

The iPad cohort of 2013: A multiple stakeholder view of the planning, design and implementation of a first year curriculum integrating tablets

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Abstract

In a quest to develop strategies to improve teaching and learning outcomes and student engagement across the business school, a pilot program was devised that involved the provision of tablet computers (iPads) to the 2013 cohort of business students at small campus within a multi-campus university. The pilot aims to examine the way staff and students utilise tablet technology in the learning process and how this impacts on student (and staff) learning and engagement. This nuts and bolts session provides an opportunity to present the results from the first year of the project, including outcomes, such as student and staff satisfaction, and the process experiences of multiple stakeholders. Session participants will benefit from an explanation of the detailed project evaluation regime and will participate in a discussion exploring the challenges involved in planning and designing curricula involving technology.

Introduction

Tablet technology is appealing in any educational context because of the potential for learning anywhere and anytime, formal and informal uses and multimodal interaction, facilitated by visual, sound and touch screen attributes, which caters to multiple learning styles (Klopfer, Squire & Jenkins, 2002). Teachers are looking to technology to assist in improving student engagement, time on task and ways to enhance their current practices which more often than not incorporate collaborating in teams and accessing industry information and experts. Students are looking for more efficient and cost effective ways to take notes, create and access text books and personalised resources as well as communicate with peers and teachers. Despite the potential for tablets, like earlier technology, to disrupt the classroom (Taylor et al., 2006), the key features of portability, social interactivity, context sensitivity, connectivity and individuality (Klopfer et al., 2002; Melhuish & Falloon, 2010), seem to match the needs of teachers and students and outweigh the downside.

Tablets are already used by members of our student and staff population. This is largely ad hoc, but also formalised in small pockets of innovation, utilising student and staff owned tablets and the campus pools of iPads available to be booked by teachers on a casual or regular basis. Knowing that many schools use devices including tablets for daily learning activities, it also seemed likely that some students would feel let down on their transition to university. The question for us was how could we dream bigger and deploy tablet technology on a larger scale to dig deeper into many of the unanswered questions with regard to the integration of tablets in the tertiary teaching and learning environment as part of a wider flexible learning strategy.

While there have been a number of tablet studies conducted in tertiary institutions in Australia and abroad, this study adds to the body of knowledge with its whole of program and multiple stakeholder approach, including the experiences of first year students, program directors, blended

learning advisors (BLAs), and course convenors, the larger size of the cohort being tracked and the longitudinal nature of the study across six study periods spanning two years.¹

Tablet project overview

Like any technological change, we had to contend with criticisms such as the adoption of technology for technology's sake. We were also aware of prior tablet adoption studies where students were not convinced that tablets made a difference to their learning (Kinash et al., 2011). We wanted to know more, particularly in terms of stakeholders other than students and how, for example, the use of technology by staff may impact on student use given that the Pepperdine trial highlighted that tablets are without a purpose until given one by the teacher (iPad study results, 2011). The risks lay in designing the project in such a way that the maximum amount of learning could be achieved in terms of the hardware, software, roles of and value to multiple stakeholders as well as the process of planning, designing and integrating the tablets into classrooms. It was decided to follow previous studies and control for technology by adopting a single device for the period of the project.

The detailed process of testing tablet device suitability was the responsibility of IT staff in consultation with the teaching and learning staff, BLAs and external industry experts. The analysis undertaken was consistent with prior studies in schools and tertiary institutions considering physical aspects such as weight, size, and battery life, along with the available apps, e-books, training and more. The results supported the use of iPads as the chosen tablet. The next step was to consider where and how to deploy the iPads.

A benefit of our multi-campus university environment is being able to isolate changes to a single site. Our campus has a much smaller cohort than other campuses and is well suited as a testing ground for innovation given the extensive data already collected at this campus during previous pilot projects. With the iPad being held out as an invaluable business tool, the business school programs, the Bachelor of Commerce (BCom) and Bachelor of Business (BBus), were selected for the tablet pilot study. The rooms these programs use for teaching were then upgraded to include improved Wi-Fi and the installation of AirPlay to allow wireless streaming of both teacher and student content to the projector screen.

Alongside the IT testing, there was a significant investment of time in planning and design, including both individual and group contributions to course templates outlining the goals, activities and apps likely to be suitable for each course, consultations with book stores and demonstrations of e-resources by publishers. Course convenors of 20 courses in the first year across the two programs were provided with iPads and supported by frequent hands on workshops with BLAs and peers and additional training conducted by Apple consultants. One-on-one support was also available.

At the commencement of trimester 1, 2013, 108 new students in the BBus and BCom programs were provided with an iPad 2 and workshops to support the set up and use of iPads. No apps were pre-installed on the iPads. Students and staff were provided with suggestions for commonly used

¹ For example, Trinity College, University of Melbourne tracked a cohort of size 44 students in 9 courses and later 14 courses (Jennings et al., 2011). Reed College, USA reported on two separate cohorts of 40 and 38 respectively in a single course, followed by redeployment of the iPads to students across 5 course groups with diverse content (Marmarelli & Ringle, 2011). While Trinity College included other stakeholders including student counsellors, most other studies are confined to reports from the participating students and their course convenors and lack detail on the process of integration.

apps for administration tasks, taking notes, brainstorming and disseminating ideas as well as specialised apps for courses including scientific calculators and accounting and law apps. Suggestions included free and paid apps, and students and staff were provided with opportunities to earn iTunes vouchers during the trial to support the purchase of paid apps. Staff were given guidance, but not required to undertake any particular activities in and outside the classroom nor restricted by choice of apps. Students were able but not required to use their iPads for any activity including assessment and the use of e-books. The focus was on how and what was produced and achieved so we could explore the type of apps, e-books and other resources students and staff were using, if any, how they were being used to achieve outcomes and to learn about the successes and challenges of their approaches to learning and teaching and levels of engagement.

Evaluation regime

The tablet project was designed as an action learning project to ascertain how the academic staff and students in the business school responded to the tablet devices to inform future strategies around the adoption of emerging technology.² Thus, the evaluation regime investigates key outcomes and processes related to the impact of the tablets.

RQ1: How does the introduction of tablet technology impact on student satisfaction?

RQ2: What is the impact of the introduction of tablet technology on student engagement and retention?

RQ3: What is the impact of the introduction of tablet technology on student achievement of learning outcomes?

RQ4: How are issues of student readiness for, confidence with and development of skills to use and benefit from the technology best managed?

RQ5: How are issues of teaching staff members' readiness for, confidence with and development of skills to use and create curriculum with the technology best managed?

RQ6: Based upon the outcomes of RQs 1-5, is there a sustainable basis upon which to operationalise tablet technology in the curriculum? What elements are necessary as identified in the investigations into these RQs?

Data was collected from instruments including a student pre-commencement survey, weekly 'time on task' surveys, class attendance records, a post semester student survey, student focus groups, student evaluations of courses, student enrolment and retention data, student grades, pass rates and other results statistics, learning management usage statistics, staff reflective journals, assurance of learning reports, and post trimester staff focus groups and interviews. Comparison with non-treatment populations is a limitation for the project, in that contemporaneous comparison with other campus offerings would be confounded with too many variations between campuses in program format and delivery. The only option for comparing to a control cohort is to compare data from previous years' business process documents derived from the same campus prior to 2013.

Results to date in brief⁴

Overall, the main benefits identified were 1) enabling greater engagement in tutorials, 2) providing a convenient and ready tool for checking timetables, emails, e-books, lecture material, signing in on

² Students were not aware of the provision of the iPad until they arrived at orientation. Research ethics clearance and executive approval was obtained for the project and all instruments in accordance with university policy.

⁴ Extensive data was also collected on self-management and resourcefulness, learning and adaptability and a range of other issues including prior technology usage at home, work and study and their current owned devices.

attendance forms, checking blackboard, information gathering as well as personal use, 3) building community as a tool for students for communicating and social media, 4) a tool for collegial work between staff and students, 5) the blurring of lines between relaxation (e.g. gaming, listening to music) and study, demonstrating a way to blend study and life; and 6) environmental sustainability.

RQ1: Student satisfaction stayed in the range of average to excellent at the beginning and end of year. Students are generally satisfied with the quality of the courses and are equally engaged in courses whether they integrate the iPad technology or not. Students are using the iPads for a variety of purposes but would have liked a greater level of structured use of the iPads across the first year curriculum.

RQ2: There was no significant impact on retention. Like RQ1, although quantitative measures showed comparable results to previous years with no iPads, qualitative data suggests that more frequent engagement and increased time on task resulted.

RQ3: There was no significant change in the distribution of grades across a diverse range of courses. With changing entry scores and other demographics, it is difficult to isolate the impact of a technological change on student achievement of learning outcomes and to know whether the outcomes achieved were better than they might have been without the introduction of iPads.

RQ4: With minimal encouragement, students of a range of ages and backgrounds are willing and able to use iPads as part of the learning experience. Student use of iPads is highly correlated with staff use of iPads.

RQ5: Some staff did see embedding new technology as integral to their academic work, however, a range of issues were raised from staff in regard to the support needed to incorporate iPad technology into teaching and learning and the investment of time required (both in terms of awareness/skills/professional development and the curriculum design) to do this.

RQ6: The three biggest impediments to smooth integration of new technology into teaching and learning are 1) the willingness, upskilling and support of staff; 2) redesign of course materials; and 3) the supply of iPads. This trial has highlighted the staff uptake of the initiative as the most important element of the project, in particular, the critical role of some staff as change leaders who stood out across the project in the integration process. Many staff do not regard staying up to date with technology changes and adapting courses to new technology as part of their professional, scholarly responsibility without further incentives being provided. Rather, the perception appears to be that technology change is seen as a corporate add-on that needs significant support to incorporate.

To maximise the opportunities available with tablet technology, more thought needs to be given to technological pedagogical content knowledge (TPACK) (Mishra & Koehler, 2006) before revisiting the redesign of course materials. Bond University found that mobile learning is important but not independent from curriculum design and student engagement (Kinash et al., 2011). Pepperdine concluded that in some cases apps needed to be chosen to fit with the teaching style used or in others that the teacher had to acknowledge a change in teaching style was required (iPad study results, 2011). The key is to break away from teachers replicating old pedagogies on new devices to exploit tablets to their full potential (Cochrane, Narayan & Oldfield, 2013).

The way in which tablets are supplied has a major impact on financial decision making and activities in the classroom. Although tablets are popular, adoption among students has not been sufficient for universities to run programs or establish specialised learning environments for student-owned devices (Kolowich, 2010). Even at discounted prices, the collective cost of a tablet, phone and a laptop restricts student adoption of technology (Marmarelli & Ringle, 2011). While Trinity College, University of Adelaide and UWS have recently made widespread rollouts of free

iPads, others have decided it is premature to adopt tablet technology due to the need to pass the cost on to students. Some studies involved co-payments, for example, Reed College discounted iPads to half price for students who met reporting requirements in their pilot program, an offer that was taken up by all students (Marmarelli & Ringle, 2011). Whether student payment or cost sharing is implemented moving forward, course convenors would need to be thoroughly prepared and engaged with the technology as students would have increased expectations about the use of iPads if they had to cover the cost of the technology in whole or in part.

Starter questions for discussion

- 1) Although students are reasonably tech-savvy, what practical steps that can be taken to assist first year students in moving their view of themselves as receivers of information to creators and curators of information to maximise the benefits available from digital devices?
- 2) How do we improve staff capacity to adopt technology while enhancing pedagogy? Given the competing demands on time between research and teaching (and that research pursuits often provide financial assistance), how can we meaningfully incentivise teachers to take risks in the classroom both with and without technology?
- 3) Are there similarities or differences between your experiences and ours that can be shared to enhance the group's understanding of integrating technology, managing change and gathering evidence on the process and outcomes of innovation?

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