

Beyond marks and measurement: Developing dynamic and authentic forms of e-assessment

Catherine McLoughlin

Faculty of Education

ACU National

Joe Luca

School of Communications and Contemporary Arts

Edith Cowan University

E-learning has transformed both pedagogy and learning environments and a new generation of learners has emerged, who require immediacy, connection and personalised opportunities for both formal and informal learning. Instead of using narrowly defined learning outcomes tested by examinations, social software tools offer scope for social connection and self-governed assessment tasks such as critical inquiry, collaboration and team work, giving learners multiple channels of expression, and perspective taking. While social software tools can be closely inter-woven with learning management systems, and be used to scaffold authentic tasks for assessment, there remain design and pedagogical challenges. The paper critiques current practice and analyses several examples of dynamic, resource-based, sustainable e-assessment that support lifelong and self-regulated learning.

Keywords: authentic assessment, dynamic assessment, e-learning, generic skills

Introduction: the need for critical pedagogical concern

The search for new modes of assessment is a key area of development in e-learning. According to current practitioners e-learning requires a qualitatively new pedagogy and the design of educative, authentic assessment tasks could be considered to be the most important element of tertiary teaching (Herrington and Herrington, 2006; Angelo, 1999; Huang, 2002). Traditional university education is being transformed from a “transmissive paradigm”, emphasising the transfer of knowledge, to one where there is pressure to maximise the value of the assessment process in enriching the learning process and encouraging greater feedback. The associated assessment practices now focus on students’ capacity to analyse their own knowledge, practice independent judgement and evaluate their own and others’ performance. This view of learning and assessment is conducive to constructive, active learning where students take a pro-active role in questioning, sharing ideas and applying prior knowledge to new ideas. However, traditional university assessment tasks may not test for deep conceptual understanding (Anderson & Krathwohl, 2000). For example, an exam requiring recall of facts will encourage learners to adopt a surface approach, whereas e-assessment of collaborative problem-solving or teamwork also promote problem solving by giving the learner control over processes and outcomes. The aim of this paper is to provide examples of learner-centred forms of assessment utilising networked technologies and social software tools to support a diversified student population.

How social software tools support authentic assessment

As early as 1966, Bruner (1966, 34) commented on the power of technology – “emphasis should be placed on skills in handling, in seeing and imaging, and in symbolic operations, particularly as these are related to the technologies that have made them so powerful in their human expression”. This statement prefigured the increased emphasis placed on generic transferable skills that have more recently required a re-alignment of e-pedagogies with desired learning outcomes (Oliver & McLoughlin, 2001). This implies that if self-regulated learning and critical skills are expected of graduates, assessment methods must foster such processes and skills. As institutions move increasingly to online delivery, there is ample evidence of the power of technology to support authentic assessment practices in on-line environments (Herrington & Herrington, 2006). Numerous commentators have remarked on the gradual infiltration of technology into schools, universities and workplaces, where software tools, self-paced learning packages and learning objects lessen the learner’s dependence on the physical environment and the instructor. Learning and

assessment are enhanced when participants are given the opportunity to create a kind of community where support, motivation and enjoyment are blended into the learning experience (Richardson & Swan, 2003). These ingredients are far removed from traditional and didactic pedagogies where disconnectedness and isolation were prevalent. Learning technologies provide an integrated environment where social software applications such as blogs, text chat, private and group spaces enable multiple forms of human discourse and collaboration. The term 'social software' is used in many different contexts, though the different technologies covered by the term have not been specifically developed for educational purposes. Anderson (2005, p4) has introduced the concept of 'educational social software' which he defines as:

[...] networked tools that support and encourage individuals to learn together while retaining individual control over their time, space, presence, activity, identity and relationship.

As Anderson notes, social software is a very difficult concept to define. The term not only includes a wide range of different technologies, but the social aspect of the technologies often emerges from a combined use of different technologies. The examples of social software technologies which are being integrated into assessment tasks include weblogs, wikis, RSS feeds and collaborative tools. However, it is important to note that social software is in no way limited to these specific technologies.

The relevance of these developments to assessment design is that we can use the attributes of technology to create personal tools to enhance process skills, while developing autonomy and independence by designing authentic assessment tasks. In addition, by creating tasks as 'challenging learning events' that are self-governed, problem-based and social collaborative activities, educators provide a seamless integration with real life contexts (Sluijsmans, Dochy & Moerkerke, 1999).

User centred technology in support of assessment

The integration of online assessment tasks and tools has the capacity to support a wide range of learning goals and is becoming increasingly common in higher educational institutions across Australia (Byrnes & Ellis, 2006). Koper & Tattersall (2004) for instance suggests that many tools now employed in e-learning have a major role in supporting:

- self-directed learning and increased student autonomy
- the construction of personal representations of meaning-making
- increased information literacy
- intentional, mindful thinking and metacognition.

The transformative shift to a diversified student population characterised by self-direction and autonomy means that different pedagogies must be used to support the lifelong building of knowledge and competencies, enable students to assume responsibility for their own learning, have mobile and flexible to resources and be supported in developing skills in independent learning. Huang (2002) notes the challenges of applying constructivist approaches to online learning and that learning processes should be the focus of assessment, and an indicator of learner achievement. However, the quality of online assessment should adhere to the same principles that apply to authentic, student-centred assessment and that in all cases, it should be valid, reliable, fair and flexible, and include qualitative and quantitative approaches (Booth et al., 2003; Kendle & Northcote, 2000).

Theoretical perspectives on assessment

Several theorists and practitioners have written about the limitations of current forms of assessment, both face to face and online, labelling it as static, and questioning whether in fact, assessment does promote learning. Kozulin & Garb (2004) have signposted the inherent contradiction between the goals of student assessment and its means. The goal is usually to evaluate learning ability and to gain information useful for more effective instruction. The means, however, are often limited to measuring the students' current performance level. This contradiction was identified as early as 1934 by Vygotsky (1934/1978, Kozulin & Garb, 2004). Vygotsky believed that the normal learning situation for a student is a socially meaningful cooperative activity in a culturally supportive environment, mediated by peers and supported by tools and artefacts.

Cognitive functions such as thinking and learning abilities originate within this interpersonal interaction and only later are they internalized and transformed, becoming the student's inner cognitive processes. Thus under conditions of collaborative or assisted performance, scaffolded learners may reveal certain emergent functions that have not yet been internalized. According to Vygotsky, these functions belong to the Zone of Proximal Development (ZPD) in contrast to fully developed functions that belong to the zone of actual development. While the results of static assessment show us the current abilities and performance of the student, the analysis of ZPD allows us to evaluate the emergent ability of the student who learns from the interaction with peers and others. This emergent learning ability may serve as a better predictor of the students' educational needs than results obtained from static tests. E-learning environments can sustain such approaches.

Other researchers have described a whole raft of possible interactive interventions and tasks to be used during assessment, such as asking leading questions, modeling, presenting problem solving tasks, and developing inquiry based learning approaches. Using this construct of dynamic assessment, a number of examples are provided of actual assessment tasks currently used in e-learning environments, where students can demonstrate emergent skills in problem solving, collaboration, inquiry and critical thinking. Table 1 presents examples of online tasks and forms of assessment.

Table 1: Examples of online assessment tasks

Authors	Skills assessed /knowledge domain	Approach	Example of assessment task
Nicholls & Philip, R. (2001).	Drama	Threaded bulletin board, collaboration	Students post a theatre review online, and read, reflect respond and build two new threads
McLoughlin & Luca, (2006)	Project management	Online, Authentic task, team based	Students create contracts, management models, plan roles and design a website to meet client needs. Peer assessment online
Fitzsimmons (2006)	North American fiction and film	Use of online journal	Students write a critical review of a book and post in online; act as members of an editorial board
Anderson (2005)	Archives and records management	Online discussion	Students posted responses to problems, commented on others discussions, and engaged in discussions
Lee, Chan & Van Aalst, (2006)	Computing	Collaborative problem solving and e-portfolios	Guided by several knowledge-building principles, they were asked to identify clusters of computer notes that indicated knowledge-building episodes in the computer discourse, and compile these into a portfolio

Conclusions

These examples of how social software tools can be used to assess student learning indicate that a range of strategies can be employed to ensure that students develop process skills, knowledge and generic competencies that enable them to demonstrate learning outcomes. While ICT does not automatically add quality or guarantee better learning outcomes, social software tools driven by learner-centred pedagogy, may facilitate and support processes of collaboration, engagement and reflection and create spaces for multiple perspectives, dialogue and social connectivity. Online assessment design processes, if managed within a sound pedagogical framework, can support rich opportunities for innovative and engaging forms of learning, and thereby meet the needs of a diverse learning population.

References

- Anderson, T. (2005). *Educational social overlay networks*. <http://elgg.net/terrya/weblog/4283.html>.
- Anderson, L. W., Krathwohl, D. R. (2000). *Taxonomy for learning teaching and assessing a revision of Bloom's taxonomy of educational objectives*. London: Longman.
- Angelo, T. (1999). *Doing assessment as if learning matters most*. *AAHE Bulletin*, May 1999(<http://www.aahe.org/Bulletin/anglomay99.htm>).

- Booth, R., Clayton, B., Hartcher, R., Hungar, S., Hyde, P., Wilson, P. (2003). *The Development of Quality Online Assessment in Vocational Education and Training*. Vol. 1 and Vol 2. National Centre for vocational Education Research, Leabrook, South Australia.
http://www.ncver.edu.au/research/proj/nr1F02_1.pdf
http://www.ncver.edu.au/research/proj/nr1F02_2.pdf
- Bruner, J. (1966). *Towards a theory of instruction*. Harvard University Press
- Byrnes, R. and Ellis, A. (2006). The prevalence and characteristics of online assessment in Australian universities. *Australasian Journal of Educational Technology*, 22(1), 104–125.
<http://www.ascilite.org.au/ajet/ajet22/byrnes.html>
- Fitzsimmons, J. (2006). Speaking snake: Authentic arning and the study of literature. In A. Herrington & J. Herrington (Eds.), *Authentic learning environments in higher education* (pp. 162–171). Hershey, PA: Information Science Publishing. <https://doi.org/10.4018/978-1-59140-594-8.ch012>
- Herrington, A. & J. A. Herrington (Eds.), (2006) *Authentic Learning Environments in Higher Education*. (pp. 1–13). Hershey, PA: Information Science. <https://doi.org/10.4018/978-1-59140-594-8.ch001>
- Huang, H. M. (2002). "Towards constructivism for adult learners in online learning environments. *British Journal of Educational Technology* 33(1): 27–37. <https://doi.org/10.1111/1467-8535.00236>
- Kendle, A. & Northcote, M. (2000). The struggle for balance in the use of quantitative and qualitative online assessment tasks. In *Proceedings ascilite 2000*, Coffs Harbour. [viewed 12 Jan 2006]
http://www.ascilite.org.au/conferences/coffs00/papers/amanda_kendle.pdf
- Koper, R. and C. Tattersall (2004). New directions for lifelong learning using network technologies. *British Journal of Educational Technology* 35(6): 589–700.
- Kozulin, A. & Garb, E. (2004) Dynamic Assessment of EFL Text Comprehension of at risk students. *European Journal of Psychology of Education*, 19 (1), 65–77. <https://doi.org/10.1007/BF03173237>
- Lee, E. Y., Chan, CK., van Aalst, J. (2006) Students assessing their own collaborative knowledge building. *International Journal of Computer-Supported Collaborative Learning* 1(1), 57–87
- McLoughlin, C., & Luca, J. (2006). Applying situated learning theory to the creation of learning environments to enhance socialisation and self-regulation. In A. Herrington & J. Herrington (Eds.), *Authentic Learning Environments in Higher Education* (pp. 194–213). Hershey, PA: Idea Group.
- Nicholls, J. and Philip, R. (2001). Drama online. *Australian Journal of Educational Technology*, 17(2), 150–168. <http://cleo.murdoch.edu.au/ajet/ajet17/nicholls.html>
- Oliver, R., & McLoughlin, C. (2001). Exploring the practice and development of generic skills through web-based learning. *Journal of Educational Multimedia and Hypermedia*, 10(3), 307–325.
- Sluijsmans, D., Dochy, F., & Moerkerke, G. (1999). Creating a learning environment by using self-,peer- and co- assessment. *Learning Environments Research*, 1, 293–319.
- Richardson, J., C. & Swan K. (2003) Examining Social Presence in online courses in relation to students' perceived learning and satisfaction. *Journal of Asynchronous learning networks* 7(1) Accessed June 2004. <https://doi.org/10.24059/olj.v7i1.1864>
- Vygotsky, LS (1978). *Mind and society: The development of higher mental processes*. Cambridge, MA: Harvard University Press
- Wood, D.J., J.S. Bruner, and G. Ross (1976), The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry*, 17(2): p. 89–100. <https://doi.org/10.1111/j.1469-7610.1976.tb00381.x>

Author contact details

Catherine McLoughlin, Coordinator, SIMERR, ACT National Centre for Science, ICT and Mathematics in Rural and Regional Australia (SIMERR, ACT), School of Education, Australian Catholic University, Canberra, Australia. Email: c.mcloughlin@signadou.acu.edu.au.

Joe Luca, Edith Cowan University, 2 Bradford Street, Mt Lawley, Perth, WA 6050, Australia.
 Email: j.luca@ecu.edu.au

Please cite as: McLoughlin, C. & Luca, J. (2006). Beyond marks and measurement: Developing dynamic and authentic forms of e-assessment. In L. Markauskaite, P. Goodyear, & P. Reimann (Eds.) *Proceedings of the 23rd Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education: Who's Learning? Whose Technology?* (pp. 559-562). Sydney: Sydney University Press.
<https://doi.org/10.65106/apubs.2006.2941>

The author(s) assign to ascilite and educational non-profit institutions a non-exclusive licence to use this document for personal use and in courses of instruction provided that the article is used in full and this copyright statement is reproduced. The author(s) also grant a non-exclusive licence to ascilite to publish this document on the ascilite web site (including any mirror or archival sites that may be developed) and in electronic and printed form within the ascilite *Conference Proceedings*. Any other usage is prohibited without the express permission of the author(s). For the appropriate way of citing this article, please see the frontmatter of the *Conference Proceedings*.