

Towards a global educational technology environment - technology integration at RMIT University

Garry Allan
RMIT University

RMIT is at the point of commencement of integrating its core Learning Management System (Blackboard) to a singular global presence. This step will transition the University from its historical base of operating two independent LMS systems, to a unified global systems presence. Additional to this, the university has integrated a suite of technologies for global deployment that enrich and personalise the online learning environment for local delivery, but within a global framework. In parallel, emphasis has been placed on transitioning assessment practice to fully online grading and the availability of professional development delivered in a fully online format. Presented here are the core aspects of the design and implementation of the integrated RMIT educational technology suite and its immediate future directions.

Keywords: online learning, technology integration, strategic planning, mobile technologies

Introduction

The RMIT strategic plan places direct emphasis on developing a global presence, and over the strategic planning cycle this has been expressed in the form of an increased presence in Europe and Asia. Commensurate with this direction, the university's educational technology suite has evolved to meet the challenges of global delivery. This paper reflects on a long history of systems development and integration at RMIT, and as such it represents the trajectory of a large urban University, that has positioned itself as a global online presence.

The institution initiated enterprise web-based learning systems in 1998 (McNaught, 1999), which included the Blackboard (then Course Info) Learning Management System (LMS) as part of a consolidated suite of technologies that formed what was termed the Distributed Learning System. Since that time, RMIT's enterprise systems have evolved to the point where it is now at the cusp of establishing a global LMS environment, with a suite of integrated technologies, designed to manage the scale of the of the University's presence as a global education provider. At the present time RMIT has 82,000 students, of which 17,600 are educated outside of Australia. A principle focus of the offshore presence is the RMIT Vietnam campus which currently has approximately 7000 students. In recent years the conceptual development of RMIT's enterprise learning and teaching systems has been focused on the formation of a cohesive online experience for students and staff, in a manner that can be sustained globally and utilised in contextually relevant ways for local learning and teaching requirements. This has been built on a *Minimum Online Presence* initiative, that was defined in 2006 and created an online presence for all RMIT courses, with the expectation of engagement in online delivery by all learning and teaching staff.

Discussion

Supporting strategy with technology planning and lifecycle management

RMIT has sustained a 'roadmap' planning process to systematically plan, execute and communicate the evolution of its technology suite. The university's educational technology roadmap, which is depicted visually (Marshall, 2013, p. 553), is developed and promulgated from within the university technology governance processes. Such a strategically prioritised management of the lifecycles of various educational technologies is necessitated by the increased complexity and expense associated with the infrastructure and services that form a complete and integrated educational technology suite. RMIT includes all enterprise learning technologies in an annual mapping (Marshall, 2013, p. 553), that is projected across the timeframe of the academic planning cycle, and utilises a lifecycle quadrant (Marshall, 2013, p. 553) for defining the current status and lifecycle management of any enterprise-supported learning and teaching technology. As depicted in the lifecycle quadrant (Marshall, 2013, p. 553) prior to consideration as a supported technology, technologies are placed within an 'Evaluation and Innovation' phase, where all aspects of the technology relative to its implementation are assessed. If, within the educational technology governance process, it is deemed that the technology should be positioned for more complete evaluation and possible inclusion in the university educational technology suite, it is transitioned to the first lifecycle quadrant 'Trial/Pilot/Innovation' (Marshall, 2013, p. 553) where it is

supported for student-facing activities. Technologies in this quadrant are often specialist technologies that directly support discipline requirements or are relevant to smaller localised cohorts. The capacity to actively support innovative technologies is central to the university's mission, but the sustainability each application and service must be continuously assessed. Technologies of broad strategic relevance, upon satisfactory completion of trial assessment, move to the '*Production Ongoing*' lifecycle quadrant (Marshall, 2013, p. 553). Where they are openly available within the university's global operations, and are furnished with the commensurate support services. In recent years, the university has defined a small number of technologies in the *Production Ongoing* phase to be available to the university community only on a limited strategic basis. The increased availability of web-serviced learning systems, and learning systems provided by third parties that integrate with the LMS (Hallam, 2012), will likely result in an increased number of technologies that are technically available globally in the *Production Ongoing* quadrant, but in practice, are organisationally limited in availability. This will be due to many potential factors, but likely to be inclusive of one or more of: licence regime, regional applicability, and positioning in local curriculum design. As a technology diminishes in organisational relevance, it is transitioned to the *Review for removal from Production* lifecycle quadrant. Here the full implications of removing the technology from the university educational technology suite is assessed and, if the technology and associated services are to be terminated, it is moved to the final '*Remove from Production*' quadrant. The open and systematic communication of this lifecycle management of enterprise technologies is an important communication tool in fostering understanding of management processes and the adoption of the supported educational technology suite, as well as providing a stable process for the evolution of the technology landscape and associated services.

Foundational technology

There is increased emphasis in the literature on the importance of strategically designing learning systems in a manner that is cognisant of both the academic requirements of students as well as their social practices and preferences. On this basis RMIT has globally implemented Google Apps for Education as the foundational collaborative technology for all students and staff. The social salience of the Google technologies and the ongoing potential for innovation afforded by the Google platform, is consistent with the contemporary expectations of students. A consequence of this approach is that the foundational services are subject to continuous refinement and are augmented by the release of new enterprise environments that both challenge and extend existing teaching models and the established LMS-centric university educational technology architecture. This is exemplified by the recent launch of Google + at RMIT, which introduces complexities resulting from a globally available, externally managed social network, within the core educational technology suite. A key consequence of utilising the no-fee Google suite as foundational university learning services is that, dependent on the usage model, it can directly couple the base student learning experience to the priorities and business trajectory of a third party.

The Learning Management System platform used by RMIT is Blackboard 9.1, and as of 2014, the formerly separate Melbourne and Vietnam Blackboard instances have been brought together onto the one hosted platform. A focus has been placed on using the Building Block architecture to extend and enrich functionality within the cohesion of the overall consistent global LMS user experience. From this initiative the university has positioned Blackboard Collaborate for virtual classroom services, Echo 360 for lecture and desktop capture and PebblePad ePortfolio is available in strategically valid contexts (Botterill, 2008). In addition to standardising the online presence, the *Minimum Online Presence* also introduced a Learning Repository on the Equella platform and a standardised AV environment inclusive of interactive whiteboards and mobile Collaboration on Wheels platforms (Evans, 2013) in priority spaces.

Universities are moving towards systems and support services that normalise mobile technologies as part of the student and staff presence. RMIT has placed significant emphasis on the transformation of its physical on-campus built form to accommodate the affordances of mobile and digital technologies. This is exemplified by the recently established Swanston Academic Building (Hall-van den Elsen, 2012), that is a representative model of the learning space design and student personal technology environment to be scaled across the University campuses. In planning the on-campus support of student personal technologies, the technology design was modelled on students bringing three devices on campus: mobile phone, tablet and laptop. To accommodate the flexibility that is a cultural fit to the expectations of the university community, a Bring-your-own-device (BYOD) platform was deployed as the cornerstone of the mobile support services. The university-wide service, termed *My Desktop*, delivers a student-specific managed Windows 7 environment onto Windows, Android, and iOS mobile devices. It thus decouples device type dependency from the on-campus student experience. Specialist applications are being systematically built into the *My Desktop* environment, so that the full range of applications that were formerly delivered in dedicated computer spaces can be provided via mobile platforms.

Implementation of the *My Desktop* initiative is supported by models of use of the technology that reinforces the transition to teaching space use that is built upon individual device ownership and the integration of discipline-specific software within the curriculum design.

Complementing the service provision to mobile devices, RMIT has also focused on the use of mobile technologies to support active learning within a lecture-type environment. In particular, the capacity for Personal Response Systems (PRS) to facilitate motivation and engagement within large student groups (Gauci, 2009) is of strategic priority to a mass education institution such as RMIT. From 2009 the PRS system was also has been serviced by the mobile device-specific ResponseWare technology. Responseware is provided as a scalable global service to the University, and teaching models built on PRS practices are able to be deployed at local and offshore sites.

The large-scale provision of quality assessment feedback experience to students remains a challenge, and the development of web-service assessment tools provides opportunities for recasting what has hitherto been a paper-based environment in university settings. RMIT is now positioned for its grading to be undertaken in a fully online manner at all global locations. To facilitate adoption the transition was approached as a two step process. Initially an e-Submission initiative was conducted which specified the process for valid assessment submission within the University's enterprise systems. Following systemic uptake of the e-Submission process, a global online grading capability was established in 2013. The Turnitin GradeMark technology was deployed as the platform through which online assessments could be both submitted and graded. It operates functionally within Blackboard, and therefore provides the university with an end-to-end assessment process that places grades from online grading into Blackboard GradeCentre, the designated results aggregation site for all courses. The GradeMark technology, though allowing for assessment extraction to PDF, is predicated on the act of assessment being undertaken exclusively in a Web environment (an iPad App is also available). To facilitate the adoption of what is a major new workflow process for academic staff, the online grading initiative was promoted as a productivity tool both for staff and their students. Additionally, it was highlighted that the change to online grading provided significant additional benefits in terms of the form and extent of assessment feedback. In particular, it introduced a fully scalable model of audio feedback on assessment submissions. Promotion of this approach to student feedback was predicated on the research identifying that audio feedback is positively received by the majority of students and the time savings for staff are best realised when a significant amount of feedback is given in audio form as a substitute for textual feedback (Cann, 2014). The capability of assessing any digital file allows a more complete coupling between image assessment artifact acquisition from mobile devices, and the straightforward presentation of digital artifacts as part of an assessment piece. Hence art and image-related disciplines now have the scope to transition to an online grading process in a manner that retains the relevancy of their assessment methodologies. The uptake of online grading has been such that in the first half of 2014, twenty-five percent of all Turnitin assessments are now positioned for online grading.

The first step in developing globally distributed online grading tools has been the introduction of a standard set of Rubric and QuickMarks (the GradeMark online comment tool) which address the acquisition of academic and communication skills. The rubrics, which are structured on the RMIT marking scheme, can be readily modified and extended by staff, with the knowledge that they are working with a rubric construct that is consistent with the university's assessment expectations.

Professional development

As the overall RMIT learning technology environment has matured, an on-going program of professional development for academic and teaching staff has continued to evolve. At RMIT the bulk of professional development for staff is provided within the three Colleges. However, to address global requirements for informed support for the use of learning technologies an array of scalable, centrally-delivered professional development services have been implemented. The starting point for staff is a core resource site termed '*Teaching with Technology*' (<http://www.rmit.edu.au/teaching/technology>) which focuses on the globally available educational technologies and associated pedagogical practices. The technology-related professional development can be accessed via basic functional skills training (delivered face-to-face or online) as well as a pedagogically-focused education program that extends to address the transformative change manifest in the tertiary sector as a consequence of developing digital technologies. This latter educational program, termed *Online Tertiary Teaching Practice*, operates fully online and was developed by Open Universities Australia (OUA), who also deliver the program. The *Online Tertiary Teaching Practice* program is built into the overall university professional development framework, is mandatory for new academic staff and available to vocational staff. As such it forms a cornerstone of elevating staff capability in a manner commensurate with the advances in available technologies. Key parameters in the structure of the program are that it runs over a six-

week timeframe, is assessed, and is a weighted component of a formal teaching certification. The online content is enriched with videos and supported by weekly webinars using the virtual classroom technology of Blackboard Collaborate. Assessment output is generated each week and a fully online peer review assessment is undertaken as well as a final summative assessment. The weekly modular format is used, so that a structured ongoing learning progression occurs, yet staff have the option of determining where in a given week they prioritise their professional development activities.

Conclusions and future directions

The complexities of progressing a large scale multi-sector university towards a well-designed and cohesive global online presence is necessarily a process that requires significant coordination across many organisational units within the institution. This paper has represented key milestones over a number of years that define the university's current capacity to provide an integrated educational technology suite. An essential component of the work has been the focus on maintaining a structured approach to technology roadmap planning to facilitate meaningful integration of learning systems, and a sustainable approach to lifecycle management. A further key aspect of the learning systems design has been a focus on providing as much of a contemporary online experience for students and staff as possible. This has been balanced within the constraints of a learning systems environment that is increasingly reliant on standard commercially serviced systems as a means of addressing the scale and complexity requirements of a global institution. The progression and outcomes delineated above have been necessarily shaped by strategies subservient to the overall university academic planning cycle, and as the university is about to commence a new academic planning cycle, it is anticipated that an increased focus will be placed on enabling third party systems to integrate, in a bounded manner, within the overall university educational technology environment, to support the increasingly complex academic expectations generated from multiple global sites.

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Contact author: Garry Allan, garry.allan@rmit.edu.au

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