Enabler or inhibitor? Educational technology in self and peer assessment

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This paper explores challenges and opportunities in self and peer assessment and its relationship with educational technologies that support the implementation of the assessment in Higher Educational contexts. While self and peer assessment offer a range of learning opportunities which may lead to enhanced learning outcomes, designing and implementing self and peer assessment comes with complexity and challenges. Through piloting two self and peer assessment tools, the limitations of current technology were identified. This suggested the need to deeply investigate challenges and enablers in self and peer assessment. An online survey captured perceived factors in addition to technology which contributed to the success. While student willingness to participate was the major inhibitor, technology and technology support were seen as vital to contributing to the success of self and peer assessment. Future work should consider educational technologies in context to contribute to the success of self and peer assessment endeavours.

Keywords: self and peer assessment, educational technology, Higher Education

Introduction

The literature has recognised both the opportunities and challenges that the design and implementation of self and peer assessment present (Liu & Carless, 2006; Murdoch, 2015). While various meanings of the term 'assessment' can be found in the literature (Boud & Falchikov, 2007), our use of the term includes both summative and formative connotations of assessment. This paper treats the term assessment as an umbrella term which encapsulates the broader notions of (self- and peer-) evaluation, review, marking and grading, for example. With this in mind and drawing on the definitions provided by previous literature (cf. Topping, 1998) the definitions of self and peer assessment are given below in the simplest possible terms for this study:

- Self assessment: students judge and make decisions about their own work against particular criteria.
- Peer assessment: students judge and make decisions about the work of their peers against particular criteria.

The benefits of self and peer assessment focus largely on a range of transferable skills (sometimes also known as graduate learning outcomes) that can be addressed and enhanced by both the design and implementation of self and peer assessment when done right – e.g. critical/reflective thinking, communication and teamwork skills (Yucel, Bird, Young, & Blanksby, 2014). Students first need to be able to grasp the assessment criteria and/or standards before they can assess their own work or that of others. They are then required to provide constructive feedback that leads to improving their/others' intended future work. Students therefore develop these transferable skills in performing a particular self/peer assessment task. Further, self and peer assessment design can transform students into assessors themselves, who actively understand and perform the assessment, rather than being the assessed, the passive receivers of marks and feedback from academic staff (Brindley & Scoffield, 1998). This use of self and peer assessment directly relates to the model of sustainable assessment acclaimed by Boud and Soler (2015) making a shift "from a focus on disciplinary knowledge to what they can do in the world". It also addresses the common criticism from employers about the limited number of 'work ready graduates' who lack such skills to be applied in real work situations (Boud & Tyree, 1980).

The complexity and associated challenges surrounding self and peer assessment have also been noted. The main focus in the literature seems to be on the credibility and accuracy of student grading (Brown, Andrade, & Chen, 2015; Hamer, Purchase, Luxton-Reilly, & Denny, 2015; Kulkarni et al., 2015). This is particularly of concern when the grades generated by students contribute to the overall summative grades in a unit or course. While students can be taught and trained to be credible assessors over a period of time (Boud, Lawson, & Thompson, 2013), there still seems to be considerable fear attached to giving the power of assessors to students. Liu and Carless (2006), for example, explored the resistance of academics towards peer assessment and highlighted that there are four major reasons for this resistance – reliability (of students to grade accurately), perceived expertise (of students to be able to assess the subject matter work), power relations (between staff and students and among students themselves), and time (that is available to conduct self and peer assessment). They go on to advocate for formative rather than summative peer assessment, arguing that peer feedback is the 'learning element' of peer assessment.

This paper builds on such existing literature and re-examines the opportunities and challenges of self and peer assessment described so far. It sheds light on how educational technologies in particular are identified as both enablers and inhibitors in facilitating this assessment approach. In this way, the paper aligns with Selwyn's urging for educational technology researchers to look beyond the 'state of the art' in educational technology towards the 'state of the actual' (Selwyn, 2010); in the context of this study, towards a focus on the everyday realities of technology-enabled self and peer assessment. The technology-enabled assessment literature in particular has an obsession with innovation, with Stödberg's recent structured review study finding the typical study in this area is a short-term, small-scale intervention study of the researcher's own practice (Stödberg, 2012). This paper also builds on an agenda set forward by Bennett, Dawson, Bearman, Molloy, and Boud (2016), who examined the complex relationship between educational technologies and assessment designs, and Tomas, Borg, and McNeil (2015) who argued for a research focus on the development and implementation of e-assessment. Much is possible in technology-supported self-and-peer assessment, but what actually happens in the fraught realities of everyday teaching and learning at a large Australian university?

Context

In 2015, Deakin University introduced the 'Assessment Tools Project' as part of the University teaching and learning strategic plan. The project intended to i) to raise more awareness and gather current practices and/or requirements around self and peer assessment across the University and ii) to investigate peer assessment elearning tools to enable these existing practices and to make recommendations on a University wide platform.

Engagement with academics and academic developers from across the university revealed that the types of self and peer assessments in place were varied in the form of contribution to student grades (i.e. summative vs formative), types of assessments (e.g. written, oral and teamwork assessments) and feedback (e.g. qualitative vs quantitative). A frequently mentioned inhibitor was that of technological challenges, i.e. that there was no online platform for self and peer assessment supported by the University. After investigating online self and peer assessment tools in the market (e.g. iPeer, WebPA, CATME, PRAZE, TEAMMATES, PeerWise, SAPCA), two tools were implemented on a pilot basis: PeerMark (as part of Turnitin) and SPARKPlus, which enabled different types of assessments. PeerMark is generally used for one-to-one review on written work submitted while SPARKPlus allows group/team work evaluation even without the submission of work by students. Over the two trimesters of the pilot phase (Trimester 3, 2015 and Trimester 1, 2016), over 20 units with approximately 2500 students used SPARKPlus while three units with about 300 students utilised PeerMark for formative assessment opportunities.

Though these tools are now supported by the university on a pilot basis, it is clear that no single tool meets all of the academics' requirements. While most academics acknowledged that self and peer assessment provided benefits for enhanced student learning experiences, leading to improved learning outcomes when done successfully, they also showed significant scepticism and talked about challenges to make their assessment successful. Given the importance of the 'state of the actual', further investigation of the challenges and enablers for self and peer assessment was required, focusing on the role of educational technology within a broader context.

Aims

This paper aims to:
1. further unpack the challenges and opportunities identified with self and peer assessment and;
2. understand the 'state of the actual' with respect to technology and self and peer assessment in a large Australian university.

Methods

A survey was developed with a total of 30 questions on the perceptions of, and experiences with, self and peer assessment, with the overall intent to understand what types of professional development opportunities (e.g. resources and workshops) were needed to build staff capacity in confidently designing and implementing self and peer assessment. To capture those who had not yet used either self or peer assessment, survey logic (which could send participants to certain pages depending on their previous answers) was used with differently worded variations of the questions. The resultant survey was entered into SurveyMonkey for data collection.

Data collection and analysis

All academics and academic developers at Deakin University were eligible to participate in the research project. In January & February 2016, an email was sent out to senior executive administrative officers in all Schools and Departments, requesting the survey link and participant information be distributed via appropriate means – i.e. inclusion in an email circular, or as a separate email to staff. A reminder email was sent in May 2016.

A total of 91 surveys were returned; 52 responses contained meaningful content while the remainder were blank or incomplete; 47 respondents responded to the two specific open-ended questions from the survey, which were relevant to this paper:

- What were (or would be) the challenges for implementation (of self and peer assessment)?
- What resources or support did you (or would you) require to implement self and peer assessment? For example, teaching support, talking to colleagues, literature, other universities' tool kits, etc.

Frameworks of content and thematic analysis (Vaismoradi, Turunen, & Bondas, 2013) with open-coding in nVivo were applied to analyse the texts/responses provided by 47 participants for the questions above.

Ethical approval

Ethical approval was gained via the Faculty of Health Research Ethics committee at Deakin University, reference number: HEAG-H 158_2015.

Results

Six inhibitor themes were identified, and are listed in order of frequency: i) willingness and capabilities of students, ii) technology, iii) teaching support and professional development, iv) willingness and capabilities of academics and colleagues, v) time, and vi) University policies. The themes, their frequencies (N) and indicative quotes are summarised in Table 1.

Table 1: Inhibitors of Self and Peer Assessment

Themes	Indicative quotes
Willingness and capabilities of students (N = 18)	Students don't like peer assessment. Enthusiasm from students. Students hate this type of assessment. We already have a great deal of difficulty getting them to do assessment of other types and participate appropriately without requiring something we know they do not like. Providing enough detail & support for the students to develop their group learning to allow for a good self & peer assessment. At first, the barrier of attitudes- many of our students are East Asian and are uncomfortable with self/peer assessment initially Convincing students it is a worthwhile thing to do - they see assessment as purely up to the academic staff.
Technology and technology support (N = 10)	Getting past LMS hurdles/controls Tools are largely inadequate [Deakin's LMS] Another system to learn, implement and evaluate. Technical set up.

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	I used manual templates rather than automatic rubrics.
Teaching support and professional development (N = 10)	I had no assistance. I have never received induction on any collective activities of this nature or on self/peer assessment.
Willingness and Capabilities of academics and colleagues (N = 8)	Persuading colleagues at the initial introduction. Expertise and Cooperation The quality of staff and their ability to work with less than usual structure and power. My reluctance to provide an environment where students can bully other students. Confidence to describe the process (with benefits) to students and then working through their resistances.
Time (N = 5)	Time. Finding time to let students develop an understanding/appreciation of what self and peer feedback can offer learning. There is some staff resources, but they are stretched quite thinly in the Faculty for implementing and researching these types of initiatives. And I have barely enough time to write the assessment, let alone research them!
University policy (N = 5)	Having universal acceptance of the concept across the University. Standardisation of student/peer assessment.

In the case of enablers, similar themes were found (Table 2); however, the most frequent enablers were the need for, or use of, literature and other resources that enable academics to apply the assessment. Further, sharing their knowledge and experiences among their colleagues was also identified as a potential resource.

Table 2: Enablers for Self and Peer Assessment

Themes	Indicative quotes
Literature, tool kits, other resources (online, other institutions, samples) (N = 23)	Peer assessment websites. Literature, various published tools. Tool kits or 'how to' based on best-practice. Guidelines around practical and informative forms of feedback. Evidence of how this has been done effectively in other institutions. Sample rubrics, clear criteria for assessment.
Teaching support, including IT support (N = 12; 6 on IT support)	Proper support to implement greater teaching demands. Moderation support. Staff and student videos and technical how-to documents.
Working with colleagues (N = 12)	Talking to colleagues - mainly about the things that don't work. I was working with a colleague in this unit – we negotiated the task together. It was great. I have a colleague who has a lot of experience in this area and I would go to her.
Technology (N = 5)	IT support, Technology support. A reliable, easy-to-use interface above all. Faculty support team helped me set up [Deakin's LMS]. University evaluation tools would assist the process There is software around that claims to fulfill the task, but it requires a lot of setup and time.
Time (N = 2)	In our Faculty we are only allowed to spend 1 hour per student for all the assessment marking, and assessment must be designed to fit this requirement.
University policy (N = 3)	Clear policy about how these strategies fit with assessment policy.

Discussion and conclusion

What is the state of the actual with respect to technology and self and peer assessment at a large Australian university? Our analysis connects with two important themes in the literature, and provides further support for them.

Firstly, the implementation of self and peer assessment faces very human obstacles, most prominently, perceptions about the capabilities of staff and students. Very similar themes featured prominently in a previous study of peer assessment (Liu & Carless, 2006). That these themes would feature just as strongly, almost a decade later and in another country speaks to their enduring influence which may span cultures.

Secondly, although we sought to understand technological inhibitors and enablers of self and peer assessment, pure technical matters were not the most prominent feature of our data. Even when technology was mentioned, it was largely a matter of support, learning to use new tools, resourcing and time; this echoes findings by others (Bennett et al., 2016) of the need for support in designing assessment with technology. Our analysis further supports the need for researchers to move beyond a focus on the learning benefits of technology in assessment towards "building an understanding of development and implementation" (Tomas et al., 2015). High-quality self and peer assessment technologies and pedagogies have existed for more than a decade; actual practice is not inhibited by a lack of possibilities, but by the fraught realities of context and implementation. In this complexity, it is perhaps not surprising that the challenges or inhibitors that academics identify largely overlap with the required resources or enablers: inhibitors can become enablers once they are overcome.

Much to our delight (as researchers), many participants regarded research literature as an enabler of self and peer assessment. We suggest that future work on this topic, for this audience, might focus on practically addressing cultures, attitudes and perceptions around peer assessment, while at the same time supporting educators to identify and use technologies to achieve their desired designs of self and peer assessment.

Acknowledgements

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