

Enhancing and enriching the feedback matrix through the embedding of a dedicated eAssessment system in module delivery

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Abstract

This paper argues that embedding a dedicated online assessment system at the centre of module delivery has the potential to enhance the student experience of learning, teaching and assessment. Focusing on the experience of embedding Assessment21's Assess By Computer (ABC) eAssessment system in the delivery and assessment of a first year Sociology module, the paper considers the way in which the ABC system can be used to produce an enhanced and enriched feedback matrix that enables and empowers the student, promoting self-assessment, self-evaluation and self-regulation. The potential of ABC to enhance and enrich the feedback matrix is mapped against the seven principles of good feedback practice identified by Nicol and MacFarlane-Dick. It is argued that by embedding ABC at the centre of module delivery, the system can facilitate a greater student engagement with feedback and help close the gap that often exists between educators' expectations of student engagement with assessment and feedback and students' understanding of these expectations.

Over the last 20 years, it is fair to say that an on-going revolution can be identified in the changing shape and focus of learning, teaching and assessment practices in higher education. As part of a '21st century focus' on learning and teaching, there have been growing calls for educators to reconsider the purpose and effectiveness of assessment in higher education, and to close the gaps between staff expectations and student perceptions of the role and outcomes of assessment and feedback (see, e.g. Boud 2000; Boud & Falchikov 2006; Carless 2006; Elwood & Klenowski 2002; Sadler 2002, 2010). These calls have been closely aligned to a growing recognition of the need for educators to move beyond the understanding of feedback as a 'gift' and to re-evaluate the feedback process, recognizing the central importance of the provision of high-quality feedback through the mechanism of formative assessment (Askew & Lodge 2000; Boud & Falchikov 2006; Hounsell 2008; Nicol 2007, 2010; Nicol & MacFarlane-Dick 2006). The growing belief that educators must re-evaluate and refocus approaches to assessment and feedback delivery have resonated with those experiencing the knock on effect of a number of drivers that have had a significant impact on contemporary higher education. These drivers include the modularisation of curricula, widening participation, increased student diversity, and growing class sizes, all of which have arguably impacted negatively on the student experience through the reduction of resources, and led to increased attrition rates (see Nicol 2006).

However, this period has also witnessed the growing potential of eTechnologies in the delivery and assessment of module content and in the production and provision of feedback: a potential that has been a central highlight in the literature surrounding the future of assessment and feedback (see e.g. Nicol 2007; Nicol & Milligan 2006). With eAssessment being described as a "fundamental strand of any unified e-learning strategy" (Whitelock 2009: 199), the importance of considering the potential of the emerging eAssessment tools is obvious. Focusing on the experience of using Assessment21's Assess By Computer (ABC) system on a first-year level Sociology module at The University of the West of Scotland (UWS), this paper examines the potential feedback benefits to be achieved by embedding a dedicated online assessment system at the centre of module delivery. The paper will briefly outline the central mechanisms of the ABC system, highlighting the way in which the system was employed. It will then consider the feedback capabilities of the system, employing Nicol and MacFarlane-Dick's (2006) seven

principles of good feedback practice to form a backdrop against which to map these capabilities. It will examine the potential of the system to provide a platform from which to enhance and enrich the feedback matrix and to encourage self-regulated learning in students. It will then briefly discuss the advantages of using the system in the delivery of summative assessment, thereby identifying the benefits of the synergy achieved by the integrated assessment process internal to the ABC system.

At the start of the 2010/11 academic session, the Centre for Academic and Professional Development (CAPD) at UWS announced that the institution was to take part in a pilot trial of Assessment21's ABC dedicated online assessment system: a system which Assessment21 state offers a "genuine 21st century approach to assessment and marking" (Assessment21 2010). Following discussion with representatives from Assessment21 and CAPD, and consideration of the potential pedagogical and logistical benefits ABC had to offer, it was agreed that the Introduction to Sociology (ITS) module (a core module on the CertHE Social Studies programme - SCQF level 7) would be included in the pilot. Following this process, the central aims surrounding the introduction of ABC on the module were identified as follows:

1. To enhance the student experience of learning, teaching and assessment by embedding Assessment21's Assess By Computer at the centre of module delivery and assessment.
2. Through the mechanism of formative assessment, to enable and encourage on-going self-assessment and self-evaluation and to promote self-regulation through the production of an enhanced and enriched formal and informal feedback matrix.
3. To harness the potential benefits for students and teaching staff of online assessment in the delivery and marking of the high-stakes end-of-module summative assessment.

The ABC system provides an electronic framework for the delivery of a number of forms of assessment, ranging from simple multiple-choice quizzes to extended essays. It operates across all platforms that run Java and in all the major browsers, making it easily accessible outside the university setting. Formative and summative assessment and corresponding feedback are delivered online but authored and marked offline using ABC's

setting and marking tools. The timing of formative assessments can be closed or open and feedback provided synchronously or asynchronously. This allows teaching staff to set specific class tests or open up assessments to allow students to access them at a time that is suitable outside class contact hours. As regards summative assessment, ABC provides a robust and secure environment for large-scale multi-site examinations. This capability is supported by a powerful online invigilation tool, which can be monitored remotely to ensure the integrity of the assessment. While ABC captures the efficiencies of electronic marking, decision making remains in the hands of the human marker, highlighting marginal cases and allowing qualitative assessment of these answers: "the machine does the time-consuming routine tasks while the human assessor makes the all important value judgments, staying fully in control of the eventual outcome" (Assessment21 2011). Assessment21 have focused on the accessibility, stability and security of ABC, which means that the interface the student encounters is intuitive, easily navigable and reliable. These attributes identify ABC as a highly appropriate integrated eAssessment system for the delivery of formative and summative assessment. While ABC is not the only dedicated online assessment system that could fulfill this role, the combination of the variety of types of question it can handle, its ease of use, for both educators and students, its flexibility, security, and its potential to deliver rich feedback make it a highly appropriate system to locate at the centre of module delivery and assessment: "The strength of the system is its robustness, its simplicity and its familiarity to academic end users" (JISC 2009: 1).

ABC was employed firstly to deliver informal class tests at the beginning of seminars. For this, multiple choice and slotted questions were used. These tests were employed as a formative mechanism to encourage students to identify their knowledge and understanding of lectures and material covered in preparation for the seminar and to reflect on areas/issues that they had not understood or had been confused by. The pre-prepared feedback was automatically provided to the student immediately following completion of the test. This initial assessment allowed the development of a 'just-in-time' teaching approach in the seminar classes, focusing seminar discussion on areas where student knowledge and understanding was limited or weaker. Feedback provided through the assessment mechanism acknowledged and reinforced student knowledge and understanding while promoting on-going student development through engagement with

the tutor-student and student-student dialogue that it stimulated. Through this process, the feedback matrix that developed formed a central support mechanism in seminar classes and in the wider learning and teaching framework. The formal feedback system was often used to direct students to particular reading from the central text used on the module in order to encourage them to re-read and self-correct any confusion, misconception or misunderstanding.

Following seminars, the class tests were made available to students to access outside the seminar setting. Students were encouraged to retake the tests and re-assess their performance. They were also asked to map progress in their understanding of module content against the feedback received and to develop a continuous cycle of self-assessment and evaluation. In this way, students were encouraged to self-regulate their engagement with the module and their wider academic performance. Through this approach to the generation of an extended feedback matrix and the active inclusion of the student in the feedback process, feedback took on a role beyond the monologue, beyond the one-way transmission from tutor to student so widely criticised in the contemporary literature (see, e.g. Askew & Lodge 2000; Carless 2006; Nicol & Macfarlane-Dick, 2006; Pokorny & Pickford 2010; Rowe, Muchatuta & Wood 2010; Rowe & Wood 2008). Through the development of an inclusive process of assessment and feedback, students were empowered to identify and negotiate obstacles to their learning. As Rowe, Muchatuta and Wood (2010) point out, this process is central to the enhancement of the student experience and, in particular, to the reduction of pedagogical barriers that can impede non-traditional student populations. At the end of the module, ABC was also used to deliver a high-stakes summative assessment, which took the form of an extended version of the class tests. This allowed the harnessing of the synergy produced by the integrated assessment process delivered by ABC, both in terms of student understanding of assessment requirements and tutor development in understanding the processes of student learning (see Harlen 2005).

In the introduction to the Re-Engineering Assessment in Higher Education (REAP) website, Nicol states that "Assessment and feedback practices should be designed to enable students to become self-regulated learners, able to monitor and evaluate the quality and impact of their own work and that of others" (REAP 2011). Taking this view as a point of departure, the potential of the ABC system to enhance the student experience

of and engagement with feedback can be considered by mapping the feedback matrix produced through the formative use of ABC on the ITS module against the seven principles of good feedback practice outlined by Nicol & MacFarlane-Dick (2006). In this way, the potential of the ABC system to empower students to become self-evaluating, self-regulated learners can be considered. Again, it is noted that ABC is not unique in this respect: the feedback capabilities of other eAssessment systems could also be mapped against the principles identified by Nicol & MacFarlane-Dick. However, this paper is specifically focused on the evaluation of the potential of ABC as a dedicated online assessment system to enhance and enrich the student experience of assessment and feedback and makes no claims beyond that position. The seven principles of good feedback practice identified by Nicol and MacFarlane-Dick (2006: 7) are identified below and the potential of ABC in meeting these principles discussed in order:

1. *Helps clarify what good performance is (goals, criteria, expected standards)* – Through the potential to deliver synchronous and asynchronous feedback on formative assessment, both in seminar classes and outwith class time, the ABC system can be employed to encourage students to engage in a cycle of learning, assessment and re-assessment in which the goals, criteria and expected standards are continually identified and re-emphasised within a framework that identifies progression of knowledge and understanding.
2. *Facilitates the development of self-assessment (reflection) in learning* – As a result of the feedback provided from within the system, but also in part due to the informal economy of peer feedback produced by students discussing questions and answers, ABC has the potential to encourage performance through self-assessment and evaluation. It is important to note that rich feedback can be provided in relation to correct as well as incorrect answers, encouraging those who understand the module content at a deeper level to extend their understanding rather than accepting that they have reached a temporary endpoint in their learning.
3. *Delivers high quality information to students about their learning* – Through the automated delivery of rich feedback, and the potential for students to self-correct any confusion, misconception or misunderstanding, ABC can be employed to foster a clear student engagement with self-reflection and appraisal of both assessment process and performance.

4. *Encourages teacher and peer dialogue around learning* – The synchronous delivery of feedback in the class setting enables students to reflect on the feedback and encourages dialogue in seminars, particularly in areas where student understanding is limited. This not only opens up the space for tutor-student dialogue but also for student-student dialogue. This potential is furthered by the fact that tutors can also monitor students' performance outside of the seminar setting and engage students in dialogue in a following seminar or through another appropriate forum, such as a module blog. Asynchronous dialogue recorded can then be used to encourage re-engagement with the assessment and reconsideration of the feedback provided.
5. *Encourages positive motivational beliefs and self-esteem* – Through the reaffirmation of understanding provided in the feedback delivered and the progress identifiable in improved performance, the use of ABC provides the potential for educators to foster positive self-esteem and stimulate motivation through on-going self-evaluation and reward. This is extended by the potential for on-going repetition of specific formative assessments.
6. *Provides opportunities to close the gap between current and desired performance* – The potential for students to self-assess performance and to retake assessments at their convenience following consideration of the feedback received encourages on-going engagement with both assessment and feedback, with the reward lying in the identifiable improvement of performance. Through the on-going engagement in formative assessment, the student is able not only to extend knowledge and understanding of module content but also of the assessment process, stimulating metacognition.
7. *Provides information to teachers that can be used to help shape the teaching* – Significantly, the feedback matrix produced through the use of ABC can provide a rich vein of feedback for the staff responsible for teaching and constructing assessments and formal feedback. Through its use in the classroom, and through the monitoring of student performance, ABC provides teaching staff with tools that can actively be mobilised to close the gap between staff and student understanding of student comprehension of module content and the assessment and feedback processes. This goes a long way to making the pedagogical underpinnings of the

assessment process visible and accessible to students and motivates staff in their own self-regulation when constructing assessments and assessment feedback. The closure of this gap is of central importance in the provision of feedback (for further discussion, see O'Brien & Sparshatt 2008; Tarras 2002) as is the closure of any gap in understanding between tutors (O'Donovan, Price & Rust 2004). The use of ABC facilitates the closing of gaps in both areas.

Through the continuous interaction with formative assessment and feedback facilitated by ABC, the feedback matrix that developed around the ITS module was extended in a structured way that facilitated and stimulated self-assessment and evaluation, thereby encouraging a continuous process of reflection and self-regulation in the students. Feedback received from students following completion of the module supported this view. Ninety-four per cent of students who provided feedback strongly agreed or agreed that the feedback delivered through ABC was beneficial in developing their understanding of the module content (n=36).

As a result of the above consideration of the capabilities of ABC, Assesment21's claim that the system offers a 21st century approach to assessment can certainly be supported in relation to Nicol and MacFarlane-Dick's principles of good feedback practice. While a number of the outcomes above could have been achieved through the use of other eAssessment systems and by other means, what is important is that ABC provides educators with a powerful integrated assessment tool that enables the development of an extended feedback matrix along the trajectory of each of the principles outlined by Nicol & MacFarlane-Dick (2006). However, it should be stated that while the seven principles provide a useful backdrop against which to map the capabilities of the ABC system in the enhancement and enrichment of the feedback matrix, further research is required in order to investigate these capabilities further. One way in which this could be done is through a detailed examination of the way in which students interact and engage with the feedback matrix produced through the formative use of ABC. This will be the focus of future research.

Beyond the formative use of ABC, students also liked the fact that the system was used for the end-of-module high-stakes examination. Having had experience of using ABC in formative assessment, the system held no concerns for students beyond those usually associated with summative assessment. Ninety-one per cent of students strongly agreed or agreed that the use of ABC on the module benefited their overall learning experience, with 83% strongly agreeing or agreeing that the formative use of ABC benefited their final exam performance. All students who provided feedback agreed that the use of the system in class made them comfortable using it during the exam. This supports the argument that there is a synergy to be harnessed in the integrated process of formative and summative assessment internal to the ABC system.

In summary, it can be argued that ABC provides educators with a powerful integrated tool through which to deliver assessment and feedback and with which to enhance and enrich the feedback matrix available to students. It provides a safe, reliable and supportive environment for students, encouraging them to self-assess, self-evaluate and self-regulate. The formative use of ABC allows educators and students to harness the potential of the feedback matrix produced and encourages greater engagement with the feedback process. Mapping the feedback capabilities of ABC against the seven principles of good assessment practice highlighted by Nicol and MacFarlane-Dick (2006) supports this position. While further research is required to evaluate student interaction and engagement with the feedback matrix in more depth, it is clear that Assess By Computer is a powerful tool that can be used to develop students' knowledge and understanding of module content while at the same time facilitating a deeper understanding of the processes of assessment and feedback. In this way, it can help close the gap between educators' expectations of student engagement with assessment and feedback and students' understanding of these expectations.

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