to grades or marks for summative tasks, or used to provide specific feedback for formative tasks (http://centeach.uiowa.edu/documents/Six-FacetRubric.pdf).

　All these recent authors have developed more sophisticated insights into the role of assessment in higher education; their descriptions are beyond the traditional views of simply providing students with a range of formative and summative tasks and the alignment of assessment tasks with course objectives. Assessment tasks prepared by teachers play a critical part in the ability of students to plan for their learning. While it is relatively straightforward to describe assessment tasks as being formative (assessment *for* learning) or summative (assessment *of* learning) in nature, these descriptors do not convey the complexities inherent in the more sophisticated insights outlined in the current literature, nor do they provide a sense of the continuum that exists between the different purposes for assessments and how these might be used to integrate the complex requirements for current and future learning. Current descriptions of assessment *for* learning and assessment *of* learning may not be sufficient to describe what will be rewarded in students' responses, nor provide students with a clear plan of how to use the feedback provided to them. If the learning outcomes for a course emphasise the development of student autonomy and ownership of learning, and the ability of students to make informed judgements about their own performance levels, then we require a term that distinguishes what will be rewarded in assessment tasks that are designed to provide evidence of the development of these characteristics.

Integrative assessment: current perspectives

There have been various models proposed for designing assessments, often based on an instrumentalist paradigm; this reductionist approach is inevitable when one attempts to subdivide the act of assessment into its component parts. Assessment models have included the early guide for the CRESST (Center for Research on Evaluation Standards, and Student Testing) performance assessment model (Baker et al. 1992); this guide describes a performance-based approach to assessing students' understanding of content, based on an integration of knowledge recall, the provision of new information and a requirement to explain issues using a combination of new and prior knowledge. CRESST has also published a recent guide on the use of a web-based assessment design tool, the Assessment Design and Delivery System (ADDS); this tool encourages teachers to incorporate specific elements into the assessment design through the use of prompts and suggestions (Vendlinski et al. 2008). Almond,

Steinberg and Mislevy (2002) have used an evidence-centred assessment design framework to integrate the essential elements of the assessment process; these authors have proposed a four-process architecture to facilitate a deeper understanding of the assessment act, consisting of the core elements of activity selection, presentation, response processing and summary scoring. Teachers could use this four-process architecture model to take a more systematic approach to assessment design, integrating each of the core elements of the assessment process including the teacher planning and constructing the task, the teacher deciding the most appropriate delivery mechanism for the task, the means by which students will construct and enter their responses to the task, and finally the means by which student responses will be judged and reported.

An increasing interest in the use of online approaches to assessment (e-assessment) has prompted the development of several models for the design of e-assessment tasks. Sclater and Howie (2003) described the requirements for the 'ultimate' online assessment system; this description is useful as it identifies the key elements of the assessment process and how these might be accommodated through a formal online delivery mechanism. The e-Framework Reference Model for Assessment (FREMA) project subsequently created two sophisticated concept maps, one for the *processes* involved in e-assessment and one for the *entities* associated with e-assessments (Wills et al. 2009). Although the FREMA model is designed for assessments delivered through an online environment, it nevertheless provides a useful framework for reflecting on the complexity of the assessment act itself and attempts to define the various stakeholders, actors, interrelationships and dependencies that exist for assessments. The concept maps may be regarded as a form of integration since they provide a visual summary of the current descriptors that are used for the creation and delivery of assessments, and the reporting of their outcomes.

The Scottish Quality Assurance Agency for Higher Education commissioned a project in 2005 on 'Integrative Assessment'; the outcomes from this project included a series of four guides with the enhancement themes of balancing assessment *of* learning and assessment *for* learning, managing assessment practices and procedures, blending *assignments* and *assessments* for high-quality learning and monitoring the students' experience of assessments (SQA 2007a). Integrative assessment, according to these guides, consists of 'bringing the various strands of assessment together in a coherent way that addresses the desired goals and takes account of opportunities and constraints in the setting concerned, whether that be a specific course or programme of study, or department or faculty, or university as a whole' (SQA 2007b, 1).

The South African Quality Agency (SAQA) has defined integrated assessment as 'assessment which permits the learner to demonstrate applied competence and which uses a range of formative and summative assessment methods' (SAQA 2005, 4). SAQA posits that integrated assessment tasks add value to student learning by linking *theory* and *practice* in order to replicate authentic learning environments. The ability of the assessment task to integrate the testing of knowledge, skills and personal qualities is regarded as an important component of integrated assessment. SAQA suggests that teachers can identify that they are setting integrated assessment tasks when they assess using a number of criteria or outcomes concurrently, when they use evidence for student achievement from multiple sources and when the various stakeholders in the assessment process are actively involved in setting performance standards. An example of the use of the SAQA framework for integrated assessment has been described by Van Zyl and Massyn (2008) for a management course relating to

professional practice. This course uses assessment tasks integrating the use of discipline content and work experience; it uses a variety of forms of evidence to document student performance levels in the form of group work, essays, reports, simulations and debates; and the major summative task is a field study report based on research of a work-related issue.

Integrative assessment: alternative perspective

This paper is proposing that the term *integrative assessment* be used to describe specific types of tasks with specific outcomes and reward mechanisms. Why do we need another term to describe assessment tasks? Surely formative and summative, or assessment *for* and *of* learning, should suffice to describe the range of higher education assessment tasks? If we examine some recent examples of the use of the term formative assessment with feedback, we can determine whether this term adequately describes the complexity inherent in the more sophisticated approaches to assessment described earlier in this paper. We can also determine whether the term summative assessment (assuming we understand this term to mean tasks that will be marked and graded for progression or certification) can be used to simultaneously describe tasks that will document the student's ability to undertake and improve both current and future learning.

Yorke (2005) has described how formative assessment tasks (with subsequent feedback) might be used to assist students in interpreting teachers' expectations for assessment responses. There is an implied relationship here between formulating a response to a formative task, receiving feedback about the relative standard of the response in comparison to the expected (or required) response and the use of the feedback by the student to enhance learning. Formative tasks, and the feedback provided to students, would be expected to have an impact on *current* and *future* learning, but can the same assessment task or activity fulfil both of these fundamentally different requirements? Does feedback on current learning necessarily lead to improvements in future approaches to learning? How do we normally quantify the efficacy with which formative tasks enhance learning? Students do not generally repeat the same formative task (although some e-assessments use a database of questions that allow multiple attempts at a quiz through random selection of the individual test items), so the causal relationship between the use of formative tasks and enhancements to learning is implied by examining students' performances in subsequent summative tasks that are related to the formative ones. In order to succeed in summative tasks (usually measured by the accumulation of marks), students must understand what responses the teacher will reward; students (and teachers) will use the accumulation of marks as a proxy measure for improvements in learning. This process may work adequately to measure enhancements in current learning, but how will we determine whether the formative tasks have facilitated future learning?

Nicol (2009) has described how the use of formative assessment with feedback could be used effectively to assist first-year students with assimilation and learner regulation. This paper describes how assessment practices might be changed so that students are expected to undertake evaluative judgements about their own work and the work of other students. A broader view of formative assessment is presented here where student self-regulation (autonomy) and the attributes associated with life-long learning are supported. Here formative assessment is being used to serve two functions, one being the enhancement of current learning and the other the enhancement

of future learning. The learning outcomes and the reward mechanisms (marks gained or feedback provided by the teacher) may not be the same for both current and future learning. Where institutional graduate attributes are associated with the ability to self-regulate future learning (the student's ability to recognise their approach to learning and adapt it to the tasks they are given) and are embedded into the core objectives for a course, we would expect to identify both formative and summative tasks probing for the development of these attributes. Yet these same formative and summative tasks must serve a multitude of purposes, ranging from identifying weaknesses in prior knowledge or skill levels (diagnostic assessment) to providing timely feedback to students on their development of new capabilities resulting from their current learning and finally to identifying strategies that will provide productive pathways to future learning. At the same time, teachers are aware that they should not overburden students with a multitude of assessment tasks.

Boud and Falchikov (2006) have also proposed a broader conception of assessment that would include tasks that allow students to be assessors of their own learning and so be able to judge when they are producing work of an appropriate standard, especially in authentic learning environments such as those found in professional practice scenarios. This paper eloquently outlines the dilemma resulting from the use of the term 'assessment' to describe student-centred activities that require learners to be self-assessors and in control of judgements about their own learning when 'assessment' has traditionally been associated with a teacher-controlled activity and interpreted as an act that is a necessary, but not enjoyable, part of the educational experience.

Higher education teachers have often encouraged students to think of learning and assessment as time-separated activities; students have been required to engage in a teacher-directed sequence of learning activities that are followed by set periods in which formative and summative assessment tasks are completed. This has led to a fragmented approach to setting assessment tasks and for students to feed from the breadcrumb trail of instructor comments; this situation inevitably results in a culture of student dependency on the teacher in relation to learning and discourages the development of self-regulated learners. In order to facilitate productive curriculum design strategies on the part of teachers and allow students more autonomy in their learning and assessment activities, an alternative description for the range of assessment tasks is required.

This paper has shown how the terms integrated and integrative assessment have been used previously in the literature to describe a range of activities, including an appropriate balance between assessment *for* learning and assessment *of* learning; for various aspects of coherence and alignment between learning objectives and their associated assessment tasks; and for monitoring the efficacy of assessments in enhancing different types of learning. Rather than stretch (or distort) the current definitions for formative and summative assessments to include a complex range of simple and sophisticated perceptions for enhancing current and future learning, it would be more effective to clearly define the purposes for the full range of assessment tasks required in higher education courses and to differentiate their associated characteristics and reward mechanisms. This would provide clarity for both students and teachers as to the purpose, expected outcomes and the reward mechanisms for each assessment task; the various assessments could then be more effectively incorporated into an overall learning and assessment design pattern that blends the learning and assessment activities.

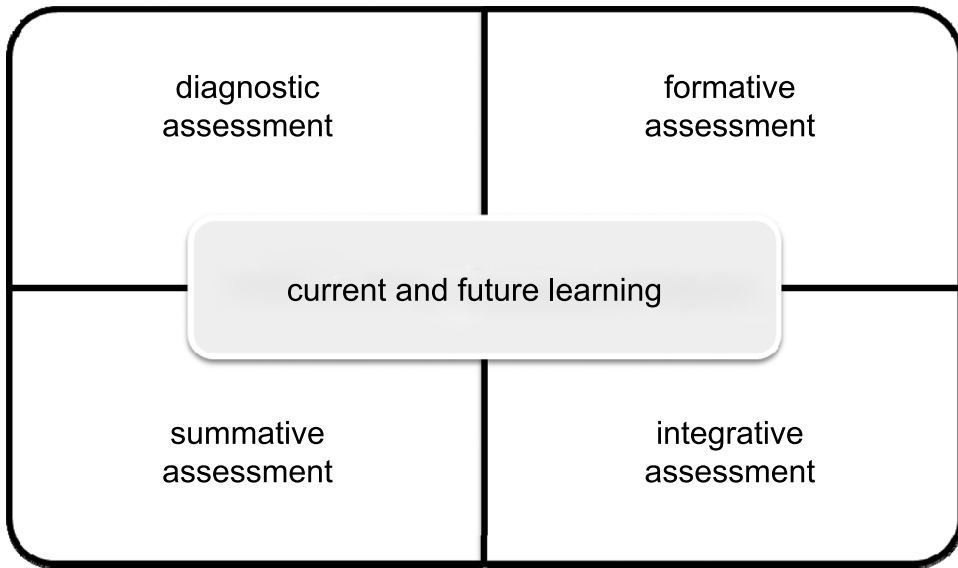| diagnostic assessment	formative assessment
current and future learning	
summative assessment	integrative assessment

Figure 1.   Descriptors for the four types of assessment tasks.

This paper proposes using the current terms diagnostic, formative and summative to describe many of the traditional aspects associated with current assessment practice and introduces the term integrative assessment to specifically describe tasks whose primary purpose is to influence students' approaches to future learning by providing activities that define and track strategies that students use to assess their own learning abilities and problem-solving capabilities, the quality and standards of student responses and how students might adapt their learning to future scenarios. The four assessment types are shown in Figure 1. For assessment tasks to have an impact on student learning, it is critical that students have a clear perspective of the primary purpose of each task and how their responses will be interpreted and rewarded.

Diagnostic assessment is probably the most underutilised of the current assessment formats in higher education and is often associated with a deficit model of student capabilities (Benseman and Sutton 2008). This should be changed so that diagnostic assessments are incorporated as an initial component in all key foundational courses and are seen as a pathway for encouraging a self-regulation paradigm in students' approaches to current and future learning. Low stakes diagnostic tasks would establish a baseline for standards within a course, allow students to determine their preparedness for their current learning activities and also permit teachers to adjust their introductory activities so that the majority of the students are able to participate at a meaningful level. Traditional diagnostic tasks have been used to identify gaps in specific knowledge; this has included the recall of factual information in the sciences, the ability to comprehend and interpret sentences in a specific language, and the ability to solve problems in mathematics. Although these diagnostic tasks do serve a useful purpose when they are used to provide students with appropriate resources for improving their current level of acquired knowledge, the purpose of the task is often to identify deficiencies in current understandings. Diagnostic tasks could also be used more proactively to highlight for students the core principle that

identifying one's existing capabilities is a critical step towards being a self-regulated learner and establishing control over the learning environment. Students use the reward mechanisms associated with any form of assessment (the marks or access to feedback and further resources) to gauge their level of understanding or to quantify their level of learning. The reward mechanisms for diagnostic tasks could reflect an evaluation of the ability of a student to identify their approaches to learning, not just with the identification of knowledge deficits. The use of low stakes self- and peer-review tasks that require students to identify the core principles, issues or concepts associated with the task in the early stages of a course could promote an attitude of self-regulation in students.

Formative assessment tasks with timely and appropriate feedback would continue to be used much as they are at the present time; these tasks would be primarily intended to have an impact on current learning and ultimately to be connected to improved performances in summative tasks. By clarifying for students that the feedback associated with formative tasks is designed to improve their performance in subsequent summative tasks, teachers can align their feedback with specific tasks that the student will encounter in the short term. This should facilitate a more strategic use of the feedback by the student. Although it may be posited that formative assessment is predominantly about improving learning, whether or not improvements are registered in subsequent summative tasks, from the students' perspective it is often the results from the summative tasks that frame perceptions of how much learning has taken place within the current course and as a result of undertaking formative assessment. The reward mechanisms for formative tasks, whether they are marks that are used to establish standards and expectations, or student access to feedback and further resources, should be made clear. Students should be able to see any proposed causal relationships between the objectives of the task, the purpose of the reward mechanisms and how they should interpret the rewards, and the paths for improving performance in subsequent summative tasks.

Summative assessment tasks will continue to be used primarily for progression and certification purposes, but as outlined above, students will often use performances in summative tasks as a proxy measure of learning. This brings up the question of whether the proposed integrative assessment tasks should be marked and graded, and whether they should be used as a component in decisions about progression and certification. The purpose of proposing a distinction between formative, summative and integrative assessments is concerned more with establishing clear guidelines for students on what will be rewarded in their responses to assessment tasks and how teachers will align the objectives for learning activities and assessments in the curriculum. Integrative assessments would only be used for traditional summative purposes if student self-regulation and the capabilities associated with life-long learning are mandatory graduate attributes or outcomes for a course, or are required for progression or certification. If students are required to demonstrate that they have developed skills and capabilities that will facilitate future learning, then integrative tasks could be summative in nature. However, teachers would need to be clear in the assessment rubrics or marking schemes that the reward mechanisms (for summative tasks this would be predominantly marks) are clearly aligned with the quality of the student's ability to make judgements about their own learning or performance, or their ability to critique their own level of understanding or that of their peers, and not the ability of students to recall or use factual knowledge or the quality of their performance per se. Marks and grades can be used as indicators of

standards, even if they are not used to make decisions about progression and certification. The advantage of identifying an assessment task as being integrative would be that students would realise that the primary purpose of the task is to provide feedback (or judgement) on their ability to be self-regulated learners, to identify and use standards and to apply their capabilities to future learning situations by being able to articulate their strategies or approaches to responding to a task or situation.

Whether the judgements for these integrative tasks come from the teacher, the student or from peer review (or a combination of all three) will depend on the particular objectives set for the activity. Teachers could use integrative tasks in either formative or summative mode; the key characteristics for the integrative task are that its primary purpose is to influence students' approaches to future learning, and the reward mechanisms in place for students will reflect an analysis of approaches to learning, rather than the learning itself. Integrative assessments would then have the following characteristics:

- Students are provided with opportunities to make judgements about their own learning or performance through review and critique.
- Students are provided with opportunities to define standards and expectations in their response.
- Students are provided with opportunities to track and analyse their approaches to responding to a problem, issue, situation or performance.
- Students are provided with opportunities to integrate prior or current feedback into their response.
- Students are provided with opportunities to engage with a meaningful task that has inherent worth beyond just an assessment activity.
- Students are rewarded for the quality of their analysis of metacognitive abilities, rather than factual knowledge or a specific performance.

Students would be active partners in integrative assessments, whereas teachers would still be seen as being the primary controller for diagnostic, formative and summative tasks. By designating an assessment task as integrative, students would be aware that they will be rewarded for being active partners since the objectives (and any associated marking schemes) would clearly articulate the key capabilities being assessed in the responses. This framework would allow students to be assessors in a pragmatic way; they would be rewarded for their analysis of their judgements and for defining standards. As with any sophisticated learning or assessment activity, students would require more scaffolding in the early stages of undertaking integrative assessments, but this scaffolding can be sequentially dismantled as the skill levels and capabilities develop throughout the course.

The characteristics associated with the proposed integrative assessments are not new; they have been identified by many recent authors as outlined in this paper. Similarly, the mechanisms by which integrative assessments could be delivered to students would not be new; the current use of e-portfolios, blogs, wikis, self- and peer-review are all examples of activities that facilitate self-regulation and life-long learning. The advantage of designating many of these current activities as integrative assessments is to clarify, for the student, the primary purpose of the task and to highlight what will be required and rewarded. What would need to be changed for many of these current activities would be the reward mechanisms that are currently in

place; for integrative tasks, students should be rewarded for the quality of their analysis of metacognitive abilities, their ability to critique other students' approaches to a task and their ability to formulate strategies about how they will approach future learning opportunities or tasks.

Conclusions

This paper proposes that a clearer distinction be made between assessment tasks that are intended to influence current learning (and predominantly summative assessment outcomes) and future learning, which is associated with the development of self-regulated learners, autonomy and life-long learning practices. The proposed demarcation lines between diagnostic, formative, integrative and summative assessments are not meant to be prescriptive, nor are they intended to impede the autonomy of teachers; they are intended to aid in the design of curricula that will enhance both *current* and *future* learning by providing greater clarity around the proposed outcomes and reward mechanisms associated with assessment tasks and feedback. This paper proposes that teachers should strive to incorporate four different types of assessment tasks throughout a programme of study, namely diagnostic, formative, integrative and summative tasks, and that the outcomes and reward mechanisms for different assessment types be explained more clearly to students.

Notes on contributor

Geoffrey T. Crisp is the director for the Centre for Learning and Professional Development at the University of Adelaide. He has written on e-assessment, plagiarism prevention and educational development.

References

Almond, R.G., L.S. Steinberg, and R.J. Mislevy. 2002. Enhancing the design and delivery of assessment systems: A four-process architecture. *Journal of Technology, Learning and Assessment* 1, no. 5. http://www.jtla.org.

Baker, E.L., P.R. Aschbacher, D. Niemi, and E. Sato. 1992. *CRESST performance assessment models: Assessing content area explanations.* Los Angeles: University of California, National Center for Research on Evaluation Standards, and Student Testing. http://www.cse.ucla.edu/products/guidebooks/cmodels.pdf (accessed March 1, 2010).

Benseman, J., and A. Sutton. 2008. OECD/CERI Formative Assessment Project background report: New Zealand. http://www.oecd.org/dataoecd/38/54/40015787.pdf (accessed March 1, 2010).

Boud, D. 2007. Reframing assessment as if learning was important. In *Rethinking assessment in higher education: Learning for the longer term*, ed. D. Boud and N. Falchikov, 14–25. London: Routledge.

Boud, D., and N. Falchikov. 2006. Assessment with long-term learning. *Assessment & Evaluation in Higher Education* 31, no. 4: 399–413.

Chalmers, D. 2007. A review of Australian and international quality systems and indicators of learning and teaching. ALTC Project Report. http://www.altc.edu.au/resource-review-indicators-teaching-learning-2007 (accessed March 1, 2010).

Gibbs, G. 2006. Why assessment is changing. In *Innovative assessment in higher education*, ed. C. Bryan and K. Clegg, 11–22. London: Routledge.

Joughin, G. 2009. Assessment, learning and judgement. In *Assessment, learning and judgement in higher education*, ed. G. Joughin, 215–21. Netherlands: Springer.

Knight, P. 2007. Fostering and assessing 'wicked' competences. http://www.open.ac.uk/cetl-workspace/cetlcontent/documents/460d1d1481d0f.pdf (accessed March 1, 2010).

Nicol, D.J. 2009. Assessment for learner self-regulation: Enhancing achievement in the first year using learning technologies. *Assessment & Evaluation in Higher Education* 34, no. 3: 335–52.

Nicol, D.J., and D. Macfarlane-Dick. 2006. Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in Higher Education* 31, no. 2: 199–218.

SAQA (South African Quality Agency). 2005. Guidelines for integrated assessment. Pretoria, 4. http://www.saqa.org.za/docs/critguide/intassessment/chapter1-3.pdf (accessed March 1, 2010).

Sclater, N., and K. Howie. 2003. User requirements of the 'ultimate' online assessment engine. *Computers & Education* 40, no. 3: 285–306.

SQA (Scottish Quality Assurance Agency). 2007a. Integrative assessment. http://www.enhancementthemes.ac.uk/themes/IntegrativeAssessment (accessed March 1, 2010).

SQA (Scottish Quality Assurance Agency). 2007b. Integrative assessment. Monitoring students' experiences of assessment (Guide 1)*,* 1. http://www.enhancementthemes.ac.uk/documents/IntegrativeAssessment/IA Monitoring.pdf (accessed March 1, 2010).

Van Zyl, H., and L. Massyn. 2008. Integrated assessment: A learning adventure and growth opportunity for adult learners. *American Journal of Business Education* 1, no. 2: 95–104.

Vendlinski, T.P., D. Niemi, J. Wang, and S. Monempour. 2008. *Improving formative assessment practice with educational information technology* (CRESST Report 739)*.* Los Angeles: University of California, National Center for Research on Evaluation Standards, and Student Testing. http://www.cse.ucla.edu/products/reports/R739.pdf (accessed March 1, 2010).

Wiggins, G., and J. McTighe. 2005. *Understanding by design.* Alexandria, LA: ASCD.

Wills, G.B., C.P. Bailey, H.C. Davis, L. Gilbert, Y. Howard, S. Jeyes, D.E. Millard, et al. 2009. An e-learning framework for assessment (FREMA). *Assessment & Evaluation in Higher Education* 34, no. 3: 273–92.

Yorke, M. 2005. Increasing the chances of student success. In *Improving student learning 12: Diversity and inclusivity,* ed. C. Rust, 35–52. Oxford: Oxford Centre for Staff and Learning Development.