Peer review of learning designs: interdisciplinary SoTEL

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For academics participating in graduate certificates of higher education, the advice and feedback of their teacher peers is a potentially powerful resource. This paper reports on an evaluation-in-progress of one subject in a graduate certificate for university teaching, a fully online unit on the scholarship of technology-enhanced learning (SoTEL). Two demands are made of participants in this unit: that they should develop a prototype activity using technology for learning and teaching, and that they should review and receive a review from a class peer to enhance these individual prototypes. The assumption at the heart of this unit design is that, by undertaking a review of a colleague's learning design, the teacher learns from these additional perspectives and can then improve their own designs for learning. Challenging this assumption are multiple aspects of the context, including the relative value of design reviews from academic developers versus less experienced peers; the multiple criteria by which a design might be evaluated; and interdisciplinary work between peers. Artefacts from participants and the academic developers teaching them are analysed to probe this underlying assumption, and to consider the value of peer review in SoTEL.

Keywords: academic development; interdisciplinarity; learning design; peer review; SoTEL

Background: peer review in teaching with technology

In launching her concept of "SoTEL" (scholarship of technology-enhanced learning), Wickens (2006) identifies peer review of teaching as one of the practices that technology ought to enable, and one that would bring teaching into a more public discourse, approaching the status of scholarly research. Peer review of different dimensions of teaching is recognized in institutional and government policy documents (for example, Chalmers et al., 2014; Tertiary Education Quality and Standards Agency, 2016) as an indicator of quality teaching, and peer advice and feedback is one of Brookfield's four lenses for critical reflection on teaching (Brookfield, 2017). Peer-to-peer feedback, effectively implemented, is strongly supported by Nicol and Macfarlane (2006, quoted in Gikandi and Morrow, 2015); the implementation of technology-enhanced learning in particular can benefit substantially from scaffolded peer review, as, for example, in the 2007-10 "Peer Review of Online Learning and Teaching" project led by the University of South Australia (Wood & Friedel, 2009).

These factors advocate for the use of peer review of technology-enhanced learning, but there are conflicting signals from the higher education context. While classroom teaching is provided with peer review processes via institutional guidance and established projects, the procedures for providing peer review of blended and online teaching in Australian and New Zealand universities are not as well developed. The contributions of peers in professional development events, including in certificate courses such as a graduate program in higher education, are often informal and incidental. While the "study buddy" is a serviceable social structure within formal courses (for example, Madland & Richards, 2016), often, rather than structured interactions, a higher goal is set for these academics: the establishment of a community of practice or a goal of lifelong learning (Kukulska-Hulme, 2012). It is not clear how well the review of the online design work of a class peer will be received, and whether there is a perceived difference in the value of design reviews from academic developers versus less experienced peers. Lelis (2017) documented the doubts that Masters students had of the expertise of their peers, but Delahunty, Verenikina and Jones (2014) show that, with some qualification, peer review may be welcomed and used.

One further complicating factor is disciplinary knowledge, given that professional development for academics can be conducted within a faculty or across an institution. How transferable is design and practice in one discipline to the teaching of another? How useful can a review from someone in a different discipline be? Are there discipline-specific qualities in learning design (Cameron, 2009, 2017) and in academic development as a whole (Quinn & Vorster, 2014; Rienties, Brouwer, & Lygo-Baker, 2013) and might they invalidate cross-disciplinary peer review?

With some trepidation, then, given these uncertainties, we chose, in teaching a fully online unit on technology-enhanced learning as part of our institution's graduate certificate in higher education, to centre the assessment in the unit on a peer review of a class colleague's learning design. The assumption at the heart of this unit design is that, by undertaking a review of a colleague's learning design, the teacher learns from other perspectives and can then improve their own designs for learning. The perspectives taken can differ widely, given, as a starting point, the disparate goals of designs, their different target student groups, and the range of skills and knowledge being dealt with, but then differentiating further with each design decision taken. Teachers taking on the role of peer reviewers are directed in the learning materials to examine these decisions, their links to theory and scholarship of technology-enhanced learning, and the functionality of the technology.

Methodology

Participants and data collection

Human Research Ethics Clearance was sought and approved (2017-332E) and all academics were invited to make available to the researchers the peer review which they submitted as one of the assignments for the unit. Six academics enrolled in the Semester 1 unit agreed to make their reviews available for analysis, and these pilot participants (Table 1) exemplify the cross-disciplinary pairings made by many of the enrolled academics.

Table 1: Demographics and disciplines of pilot participants

Reviewer			Designer		Topic match?	Co-located?
Pseudonym	**Faculty**	**School**	**Faculty**	**School**		
Faith	FHS	Occupational therapy	FEA	Religion	no	no
Evan	FHS	Physiotherapy	FHS	Exercise-Science	near	no
Burton	FHS	Physics	FHS	Biology	near	yes
Bridget	FHS	Nursing	FHS	Bioscience	no	yes
Kate	FEA	Education	FEA	Education	yes	no
Milton	FEA	Education	FHS	Exercise-Science	no	no

In designing the assessment, we chose not to blind the name of the reviewer to their reviewee, but to encourage conversations. The peer reviewers may be on a different campus to the designers that they are working with, and in only half of these pairs are the disciplines of the teachers close or matching. In Semester 2 further participants will be sought from the enrolled academics, with the aim of obtaining the same range of artefacts as data (Table 2).

Table 2: Artefacts collected as data for pilot analysis (Semester 1)

Artefact	Author	Description	Items
Peer review on design	Reviewer	Usually written responses and annotations on design document (combined word count approximately 2300 words per review); occasionally provided as video feedback	6
Tutor feedback on design	Academic developer	Feedback to the designer from one of the academic developers teaching the unit, subsequent to the peer review and commenting on the peer review as well as the features of the draft design (around 370 words each)	6
Marking the peer review	Academic developer	Feedback to the peer reviewer as part of the marking of the assignment 2 submission.	6

Data analysis

Using QSR NVivo 11 to develop a database of these documents, an initial set of codes was derived from the text of the artefacts but informed by terms from the literature used in the design of the Graduate Certificate unit. In the next phase of analysis, after sourcing additional artefacts, any connections between the recommendations of the peer reviewer, the academic developer, and the designer will be identified.

Preliminary results and discussion

Structuring the peer review

There are multiple criteria by which a design might be evaluated, including its quality, effectiveness, efficiency, appropriate match of technology and desired learning outcomes. For the taught unit, enrolled academics taking the role of reviewers were directed to look for and provide feedback on:

1. the theoretical rationale of the learning sequence: how the choice of activity matches or does not match with the intended learning outcome of the sequence
2. the design rationale (why this technology might work to support the chosen activity).

In the assignment specifications, reviewers were able to choose the form that their review took. They were able to develop their own structure, or they could choose between two peer review formats which were provided in the learning materials to encourage a systematic review of the design. These two peer review formats were derived from different sources, one from the program *Teaching Online* (Epigeum, 2014) and the other based on the activity-centred analysis and design format ("ACAD") presented by Carvalho and Goodyear (2014, 2017; Goodyear & Carvalho, 2016) as extended by Thompson, Gouvea and Habron (2016).

Of the peer reviews analysed, half used one of these structured review formats, one review using the *Teaching Online* template, one using the ACAD framework, and one combining both. (One of the design-review pairs who were co-located went beyond the review template and process to meet face-to-face for mutual critique and enhancement of the design.) Our hypothesis, that a structured template or peer review sheet would assist the reviewer to provide useful and actionable recommendations, is not contradicted by this initial sample. Mention of the two rationales requested (that is, 1. and 2. above) were only found in the reviews of enrolled academics who used the suggested templates.

Types of contributions

The usefulness of the review was increased by the provision of recommendations for the designer. Clear recommendations, labelled as such, were ideal, but statements which were phrased (and therefore coded) as "reviewer suggestions" and "reviewer hints" were also identified as actionable feedback.

Comments from reviewers indicated gaps in the design; urged designers to follow through on the design; extended activities described in the design; and noted additional phases and activities to achieve the stated teaching goals more thoroughly. It was often the reviewer's role to note what was *not* present in the design, particularly links to institutional policy. Reviewers suggested technologies other than those in the design, or in addition to the design elements, and occasionally disagreed with the technologies chosen.

In several cases the reviewers expressed gratitude for the opportunity to evaluate and learn from their colleagues' work, and noted the mutual learning that the review activity provided.

Tone and purpose

Any criticism in the reviews was coupled with positive appreciation of strengths elsewhere in the design. The most useful reviews were also marked by highly encouraging remarks and strong praise of the designer's achievement. The tone was warm and personal, even where the reviewer and designers had never met face-to-face.

Scholarly discussion and extension

Sections of the review that offered additional literature on technology-enhanced learning to extend the design were important components of the peer reviews. Recommendations for design improvements coupled with SoTEL support were valued highly by the markers of the reviews.

Sensitivity to context

The references to "students" in the reviews do not discuss the implications of any special needs or characteristics of the students, even though some contextual information forms a required section of the design

document. The students' mode of engagement and their level of motivation are assumed by the reviewers as generic, that is, as interchangeable with students of their own experience.

Disciplinary constraints

The designer-reviewer pairs seem to exaggerate in their reviews and discussions the differences in knowledge bases between what seem, at least institutionally and from the external vantage point of the academic developers in the Learning and Teaching Centre, to be closely related disciplines. What we as generalists class as "sciences", for example, chemistry and physics, are seen by the academics in the Schools as very different disciplines. The response rate so far has been too low to decide whether, for optimum peer review, reviewer and designer should share a disciplinary background. It could be noted in passing, however, that the review rated highest by the academic developers involved interactions between rather remote disciplines.

Conclusions

Looking intensively at this small collection of data has been unexpectedly rewarding. Productive points for revision of the learning design of the Graduate Certificate of Higher Education (GCHE) unit are evident, with the justification for using a structured review template being the most significant.

The core task of peer review, however, seems from these participants' self-reports to be a deep learning experience. Effortful and at times confusing, giving feedback to a colleague on any learning design is a complex task exercising multiple professional skills for the teaching academic, particularly from a remote discipline. The value of a class colleague as a peer reviewer is different from that of an academic developer, particularly when the latter has the role of arbiter and bestower of marks in a formal course. The colleague's feedback can be just as relevant to the enhancement of the design.

The aims of this ongoing investigation are to improve the operation of this GCHE unit on technology-enhanced learning and to test tools to help academic staff share and learn from each other's work in higher education. Each iteration of the unit design has trialled auxiliary tools within the learning management system, most recently an eportfolio (in our case, this is Mahara). In the next minor redesign of the unit, we expect to use Moodle's Workshop activity to manage the workflow of design submission, peer review using a structured format, feedback and self-reflection.

Our goals in offering the unit are not to seek high levels of innovation in the use of technology to enhance learning and teaching (although these are welcome and some exemplars are evident from past offerings of the unit). Instead, we wish to find practical support for all academics in developing technology-enhanced learning sequences, including, where possible, the confidence to re-use and adapt existing, trialled designs for learning. We therefore intend to continue to trial a modified ACAD/*Teaching Online* framework as a means of making the scholarship of technology-enhanced learning more useful and accessible to the academic practitioner, and perhaps contribute to a community, or, rather, a "college of practice".

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