Principles of Good Online Assessment Design

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OVERVIEW

Research has highlighted the increasingly prominent role of online assessment in higher education, particularly with regard to formative applications. The personal significance attributed to assessment events in what has been described as a test-oriented society, has profound implications for the way academics develop and present assessment tasks to students. This case study focuses on principles of good online assessment design, drawing upon the outcomes of a collaborative group activity completed by academic staff members participating on the online course, *Assessment Online*, at the University of Dundee. Specifically, the study relates to the theme of great designs for assessment and suggests approaches to enhance the student experience of online assessment. The major product of the study is a proposed list of ten principles of good online assessment design which may be used by educators to guide their development of web-based tasks..

ASSESSMENT ONLINE

The focus of this case study is a biannual, fully online course entitled *Assessment Online*, which forms part of the University of Dundee's Postgraduate Certificate in Teaching in Higher Education (PgCertTHE) offered by the School of Education, Social Work and Community Education and presented by a cross-disciplinary team of staff led by The Learning Centre. Over a period of five weeks, participants on the course are introduced to the pedagogical principles of assessing students online and given the opportunity to develop the key practice skills required to conduct assessment in the online environment. Topics addressed include:

- Principles of Assessment
- Online Assessment Selection and Design
- Introduction to Questionmark Perception
- Introduction to ePortfolios
- Innovative Online Assessment

The University of Dundee is one of the leading universities in the United Kingdom, with a student population of approximately 18,000 and a staff compliment of over 3,000. As well as being at the forefront of research and teaching quality, particularly in Medicine and the Life Sciences, the University has a strong reputation within the field of e-learning, particularly online assessment. The University's reputation in the area of e-learning is the product of a forward-looking approach to the potential of Internet-based learning and assessment methods reflected in a joined-up approach to staff education, commended in a recent study by JISC (2006). This approach combines both online and face-to-face learning opportunities with comprehensive central support. The *Assessment Online* course represents one of the first UK examples of a module dedicated to equipping academics with the knowledge and skills with which to present assessments effectively and efficiently via the web.

Participants on *Assessment Online* are primarily new academic staff members undertaking the postgraduate certificate programme and have selected the course, along with its sister course *Learning and Teaching Online*, as their third module electives. However, academic teaching and research staff members not undertaking the certificate programme may also enrol as part of their academic professional development and, on successful completion, are entitled to claim for the module credit (10 SCOTCAT, Level 11). Typically between 12-

15 staff members participate in the course each semester, with those enrolled actively teaching or supporting learning across a range of disciplines.

ONLINE ASSESSMENT IN HIGHER EDUCATION

While learning and teaching processes in contemporary higher education continue to evolve and appear to be in a continuous state of flux, one constant appears to remain – the powerful influence of assessment on student learning. This influence is unsurprising, given the salience of evaluative situations in today's increasingly test-orientated culture in which the outcome of assessment is crucial to the future careers of students and society at large (Zeidner, 1998). In line with the broad changes occurring across higher education with the careful alignment of learning, teaching and assessment to course learning outcomes (Biggs, 2004), and shift from a transmission-passive to transformation-active approach model for student learning, methods to enhance the validity, reliability and credibility of assessment are of the utmost importance. Equipping staff with the relevant expertise in effective assessment design is therefore crucial (Shephard, Warburton, Maier and Warren, 2006).

The importance of assessment may be largely undiminished in they eyes of students but in other quarters the perception remains that current assessment methods are too focussed on summative testing (Boud and Falchikov, 2006). However, assessment practice in higher education is undoubtedly changing, albeit slowly. Recognition of the formative role of assessment is gathering pace as a growing body of research has highlighted the way that assessment can engage students, direct their learning and ultimately encourage self-regulation. Online assessment, whilst widely perceived as being an efficient means of summatively assessing student learning and attainment, will progressively achieve more prominence as academics recognise its formative potential (Dalziel, 2002). Crucially, the goal of encouraging self-regulated learning implicitly demands that control be devolved to the learner. The flexibility of online assessment methods mean that students can be granted the freedom to decide when, where, and how often they engage with assessment and, by proxy, their learning (McKenna, 2001). Carefully conceived with regard to learning outcomes and the provision of high-quality feedback, online assessment in this formative role can invigorate the learning process, motivating students and teachers alike. Furthermore, when online assessment tasks are designed with due care and attention, research suggests that it is possible to assess the deepest levels of student learning (Conole and Warburton, 2005).

While numerous principles have been outlined in relation to the effective design of 'traditional' assessment tasks (Race, 2001), and more recently an extremely valuable set of principles relating to the design and provision of good feedback to support learning has been forwarded (Nicol and MacFarlane-Dick, 2006), there has been little focus on the identification of principles applicable to good assessment design in relation to the online environment.

RATIONALE

The following section outlines a set of synthesised points relating to the effective design of online assessment tasks. From an activity conducted by participants on the University of Dundee's *Assessment Online* course, it is possible to identify a series of principles relating to good online assessment design. The course includes a series of 10 sequential 'assignments' which aim to facilitate a progressive build-up of knowledge and skills. This assessment strategy is designed in such a way as to encourage sustained activity throughout the course and attempts to replicate the demands upon which 'real' students are placed under, for example time pressures and multiple deadlines, in order to instil within participants an awareness of such issues when designing their own assessment tasks. Comprising a mixture of individual, group and peer exercises, submissions occur on a weekly basis with typically two assignments to be completed each week. While these assignments are 'summative' in that they incrementally contribute to the course mark, the function is undoubtedly a formative one with multiple opportunities for feedback and refinement.

The philosophy and assessment strategy underpinning the *Assessment Online* course is based upon social-constructivist principles and recognition that all participants will have both relevant experience to share and much to learn about online assessment. In this respect, collaboration between all participants is essential to developing the knowledge of the group as a whole. In relation to the activity that is the focus of this case study, it is envisaged that the principles of effective assessment design debated and discussed during the initial week of the course will underpin participant's approach to the subsequent activities online and their future assessment practice. Introducing the activity at the outset ensures that course members are forced to reflect on the appropriateness of the points they agreed on as they engage in and look back on the practical tasks they are asked to perform. Implicit to this is the notion that participants will self-assess the quality and appropriateness of their existing approaches to assessment and the approaches they adopt when designing future activities. Crucially, the approach taken in this course reinforces that the principles underlying 'traditional' assessment also underpin assessment methods in the online context and emphasises that these foundations are in many ways extended in this context.

TEN PRINCIPLES OF GOOD ONLINE ASSESSMENT DESIGN

The first assignment that participants are asked to complete on the *Assessment Online* course is a group activity in which they must discuss the principles of good online assessment design and subsequently agree upon a ranked list of the 10 most important points identified. Participants are typically divided into groups of 5-6 with each group granted access to a private discussion board, synchronous chat facilities and an optional group wiki. The participants have seven days in which to complete the task. Importantly, the instructions do not refer to any specific means of conducting online assessment so as not to lead the discussion in any particular direction. Once the final top-ten points has been debated and agreed upon within their respective groups, members are given the option of submitting their final list electronically as a Microsoft *Word* file or in the form of their group wiki.

Since 2005, three iterations of the *Assessment Online* course have occurred and the results of 8 group submissions for this activity are available. A comparative analysis was conducted of each group submission to establish the key similarities and differences with the objective of producing a synthesised list of 10 points on good online assessment design. Each list was systematically coded, ordered and reviewed. From the wide-ranging selection of points forwarded by the 8 groups the ten most frequently occurring and highest ranked points were as follows:

1. Online assessments should be aligned with the curriculum and relevant to the course learning outcomes.
2. Online assessment instructions and question wording should be clear, concise and free from ambiguity.
3. Timely and meaningful feedback should be provided. The extent and nature of this feedback should reflect the purpose of the assessment and the nature of the online assessment method.
4. Marking schemes should be fair, transparent, weighted appropriately and clearly communicated to students.
5. Online assessment tasks should be designed with accessibility in mind. Provision for 'reasonable adjustments' to accommodate students with special needs should be considered as should appropriate alternatives should potential adjustments prove inadequate.
6. Where appropriate, online assessment tasks should incorporate a range of question types in order to assess the breadth and depth of student knowledge.
7. Online assessments incorporating objective questions should include suitable and relevant distracters to minimise the potential for guessing.
8. Online assessment approaches should be guided by the level at which the student is studying.

9. Careful consideration should be made in relation to the time (stage) at which online assessment tasks are employed during a student's course of study and also to the realistic time frame in which students could be expected to complete the task.
10. Online assessments should not test a student's information technology skills or their adeptness at using a specific online assessment tool unless that is the explicit purpose of the assessment.

Comparison of the lists produced by the 8 different groups revealed a total of 34 unique points on effective online assessment design. Notably, 7 out of the 8 groups listed alignment of online assessment tasks to the course curriculum/learning outcomes as a key principle, with 6 of these groups ranking this as the most important aspect of good online assessment design suggesting awareness among participants of the importance of curriculum alignment. The importance of clarity and need to be more explicit with assessment instructions was identified by all 8 groups, with the high ranking across groups suggesting that avoiding ambiguity in assessment guidelines is perceived to be crucial. Encouragingly the formative potential of online assessment appears to have been recognised with the provision of timely feedback to direct learning and encourage further research identified by 6 of the groups, with particular emphasis placed upon the need for feedback to be meaningful to students if it is to address misconceptions and facilitate deeper learning. Further to this, the need to ensure that an assessment's marking scheme is fair, transparent and clearly communicated to students was a point identified by 5 of the groups. Also ranking highly on the respective group lists, accessibility was identified as a priority consideration when designing online assessment tasks, with particular emphasis placed on the need to make 'reasonable adjustments' to accommodate special needs and to ensure that equivalent alternatives are considered should an online assessment approach be unsuitable for specific learners.

Perhaps demonstrating the continued perception among a section of academics that online assessment approaches mainly involve the objective measure of student knowledge, use of a range of different question types to assess the breadth of student knowledge, and the importance of designing appropriate distracters to reduce the potential for guessing, was identified by 3 of the groups examined. Half of the groups identified time considerations as a key aspect of online assessment design, particularly with regard to the time frame within which the assessment can be completed and from the point of view of returning feedback to students if not presented automatically. Other key points identified included the need to tailor tasks to the appropriate level of the student undertaking the assessment, and to ensure that online assessments test student's subject knowledge and not their information technology skills or ability to engage with a particular online assessment tool.

Having explored the most frequently cited points identified by the groups, it is worthwhile examining those points listed less frequently as this arguably offers some insight into the academic's conceptions of online assessment and the assessment process as a whole. Interestingly the need to evaluate the effectiveness of online assessment activities with a view to enhancing the design of the task was only identified twice by the groups and was ranked lowly on their lists. Furthermore, validity and reliability were only explicitly referred to on two occasions while the need to consider methods to minimise student opportunities for plagiarism or collusion was identified by one group only. Among the other less frequently identified points was the principle that online assessment tasks must be interesting in order to engage students and the suggestion that these forms of assessment should be designed in such a way as to 'evoke the truth'.

CONCLUSION

Online assessment is an area of e-learning which is constantly evolving and subject to frequent developments. The *Assessment Online* course must therefore continually evolve in line with these changes to remain current and relevant to contemporary learning, teaching and assessment practice and the learning approaches of students. Similarly, the principles of good online assessment design will undoubtedly evolve as approaches change and technology advances. In relation to the activity outlined in this paper, it would be of

particular interest to examine whether the points arrived at within the groups were to be different if the task was conducted at the end of the course when participants have been exposed to a wider range of online assessment tools and techniques. The principles outlined in this study suggest that academics are aware of the importance of aligning assessment with course learning outcomes and recognise the potential formative role of online assessment. In contrast, it appears that among some academics the perception remains that online assessment centres round the objective measure of low-level knowledge. Further research in this area is therefore crucial to enhance the credibility of online assessment practice and to aid academics aiming to produce efficient web-based assessment tasks that assess higher-order cognitive skills in a manner that is valid and reliable and allows the learner to demonstrate their true potential.

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