Changing technologies and assessment redesign: factors impacting implementation and participation

Mark O'Rourke
RMIT University,
Australia

This project reviewed current assessment practice across a School at a large University in Melbourne through analysis of student Course Experience Surveys (CES), desktop analysis of course guides, teacher interviews and student focus groups. Based on the findings, targeted resources were designed and professional development activities delivered to teachers to improve assessment and feedback processes in an environment of changing educational technology contexts. Analysis of qualitative CES data identified the most significant issues with assessment design and implementation, and this was used as a reference point and in communication with teachers to promote an understanding that assessment design impacts student learning and achievement.

The development of resources and delivery of professional development activities to improve assessment design were undertaken during a period of significant technological change at the University. A new Learning Management System (LMS) was implemented and all courses were required to have an online presence and comply with a set of guidelines. The impact of this significant change on academics and students was examined to determine whether institutional technology implementation facilitates or hinders efforts to improve assessment and feedback processes in the context of learning and teaching practice.

Keywords: Assessment design, LMS, educational technology, course experience survey, change management

Introduction

The project's aim was to enhance the practice of assessment that supports learning by reviewing and challenging existing understandings of assessment and feedback practice, and supporting academics to embed improvements in their courses (Sadler & Reimann, 2018). With the introduction of a new LMS there was an opportunity to rethink assessment and feedback practices through technology change and increase staff awareness and capability for assessment for learning through aligned and innovative curriculum design. The professional learning activities being undertaken attempted to shift assessment practices to position them as central to the curriculum and align teaching, learning, assessment and feedback as interdependent activity (Boud et al., 2018). The project data has been collected after only one semester of implementation of the new LMS. This paper aims to generate discussion around how educational technology change is best undertaken at Universities to maximise the beneficial impact on assessment practice and student learning.

The introduction of new technologies can be destabilising for academics and effective adoption for assessment design is often inconsistent (Bennett, Dawson, Bearman, Molloy, & Boud, 2017). In a sector that rewards discovery, promotes the generation of new ideas and practice, and celebrates innovation, it is anomalous that the introduction of new teaching technologies is unsettling for academics. This research asks why such change is unsettling to teachers and whether support strategies can be implemented to equip teachers with the capabilities to embrace and exploit this disruption in order to enhance their teaching practice and assessment design.

Presentation of CES data in the context of the professional learning activity for teachers aimed to connect teachers with the decisions they were making about assessment design and the impact on student's interpretation of the assessment tasks. Although this scrutiny can be challenging for teachers, the focus on the personal and social aspects of learning can shift teachers' assessment strategies from the didactical to a more social constructivist approach. Fraser, Kennedy, Reid, and Mckinney (2007) propose that such a focus will provide opportunities for greater ownership and control of the process and are more likely to result in transformational professional learning for teachers.

Ownership and control are critical factors in the successful implementation of learning management systems and impacts the engagement of students and teachers on their application and use. Engagement in educational environments has been characterised by collaboration; project-based delivery; and an authentic real-world focus (Kearsley & Shneiderman, 1998). If we were to extend this to teacher engagement in the use of the LMS for enhancing assessment design, this would include being involved with peers in using the technology, ensuring the implementation project aligns with their academic practice, and a connection with their discipline within a societal context. The data in this project is analysed through this lens and investigates whether teacher identity and the community they operate in are factors impacting on successful assessment enhancement in the context of this technology change.

Methods

This project adopts multiple data collection methods including: desktop analysis of course guides; teacher interviews; student focus groups; CES data; and online questionnaires. Data was collected from students in order to get their appraisal on task related efficacy and engagement and identify issues of clarity and alignment. This enables student voice to be an integral component of the improvement for assessment and feedback design by providing insight into students' learning experiences (Campbell, Beasley, Eland, & Rumpus, 2007). In addition, course guide data is reviewed to understand student's experience of assessment tasks and implications for their engagement and performance (Lizzio & Wilson, 2013) and provides a basis for interpreting CES data.

The iterative collection and analysis of data will continue over the coming semesters to evaluate the continuous learning of academics in the improvement of assessment and feedback processes. The research examines this learning within the context of the shift to a new LMS, however we also need to consider the contexts in which the change is situated. This includes the physical and digital spaces that academics work in, and institutional, social and interactional elements (Ang, Zaphiris, & Wilson, 2010). These elements involve cooperative partnerships with a variety of professions, each of whom have their own professional cultures, management protocols, and understandings. The research adopts an Activity Theoretical framework (Engestrom, 1987) as an approach for understanding the differing objectives that participants bring to any activity, and to reveal the contradictions in practices that are generated as a result.

Activity theory describes contradictions that drive transformation (Kaptelinin & Nardi, 2012). In the context of implementing new educational technologies there are contradictions between achievement of institutional strategic initiatives and the impact that the priorities of teacher's professional identities have on progressing the institutional goals. Sharples, Taylor, and Vavoula (2010) describes the technological layer of Activity theory as being concerned with human engagement with technology, whereby the technological tools function as interactive agents in communication, mediation and reflection. In this project the LMS serves as this technological tool for teaching and learning.

Discussion

What students are saying about their assessments

Qualitative CES data was collated over two semesters across 343 courses (see Figure 1). Keywords about assessment were searched for in student comments and then each result was reviewed and using NVivo, themes were generated based on this review. Analysis of the CES data revealed student perceptions of ambiguity in assessment and feedback, with the top five issues identified in order of priority as:

- confusing criteria
- inadequate assignment resources
- lack of alignment between assessment task and course learning content
- inadequate feedback
- inconsistent assessment task information

The issues with assessment design and communication (see Figure 1) are represented by the number of times a specific issue is raised by students in their comments on the CES. This data was supported by comments from students in focus groups and an online questionnaire. The CES data was used to frame professional development activity in assessment design, and workshops that were conducted targeted the top issues raised in the data. The connection between what students were saying and improving task design to address this feedback ensured traction in the activities. These activities focused on clarity of assessment task writing; writing rubric criteria that

provided developmental feedback to students; discussion of appropriate resources to supplement assessment tasks such as graded assignment examples; and aligning learning outcomes with authentic assessment tasks.
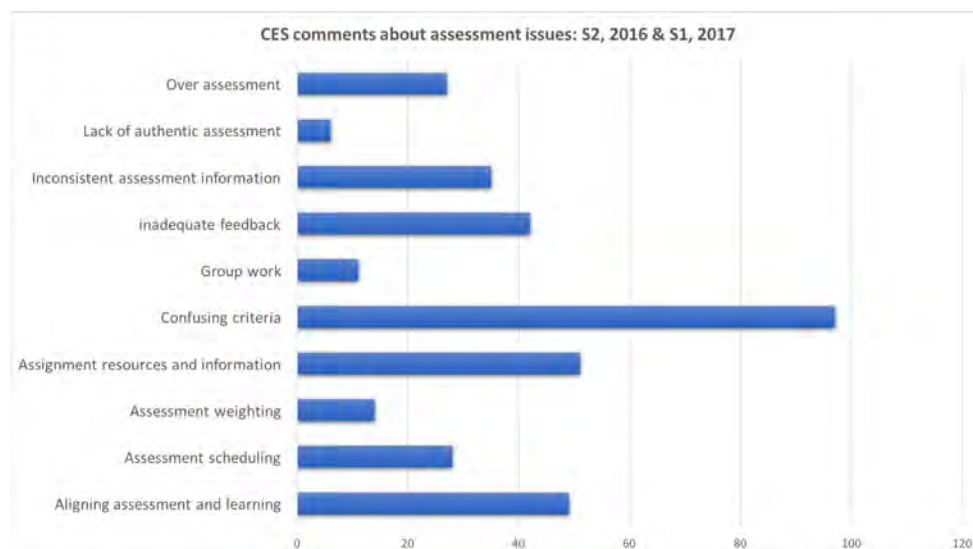
Figure 1: CES data

All activities were conducted using the new LMS to ensure alignment with teachers' practice, however in these sessions observations indicated tensions in teachers between the learning of strategies to improve assessment design and the learning of new tools in the LMS. Learning the procedural steps to understand the functionality and operations of the LMS provided significant cognitive challenge to teachers. Attempts to contextualise this in the workshops by considering ways of improving assessment design using the LMS proved difficult. However, providing examples of best practice or contextualising within a pedagogical framework has been shown to ensure a more successful implementation experience (Ryan, Toye, Charron, & Park, 2012).

Possible factors that caused tension in staff undertaking the professional development could have been the lack of opportunity to contextualise the training, and not enough time allocated within discipline settings. This is supported by research that indicated teachers were genuinely concerned about the time and effort needed to make a successful transition to a new LMS in their courses, and the impact on students (Smart & Meyer, 2005). In order to learn the LMS effectively consultation and training is required, as well as a strategy that engages teachers along with their peers, in discipline focused activity (Ge, Lubin, & Zhang, 2010).

Approaches for improving assessment design

In order to build teachers' capacity in appraising their assessments and improving design, an interactive resource was developed by academic developers from the Institution. The resource provided definitions, links and activities. The aim of the resource was to:
- develop teachers' understanding of assessment concepts and good practice
- enhance teacher understanding of alternative assessment strategies
- align with the LMS implementation project

The interactive resource was referred to in professional learning activities and provided as a stand-alone resource on an institutional Learning and Teaching blog. The resource, referred to as the Assessment Map (see Figure 2) was designed around the concept of a path or map that provided a combination of non-linear just-in-time access to resources, as well as an adaptive sequential approach to activities (Adachi & O'Rourke, 2015) that contextualised assessment design within the LMS. The Assessment Map provided an engaging graphical metaphor, aligned with institutional strategic goals and policy, linked to institutional services and processes, and served as an adaptable living resource.

Figure 2: The Assessment Map

Measuring success

The research project will continue to interview teachers over the coming semesters to measure whether the development of resources, professional development and training activities have had a systemic effect on improving assessment design. We have developed a baseline with two semesters of CES data, course guides and some interviews and focus groups. Further analysis of how the LMS is being used with regards to assessment design will be undertaken. Student survey results and comments from the staff interviewed indicate that the new LMS has had a positive impact on assessment design. In one course 86% of students strongly agreed or agreed that the new LMS provided clarity of assessment tasks, however this data cannot be treated as significant or compared to the CES data which surveyed multiple cohorts across many courses. Teachers' comments provide evidence that the new LMS has positively impacted on assessment design and delivery, but once again due to the small numbers interviewed this is not necessarily representative of the whole teacher cohort.

Anecdotal evidence suggests that many teachers are not engaging with the uptake of new technologies, in particular the shift to the new LMS. It is useful to ask why this is. Statements from academics to explain the frustrations with meeting institutional targets focused on the amount of time allocated to training or the level of individual support. However, often when this individual support was provided the result was that the learning designers or support staff ended up configuring the learning content for the academics in the LMS to achieve University targets. Many online education providers implement a model where learning designers configure content and discipline experts deliver the subjects. However, in the context of this project, we are examining capacity building of academics to review their assessments and utilise online tools to manage and improve this process.

Some of the interviews undertaken provide evidence that the tensions between successfully introducing new educational technologies, and teachers maintaining and developing their professional expertise have actually driven the transformation of the Activity system and progressed institutional goals. This is observed in teachers who participated in the pilot LMS implementation who used this opportunity to innovate and enhance their professional skills. However, there were more resources and support for teachers participating in the pilot stage and subsequently this may not be representative of whole of institution transformation.

Concluding remarks

The project has involved developing resources and providing professional development opportunities for academic staff to build their capacity to reflect on their practice in designing assessments. The aims have been for teachers to use new educational technologies to improve assessment design and feedback. Conflicts between

institutional strategic goals and development of academic staff's ongoing professional practice has in some instances created tensions and prevented teachers from focusing on the goal of improving assessment design through the activities, and not meeting strategic requirements for implementing the LMS. In other cases, teachers have capitalised on the technology change and used the opportunity to reflect on their assessment design and explore new uses of tools within the LMS to improve student outcomes. The research will continue to explore the tensions and contradictions in progressing teacher professional development activity in the context of the introduction of new educational technologies at an institutional level.

References

Adachi, C., & O'Rourke, M. (2015). *Learning maps: a design-based approach for capacity building in tertiary online learning and teaching.* Paper presented at the ASCILITE 2015: Proceedings of the Australasian Society for Computers in Learning and Tertiary Education 2015 Conference.

Ang, C. S., Zaphiris, P., & Wilson, S. (2010). Computer Games and Sociocultural Play: An Activity Theoretical Perspective. *Games and Culture, 5*(4), 354-380.

Bennett, S., Dawson, P., Bearman, M., Molloy, E., & Boud, D. (2017). How technology shapes assessment design: Findings from a study of university teachers. *British Journal of Educational Technology, 48*(2), 672-682. https://doi.org/10.1111/bjet.12439

Boud, D., Dawson, P., Bearman, M., Bennett, S., Joughin, G., & Molloy, E. (2018). Reframing assessment research: through a practice perspective. *Studies in Higher Education, 43*(7), 1107-1118.

Campbell, F., Beasley, L., Eland, J., & Rumpus, A. (2007). *Hearing the student voice: Promoting and encouraging the effective use of the student voice to enhance professional development in learning, teaching and assessment within higher education.* Retrieved from http://dera.ioe.ac.uk/13053/2/3911.pdf

Engestrom, Y. (1987). *Learning by expanding. An activity-theoretical approach to developmental research.* Helsinki: Orienta-Konsultit Oy.

Fraser, C., Kennedy, A., Reid, L., & Mckinney, S. (2007). Teachers' continuing professional development: Contested concepts, understandings and models. *Journal of in-service education, 33*(2), 153-169.

Ge, X., Lubin, I. A., & Zhang, K. (2010). An investigation of faculty's perceptions and experiences when transitioning to a new learning management system. *Knowledge Management & E-Learning: An International Journal (KM&EL), 2*(4), 433-447. https://doi.org/10.34105/10.34105/j.kmel.2010.02.031

Kaptelinin, V., & Nardi, B. (2012). Activity Theory in HCI: Fundamentals and Reflections. *Synthesis Lectures Human-Centered Informatics, 5*(1). https://doi.org/10.1007/978-3-031-02196-1

Lizzio, A., & Wilson, K. (2013). First-year students' appraisal of assessment tasks: implications for efficacy, engagement and performance. *Assessment & Evaluation in Higher Education, 38*(4), 389-406.

Ryan, T. G., Toye, M., Charron, K., & Park, G. (2012). Learning management system migration: An analysis of stakeholder perspectives. *The International Review of Research in Open and Distributed Learning, 13*(1), 220-237. https://doi.org/10.19173/irrodl.v13i1.1126

Sadler, I., & Reimann, N. (2018). Variation in the development of teachers' understandings of assessment and their assessment practices in higher education. *Higher Education Research & Development, 37*(1), 131-144. https://doi.org/10.1080/07294360.2017.1344199

Sharples, M., Taylor, J., & Vavoula, G. (2010). A Theory of Learning for the Mobile Age. In R. Andrews & C. Haythornthwaite (Eds.), *The Handbook of E-learning Research* (pp. 221–247). London: Sage.

Smart, K. A., & Meyer, K. A. (2005). Changing course management systems: Lessons learned. *Educause Quarterly, 28*(2), 68-70.