

mLearn 2012: Lessons Through Exploration



Contents

mLearn 2012 Report mLearn 2012 : Lessons Through Exploration

Build

- Device Trials
- CSU Library
- Phase 1: Student Trials
 - ITC594 – E-commerce Technologies
 - EML302 Investigation: Literacy
 - MRS222 Nuclear Medicine Science 1
- Phase 2: Staff & Student Trials
 - Apps in Nursing: Simulation & Resources
 - iPads for Accessibility
 - Demonstrating mathematics using an iPad
 - iPads for Teaching
 - iPads for Writing
 - Mobile Devices for Digital Media
- Subject Outlines
- Learning Resources

Measure

- Summary of Findings
- Pre-trial Survey
- Exit Survey
- Pre-Survey Data

Learn

- Initial Findings
- The New Normal
- Devices are designed to be personal
- Device Limitations
- Device Advantages
- Creating Spaces
- The Learning Curve
- Adding Complexity
- Future Library Opportunities
- Technology Preferences
- Reward for Mobility
- The iPads
- Mobile Devices
- Provisioning Devices
- Support
- Vendor Alternatives
- Next Step
- Issues

Conclusion

References

The mLearn Team

mLearn 2012 Report

MLEARN 2012 : LESSONS THROUGH EXPLORATION

It is now more than a year into the mLearn Project and we would like to share what we have learnt and discovered through the work carried out so far. This report has been divided into a number of different sections, aimed at providing direct access to relevant information. The report will cover case studies of mobile technology pilots over two sessions in 2012 in a learning and teaching context. It will also discuss the results of the surveys undertaken as part of the Project, to highlight the successes and failures of these pilots. The report will also outline the work done, and the results so far, in the development of a mobile solution for CSU Subject Outlines and learning resources.

Defining Mobile

The word 'mobile' is now an umbrella term used to define the hardware, mobility of the user and the supporting technologies and interfaces. **Mobile has become a broader cultural label encompassing the technologies, ideas, customs, and behaviors that accompany these devices.** This report uses the cultural form throughout, except where referring to devices or technology explicitly.

Approach & Process

The Project has attempted to follow an agile methodology guided by milestones and sessional deadlines. The Project philosophy has been shaped by the technology industry, which has a proven record in innovation and adaptability to a rapidly changing environment.

The philosophy of the Project aligns in many ways with the model outlined in the Lean Startup (Ries, 2011), and follows the core principle of **Build-Measure-Learn**. The Project is Build-oriented with a focus on outcomes and actions. It is planned that these outcomes will be used to Measure results, which in turn will allow the university as a whole, to Learn from the experience.

The Project follows an **agile development process** (Beck, et al., 2001) with specific focus on user satisfaction, rapid delivery, tangible use, sustainable development, good design and simplicity. Regular adaptation to changing circumstances is crucial to the work of the Project.

The Project is **multi-threaded** with a number of concurrent areas of work. Rather than a number of small separate projects, these are all grouped under the one banner making optimum use of the cross over in knowledge and skills. The focus is on **encouraging small-scale innovation** rather than large-scale outcomes. Innovation is seen as an incubator for ideas and a proving ground for new technology. By conducting real world pilots on a small scale, it is hoped that they will be easier to support, and will provide lessons as to what works and what does not. The Project has been equipped to provide academic staff and students with access to mobile technology, the required support mechanisms and technically capable staff, so that it is driven by innovative ideas that can be put into action.

Project **involvement runs across disciplines** and includes representations from most divisions and all faculties. The aim is for innovation not to be siloed or restricted, and to allow it to complement strategic goals throughout the university. Developers will work directly with users and stakeholders, creating strong bonds between the needs of the users and the work being undertaken.

Build.



DEVICE TRIALS

Large-scale adoption of mobile technology is still very new and has no precedent, particularly in the education sector, so the aim of the project has been to **gain knowledge, understanding and real world experience**. This has been achieved by conducting real device trials with CSU students, staff and within current infrastructure. The pilot programs have been structured to be small and have a limited scope, so that multiple programs can be run at the same time. The small size makes it much easier to provide focused support to staff and students, affording the ability to change and adapt to resolve issues on the fly. The aim of this approach is to make it easier to manage risks and reduce failure rates. Shorter timelines (based around sessional dates) dictate that less time is spent planning and more time doing, and with all the pilots there is a sense of exploration of the possibilities rather than limitations because of the risks involved.

The initial student trials of Phase One were set up through consultation with the Learning & Teaching sub-deans who allocated specific subjects and academics. The academics involved and school Educational Designers then set up the parameters for the project, in consultation with the Project's core team. The trials for Phase Two were set up through an Expression of Interest, where academics suggested the trials to conduct in their teaching and learning. These were then screened to align with the objectives of the Project and a number of diverse projects went ahead. Throughout the trials, the core project team provided technical support and equipment, and was heavily involved in the initial setup and training. A Project Interact site was developed allowing access to ongoing support, contact with the team, knowledge base materials, how to guides and video tutorials.

Surveys were run at the start and end of each session to measure results. The initial survey was to gauge participant access to technology and familiarity with mobile technology. The second survey conducted at the conclusion of the trials asked participants about:

- » experiences with the iPad
- » experiences with support received in the Project
- » activities performed with the device
- » time spent on the device
- » perceived effect it had on them and their study
- » confidence in using the technology
- » attitudes towards mobile
- » technology preferences
- » voicing their views and opinions openly

Focus groups and interviews with specific staff and students are planned for 2013.

CSU LIBRARY

Twelve iPads and seven Sony Reader devices were purchased for the Library to explore opportunities for lending to students. Initial plans for device lending included supporting students on work placements, lending to remote and distance education students, pre-loading devices with learning resources, eBooks, journal articles etc., and purchasing apps or other mobile friendly resources.

Deliverables

- » iPad lending made available to students on work placements
- » Service Level Agreement between DLS and DLTS signed
- » Lending terms and conditions developed
- » Mobile device status created in Aleph (Library Management System)
- » Lending and iPad resetting procedures developed
- » Training for Access Services staff provided
- » Post lending survey produced
- » Faculty Liaison Librarians provided mobile device support and training for academics

Related resources

Mobile interface for Primo Search launched.

http://primo.unilinc.edu.au/primo_library/libweb/action/search.do?&vid=CSUi

My Mobile information page launched

<http://www.csu.edu.au/division/library/how-to/csu-library-mobile>

Issues

A number of issues were identified during the pilot that have prevented some of the initial objectives of the Project from being implemented. It was not possible to preload devices with content, or make the devices available to remote students. Unanticipated issues with the Sony Readers remain unresolved, and these have not yet been made available for lending.

Sony Readers

There are obstacles to using the Sony Readers on the CSU networks. CSUConnect's encryption method (EAP) is not supported by the Sony Reader, and a personal WiFi point must be used with security of type Open, WEP or WPA. Similarly, transferring resources to the Reader requires custom software (Reader for PC) that is not available on CSU computers.

Sony Readers can be lent to students, but it is not possible to pre-load them or support them while on campus. Alternatively, some Library PCs could be loaded with Reader for PC, for preloading and demonstration purposes. Competing operational priorities have prevented either of these solutions from being explored further.

Postage for distance education students

Lithium batteries used in mobile devices are considered to be dangerous goods, and cannot be transported by air. Sending iPads by road transport would lengthen the postage time to many students, and make processing the postage difficult. It was decided for the pilot, that iPads would only be lent to students able to pick up and return the devices to the Library loans desk. This required giving them an item status similar to Reserve items, and meant they could not be requested or booked by students through Primo Search.

Apple licensing limitations

Some of the licensing terms and conditions for Apple devices and software caused concern for lending iPads to students. The Apple iTunes & App Store terms and conditions state a device can be associated with only one Apple ID account at any given time, and you may switch a device to a different account only once every 90 days.

When contacted regarding this, Apple advised that iPads were designed for personal use, and that CSU had to interpret the terms and conditions. Other university libraries were also contacted; however they had not been aware of the conditions and immediately began their own review of their iPad lending schemes.

PHASE 1: STUDENT TRIALS

The first set of trials conducted in the 201230 session were focussed on the students. iPads were deployed to subjects across the faculties, and represented quite different discipline areas and student cohorts. The subjects involved were ITC594, EML302 and MRS222.

ITC594 – E-COMMERCE TECHNOLOGIES

Faculty of Business

Subject Coordinator: Ken Eustace

Additional Staff: Study Centre Staff

Class Size: 20+ students across multiple cohorts – (Internal, Distance, Melbourne & Sydney Study Centres)

Equipment: iPad WiFi + 3G

Aims:

- » To use the devices to inform and enhance a research project into mobile technology and e-commerce
- » To provide students with the tools to explore mobile technology uses
- » To allow students to create and develop content for assessment directly on the device
- » To assess the processes required for delivery and return of devices to non-internal students

Academic Observations

Mobile Learning has many value-added advantages, e.g., choice of device desktop/smart phone/tablet and location to make a video presentation. Although all students are not equipped with their own iPads or Android devices, most will switch to smart devices that have enhanced functionality and connections, as their phone upgrades occur. The trial was a good call to action and tested the CSU systems, backend and others in the supply chain. Many components of the CSU experience are not mobile friendly, such as in the use of Interact tools, especially with Online Meeting, or Wimba, with its slow Java applet controls and lack of Java support on iPhone or iPad. It is important to note that this does not improve on an Android device.

mLearning can still be viewed as eLearning in nature, but with interface constraints, such as screen size and many tools requiring a 'wired connection' over wireless connections for speed and consistency.

The students were happy to get an iPad, but some did ask for an Android device. This reflected the tech savvy nature of those enrolled in an IT masters course.

To enhance the quality of mobile learning at CSU, academics could challenge students to undertake an assessment task with mobile technology. This could examine the unique functionality that only a mobile learning experience can deliver; otherwise the dependency on the screen size and familiarity of the desktop will remain. The inclusion of a broader spectrum of devices would assist in understanding the student perspective, in particular the choices they face between devices and platforms.

The trial was a great initiative and a worthwhile experience for all students and the participating staff at the Study Centres in Sydney and Melbourne.

EML302 INVESTIGATION: LITERACY

Faculty of Education

Subject Coordinator: Jae Major

Class Size: One tutorial group with 1:1 iPads, 22 with iPads from the project + 4 students with their own.

Equipment: iPad WiFi

Aims:

- » Students to use the capabilities of the device to create multimodal text
- » Students to participate in weekly tutorial sessions with the iPad
- » Students to develop writing tasks using the iPad
- » Students to post writing tasks to a class blog
- » Assess the efficacy of the iPad

Academic Observations

Mobile learning is quite challenging to incorporate in a pedagogically sound way. It takes careful thinking and planning to design activities utilising mobile devices in meaningful ways to enhance student learning. Quite a lot of assistance to find and explore suitable apps to achieve the outcome was needed. There was a gap in the required skills or knowledge required to use the iPad confidently and help students when they experienced difficulties. Mobile devices for learning purposes are not well understood, and there needs to be much more work done in considering how they can best be used to enhance learning and teaching.

Not everything is necessarily better with new technology; some tasks are more easily and quickly done using 'old' technology. As a result of working in an app environment for the main tasks and purpose, everything took much longer, and could have been achieved more efficiently with paper and pen or on a Netbook.

The main benefits of the mobile device were easy connection to the Internet in class, so web quests and quick research could be done, and the ability to share material and work.

Not all students were confident in using the iPad, and it took quite a long time to get past the need to focus on how to use the technology and the apps, so that students could then concentrate on the skills and concepts related to subject content. Surprisingly, not all students were wildly enthusiastic about using the iPad and some preferred other technologies, including paper and pen! Using a mobile device to connect with friends via Facebook is not the same as using it for learning purposes, and few students are skilled in recognising its potential or understanding how to use their devices for educational purposes.

The mobile device did become a distraction at times, which I thought might happen.

The students suggested that they would like to have textbooks available to read on the iPad. More time to explore and plan how to embed the mobile device into the teaching program would have been more helpful, and more assistance to identify apps and strategies for use. Several orientation sessions for students would be required, so that they had some basic skills with the apps and the device generally, prior to using it in a subject. It would be useful if some research could be identified investigating best practice, or at least things that have worked for others in the use of mobile devices for teaching and learning.

I think we make too many assumptions about the skills that students have with mobile devices and technologies. Many use their devices for fairly low-level tasks and in basic ways, and are not

as sophisticated as we suppose. A lot more thought is needed about how these devices can best be used before large amounts of money are invested. In my opinion as well, the wider university infrastructure needs some serious upgrading and improvement in order to successfully support the use of mobile devices. While we are still working with clumsy platforms such as Interact and Pebblepad (not accessible on iPad), then there will be problems with effectively embedding mobile devices into teaching and learning programs. Alignment and compatibility of the different platforms and elements of IT is absolutely critical to success.

MRS222 NUCLEAR MEDICINE SCIENCE 1

Faculty of Science

Subject Coordinator: Geoff Currie

Additional Staff: A casual member is co-teaching

Class Ratio: 1:1 access for all 15 students

Equipment: iPad WiFi + 3G

Aims:

- » introduce interactive elements to the classroom using responseware (Clicker app)
- » increase the flexibility of students through improved access
- » provide an information access point and communication tool for students on placement
- » use discipline specific applications as a learning resource
- » develop learning resources for mobile devices
- » use multimedia capabilities to record learning practice in a video diary
- » leverage 3G technology to provide ubiquitous access to subject materials
- » provide support to students on placement through video chat (Skype)

This subject would form a longitudinal study, as it is a yearlong subject.

Academic Observations

The success of that program rests with careful application of the value added opportunities the iPad offers, that is, recognising the strengths of the iPad in enhancing what we currently do, while maintaining the strengths of other media. The iPad is a powerful tool, offering unique capabilities, which do not replace current valuable media like Interact.

I have used the iPad to actively engage students in the classroom, and to extend the classroom beyond the walls and timetable. An unexpected benefit has been the use of social media to enhance learning, communicate, reflect and strengthen the hidden curriculum. It should be noted that my cohort has provided international leadership in mobile learning for our discipline. This has culminated in two enormous milestones. Firstly, the invitation to write a guest editorial in our discipline's most prominent and widely circulated journal on mLearning. Secondly, recognition by international universities of what we are achieving, and requests for collaboration (Wheeling Jesuit University and the University of Alabama Birmingham).

PHASE 2: STAFF & STUDENT TRIALS

The second set of trials conducted in the 201260 session, were suggested by academics as an Expression of Interest. The project team and steering committee ensured that the trials chosen aligned with the aims of the Project. A range of devices – iPads, iPod Touch &

Google Nexus tablets were deployed across the faculties and included a range of unique and discipline-specific applications of mobile technology.

APPS IN NURSING: SIMULATION & RESOURCES

Faculty of Science

Bachelor of Nursing

Academics: Amy Vaccaro and Jessica Biles

Equipment: iPad WiFi

Aims: The iPad was deployed with the patient monitor app SimMon to enhance the simulation environment in the skills ward at Albury campus in conjunction with simulation manikins that were already in situ. To use this app, one device becomes a patient monitor, displaying patient heart rate, blood pressure and SpO2. A second device is used by the facilitator to change patient vital signs on the first device (the monitor) in order to simulate a deteriorating or improving patient. The iPads are also used to access resources such as e-MIMS for students to look up different drugs and acquire the most up to date information. This also extends to a range of other resources available through CSU Library's extensive digital catalogues.

Academic Observations

Overall, the iPads were used initially in session 201260 for two second year practical classes of approximately 18 nursing students. The app SimMon, was used for the duration of the session. This app is designed to simulate a simple patient monitor. E-Mims was also available for students to use. Students engaged with both resources, however the use of SimMon has shown to have had limited success within the subject design. This primarily came down to staffing. Simulation requires a greater capacity of staff to ensure scenarios run successfully. E-Mims has shown to be a great resource enhancing student engagement with pharmacology and medication administration. Limited student feedback was received on OES evaluations, however, anecdotal conversation suggests that students enjoyed the experience and links with contemporary technology. One excerpt from the 201260 OES evaluation stated that *"the iPads were useful"*.

The technology was at times difficult to set up, due to the capacity of nursing staff to access passwords and account details for app purchases. A handbook including passwords etc for Schools to use, or further links with information technology staff would decrease these limitations.

The iPads have been offered again for practical lab classes in the Bachelor of Nursing in 201330, and we hope to gain further feedback from students and teaching staff at that time.

IPADS FOR ACCESSIBILITY

Division of Student Services

Disability Service

Academics: Wendy Toupas

Equipment: iPad WiFi & 3G

Aims: The disability service evaluated the mobile learning environment and accessibility aspects of iPads. Students assessed how the devices cope with vision impairment, utilising on-screen enlargement and text to speech software. The assessment extends to how learning resources may be delivered in a variety of accessible formats.

Overall the use of the iPads for students with a disability returned mixed results. The blind student had issues with access to her textbooks as well as the voice over function and found that deleting apps and re-installing them was a complicated and needed to be completed on a computer. The vision impaired student found the zoom feature enhanced their learning and provided access to materials in a lightweight package that was easier to use and carry around than a laptop, and this student has gone on to purchase an iPad for their honours program. The students with learning disabilities had mixed results, with one using theirs all the time and the other not using theirs at all. The Disability Service also utilised an iPad for a Deaf student and found that using Skype for translation offered more access to translation services, as availability in regional towns is very limited. Overall, the use of mobile devices for students with a disability can enhance learning and with continual improvements in accessibility, it is expected that this will continue to improve.

Student Observations

- The voice over setting in accessibility where it speaks to you was really hard to use. It was really hard to get used to. It took a while for me to get into my textbooks online and it was a bit time consuming trying to make it read them. Maybe if the actual text aloud program could be put on an iPad it would be great. (NOTE: Software developer Textaloud have recently introduced an app although it seems there are some introductory issues.)
- I used the camera a lot as it was handy and really good. I took photos of notes and images so I could then zoom in.
- It made it easier to see small details on lecture slides as you can zoom in a lot. This was handy especially when studying anatomy lectures.
- Using the iPad was really good as it was portable and easy to transport. This helped when I wanted to go home, to class or away.
- I downloaded classical music to study with. It was easy and cheap. I'm not sure if I imagined it but I definitely felt like I learnt more and was more relaxed. It was good that I could just have it playing all the time in the background and the battery didn't go flat at all. The sound was also really good.
- I really love the iPad now. I have been studying in the library in town and it's so much easier to carry with me and to get a fast Internet wireless connection. It takes up less space. I didn't even need to have it plugged in or go to the effort of finding a power point as the battery lasted all day! I have only needed to charge the iPad about 10 times through out the whole experience, and I generally used it most days of the week.
- Studying anatomy with the iPad was the best. It was easy to go from textbook to notes to iPad easily and quickly.
- The sound through the speakers and earphones was really good.
- Throughout the trial I used notes to write this and to continually add things to this report. I think it will be hard when I can't use it anymore as I have gotten so used to it and it has made study and life so much easier.
- Having to always update apps got annoying.

- Using the reminders list app was good as I could write things I had to do down without wasting paper.
- The iPad added another element to my study that I felt aided in my memory and comprehension.

DEMONSTRATING MATHEMATICS USING AN IPAD

Academic Support & Faculty of Science

Learning Skills & School of Dentistry and Health Sciences

Staff: Colin Glanville, Matthew Prescott, Allan Ernest and Matthew Collins

Equipment: iPad WiFi & 3G

Aims: This group are investigating the use of iPads in mathematically based subjects to improve the student experience and performance. One area they are investigating is how to reduce or break down the barrier for distance students having difficulty with problem solving. Direct interaction with distance students would enable improved problem solving, concept development and retention in highly mathematical subjects. The final area of investigation is the use of apps to record drawing and handwriting with voice to create resources that can be stored and sent to students to explain difficult concepts and problem solving instruction.

Academic Observations

- As I had never used an iPad before, I did have to spend a little time getting familiar with it. Knowing what apps are there and how they will help you can be difficult, because the only way to really know how useful they will be, is to troll through the app store, find potential candidates, download them and try them out, and this consumes time. What would be useful is an 'instant advice service' that you could ask "I want to do this, this and this, and I have this, this and this restriction. What's currently the best app to do that?" Some of the things you want to do are often a bit specialised, so it isn't always obvious what to use. Also sometimes you download one thing to do a certain job and then find another that does it a lot better or does a lot more, but you didn't realise before that it was available, so that can be a bit of a time waster also, as you have to learn a new program each time. Of course this was a trial so I was expecting this to be the case. Generally I think it is a great device, although I guess Android and Microsoft products would be similar.
- One major thing that would be useful would be to be able to take notes in meetings with a pen and store them or convert them to text for reference. I have my own Windows machine that does that, but I forever need to be conscious of the battery life with that and also it is a bit heavy. If the iPad or Android devices could do that well, and have easy (automatic?) communication and file transfer to other devices such as my PC or laptop, that would be a big help.
- The greatest asset of this type of device is the 'instant on' access to emails and quick file or internet access when you just want to look something up in a few seconds. I found it great for that and much quicker and easier than my laptop.
- A bit heavy to hold sometimes but a lot better than my write on laptop! Since I am used to having to take a laptop with me wherever I go, the 'chore' of carrying the iPad instead was no chore at all. It was a great asset because of its speed and 'instant' access to email and net, particularly the 3G aspect when you aren't near home or work. (Although reception is a problem – not only country driving but surprisingly in Sydney, where the access speed was quite slow in some places – maybe too many users at once there???)

- Matt and I trialled some whiteboard communication using apps such as 'Show me' and 'Pagesend', which are good for individual communication with students. With Pagesend particularly, you can share common 'whitepage', and explain to students how to do a problem exactly as you would do if they were in the room. They can also annotate the same page, and for example draw arrows to parts of the derivation/explanation etc they didn't understand.

- It needs additional phone/verbal communication at the same time to make it great for physics/maths communication. Maybe they will release something like that in future versions.

If there was any criticism I'd say it would be better to have a bigger piece of screen to write on but this is only a small point. There may also be some bandwidth issues – Matt and I used it across a common WiFi network with great success, but when we turned off the WiFi on one of the devices to force it to go across the 3G/NextG network, it was definitely a lot slower and jerky, but in my opinion I think still useable.

- I found it most useful for research but I think it has a lot of potential for teaching if the students all had one also.

- Another really important issue is that any software available for iPad should have an equivalent communicating version for Android and vice versa. Pagesend, for example, is not available for Android at the moment, but if I want to explain some maths or physics concept to a student, then they may not have the same device as me. They all need to interact seamlessly like the same companies made them. The companies should have regular meetings to share all their research and development, so that these can be implemented across all makes and models at the same time, rather than one company bringing it out before another."

- That there is potential here for great communication. More apps than I realised – e.g. used it during a teacher's astronomy workshop with great success.

- It needs Wacom technology or similar!!!! so you can write more accurately and in more detail. It also needs handwriting recognition – better still voice recognition would be great, but I think it would need permanent internet connection as the internal processor doesn't seem powerful enough for this task. Of course in the country...

- Internet in regions where there is no signal – This is the biggest limitation – so many places you just don't have 3G or NextG connection.

IPADS FOR TEACHING

Faculty of Science

School of Community Health & School of Environmental Sciences

Equipment: iPad 3G & Nexus 7s

Aims: This cohort of participants will assess the utility of the iPad for a range of tasks in academic roles. This includes the use of the iPad to facilitate paperless marking, social media engagement with students, investigation of learning resources, implementation of paperless strategies and the integration of mobile technology into a range of teaching contexts across a range of discipline areas.

Academic Observations

Having used the device over the previous few months I can see the applicability to the following learning/teaching objectives:

- » provides a paperless means of conveying information to students
- » provides a portable method of note taking within groups of students within workshops, particularly those using a PBL framework, that can then be edited/shared with the larger group online
- » provides/demonstrates research applications and online resources to students relevant to occupational therapy (Skitch©, Goal setting apps, QR Code Generator).

How mobile learning was used – what did we do?

Within the School of Community Health (SCH) a small group of users met regularly to discuss what they were using on the iPad. Initially the focus was on paperless marking using Notability© and Good Reader©, however various members of the group were exploring other areas particular to their professional interest area.

This was presented at CSUed in the form of a group Pecha Kucha on 5th November, 2012.

I was particularly interested in exploring QR code technology for subject resources for students. This technology has been utilised in universities, primarily by libraries and learning resource areas. I have created codes to a draft Subject Outline and other web-based resources that could provide an option for students to download the site, rather than go through multiple web pages to access a document (i.e. special consideration form).

I am also exploring the use of various apps with a Master's student in her research on goal-setting for clients as part of their rehabilitation. The Japanese tool 'Aid for Decision Making in Occupational Choice (ADOC)' (Tomori, et al., 2012), has not been adapted for Western use. The Master's candidate is looking at adapting this tool for Australian clients, and researching the use of this with iPads in relation to standard pen-to-paper goal setting.

In terms of applicability to the CSU Degree Initiative and the CSU Vision (2013-2017) the use of the iPad in teaching and learning could be useful in the following ways;

Teaching

Portability is the major advantage of the iPad. It is ideal for small group work within tutorials/workshops with a PBL or case-based learning approach. Students are attracted to the tool, and it adds an extra element of engagement to a standard teaching session. It is essential for students heading into practice to know about specific apps. Not providing opportunities to learn about the apps means students could be disadvantaged on practicum.

Learning

Our group created a Wordle to explain some preliminary reactions/benefits/limitations to the iPad use. This was presented in our Pecha Kucha and is demonstrated here <http://vimeo.com/53918768>

Student Responses

- In 2011, I used a SCH iPad in a fourth year PBL subject. As I was not experienced in using it, I got the students to use it to make notes about the particular aspect of the client case they were exploring. These were then able to be placed as a forum posting with a summary of each group's responsibilities for researching and presenting at subsequent use. Unfortunately, the iPad was not available for the rest of the subject that year. In 2013 within the same subject, iPads, smart phones etc have been used extensively within class for research, note taking and information sharing purposes.

Suitability for the discipline

iPad technology and applications are being used increasingly in a variety of practice areas in occupational therapy. These include facilitating client involvement in home modifications (taking pictures of bathrooms prior to home visits, use in goal setting articles and Masters projects, industry etc.) There are many apps suitable to a range of client groups that lend themselves to practice settings. The OT team are exploring ways to include these apps in the undergraduate curriculum, so students are familiar with them (Cramm, Seguen & Adler 2011; Windman, 2012).

Lessons learned

There was some confusion between existing apps on the iPad and previous users. Although a separate iTunes account was set up for myself, the previous account holders (I believe there were at least two) kept appearing as iTunes account holders for the iPad, as did their documents/resources. This meant that updating apps could not occur, as I did not possess the password of the previous users.

There is a need for a thorough staff orientation to iPad use, particularly for novice users who have predominantly used Windows previously. Using the iPad is not intuitive and spending time watching/reading instructions for various applications and their usefulness is time consuming. It would be fair to say that I have not had the opportunity to become familiar with many of the apps existing on the iPad.

Final views and summary

The iPad could be a powerful tool to use in the face-to-face learning setting for on campus subjects. Its use as a resource, summary, note taking, annotating tool has broad applications across professional areas. Specific applications have discipline-specific relevance to maintain student currency of knowledge, and to reflect the use of technology being adopted into occupational therapy. Not using this, and other forms of smart technology, will ultimately disadvantage students in an increasingly competitive university marketplace.

My final view is that I have not had significant enough time to learn about the apps and utilise them in teaching and learning. I would welcome the opportunity to retain the iPad for an additional session, so that I could research the use of QR codes and code readers in the provision of student resources.

IPADS FOR WRITING

Faculty of Arts

WRT210 Writing for Publication

Academics: Lachlan Brown

Equipment: iPad WiFi & 3G

Aim: Students enrolled in the subject, Writing for Publishing, will assess the capabilities of the iPad for writing extensively and capitalise on its portability and extra functionalities. This trial will also investigate paperless marking and the use of social media.

Academic Observations

Personal

- I've been able to familiarise myself with a number of different apps to gauge how they might be used by classes (e.g., Popplet, Lino, Evernote etc) and used the mobile learning experience to help develop activities for subjects as they undergo major revision, thinking about how to provide options for students accessing material on mobile devices.
- The iPad was also helpful for emailing when compared with my iPhone. When I just had my iPhone, I would try to reply to students and colleagues fairly quickly, but the small screen and small keyboard

meant my responses were often short and sharp. The iPad gave me the mobility of something like a smart phone but gave me a bigger screen and somehow more 'space' to write longer and more comprehensive emails.

- The device freed me up to work in environments that were more conducive to creative activity. It also allowed me to show my students these places. For example, we held one writing class at the botanical gardens using Evernote to capture pictures, sound etc. After a time, we came back together to share poems about a particular section of this space. One of the most effective things we did, involved moving creative writing classes to new locations, but with the ability to take writing apps with us. For example, we attended the old church section of Wagga during the 'Writing the Gods' week and spent time in this location, taking photos and writing.

- I think there is an interesting dynamic at work in classrooms where everyone has a tablet and creativity is taught and expected. This is because tablets can so easily take the focus away from the teacher and away from relationships with other students in the class. At the worst, each screen comes between the teacher and the student or the student and other students. I think this is something that university teachers need to be aware of anyway (students are looking at their phones a lot), but a class full of iPads can possibly exacerbate the problem.

Issues

- I did have a problem with the trial because it is difficult to set things up knowing that I would not have the ability to recreate them in the near future. I loved the freedom of the trial. It allowed me to try various teaching techniques and apps, so I think that this freedom should be kept. A trial that integrates subjects with mobile devices (e.g. iPads) with subject review that involves educational design input/advice would be awesome. For example, imagine if you could get time to create a 'stream' of your DE subject, which was designed for tablets.

- I don't think that academics should be forced to teach with certain technologies. The iPad was really helpful for me, but the best teachers at the University aren't chasing the latest technological fads. Integration of iPad or mobile tech with existing CSU systems was an issue. For example, advice on how to control powerpoints using the iPad, leaving me free to walk around the room (not tied to a desk). Integrating Apple mobile technology with other things (e.g. Windows desktops) can be problematic. Sometimes it's hard to know what files are where. Being able to speak with the ed designers about how to design tasks for various apps on tablets (e.g. Lino, Popplet, photo editing) would have been helpful. The next step for my lectures would be to control things from the iPad itself, rather than from the in room computers. But seeing as though all my lectures were on P drive, this was a problem that I never got around to sorting out. The dream would be instant access to my CSU P drive. I haven't yet set up Dropbox with all my university work files, so there was a bit of emailing to myself going on. Interact didn't seem suited to the iPad (small size, forums were clunky) and so a new LMS which has proper iPad compatibility would be wonderful.

Students

- The main pedagogical benefit was increased student engagement, which was huge and worth it! I had the usual problems with students skipping class and not showing up on occasions when the University calendar was full of assessments. This is not a fault of the trial, but the lack of motivation from some of the students made it difficult to use the tablets in the ways I had prepared.

- Most of the time the students were fine with using the iPad. On a few occasions the WiFi issues were annoying, so quick help for students when their mobile device isn't working or alternative desktop access to whatever activity/resource is planned, would be helpful. There may be problems if you solely rely on one piece of technology for everything. For example, the week we had planned to share creative pieces via iPad, complete the readings via iPad, and collaborate on pieces in class using

the iPad, one student couldn't log into WiFi. This was crippling for her participation in the class, so flexibility and a backup are needed.

- Students sometimes found it hard to use the iPad to be creative. A couple reverted to pen and paper quite early on in session and used the iPad for other supportive functions. This illustrated how people use technology differently and for different purposes, and that technological innovation isn't a magic fix for teaching creativity, even if it may allow more choices and avenues for creative practice. Students thought nothing of going 'off task' on their iPad even when I was sitting next to them. This shows the age in which we live – http://en.wikipedia.org/wiki/Continuous_partial_attention.

Peripherals

- The keyboard was really helpful, because it allowed certain shortcuts, and the physical feel made typing easier. When typing for extended periods with the Logitech keyboard, the small size of the device could have been a problem. However I took quite a few breaks and used my desktop for extended pieces.

Apps

- The best apps for class included Evernote (creative writing and note taking), Dictionary (collecting word lists), generic free photo editors (for writing text over photos), Dropbox (for sharing weekly creative work so that the whole class could see the work of others)

MOBILE DEVICES FOR DIGITAL MEDIA

Faculty of Arts

School of Communication and Creative Industries

Academics: David Reid

Equipment: iPod Touch

Aims: Students in the subject, Understanding Digital Media, will assess the suitability of mobile technology as a means of production of digital media. Students are exposed to a range of technology from consumer grade gear through to professional production equipment. The large cohort of students will be able to loan the devices through the existing equipment lab in the school.

Academic Observations

- It was hoped that learning would improve with the use of devices, but this was not proven owing to students embracing the use of their own technology, and specific requirements of the subject. It was noted however that competence in the use of some applications did increase confidence. Limited enthusiasm and uptake was shown by the students with the subject, but the subject requires some time to sink in, and the nature of the learning and teaching needs to be modified to better suit both Internal and Distance students, and re-structured to embrace the use of the technology more. Students also demonstrated limited technical knowledge despite being indoctrinated with the technology to this point.

- Access to a greater number of devices would be beneficial as would the use of other brands in the market.

- This is as much a learning process for us as educators as it is for the students receiving the wisdom. Time is needed to embed the technology, and more experimentation needs to take place. I was able to explore a number of digital media tools: Wavepad, Audioboo, PS Express, Revel, 500px, Splice, Videolicious, Socialcam and used some of them.

- An iPad should become a mandatory tool for work because of the versatility of the device, for teaching, research and personal use.

SUBJECT OUTLINES

The Project has been consistently working on mobilising Subject Outlines on the web for use by students. The aim of this work is to deliver access to a high volume student site and provide significant benefit to the student experience. The key to this work is to provide students with tangible utility for accessing the system, and simply put, the Subject Outlines is the primary source for information on assessment tasks.

The Subject Outlines provided a unique challenge for mobile devices due to the substantial amount of information contained, in many cases exceeding 40+ printed A4 pages. Therefore, the solution needed *has* to be more significant than changing text styles. The Project's design skills and experience with user interface development, played an important part in transforming this information into an application that is intuitive, easy to navigate, accessible and cross platform. This work required design of a unique visual style for mobile devices, primarily Smartphones, that embraces their unique affordances and significant constraints. The Project also set up a device lab consisting of a range of mobile devices and operating systems vital for real world testing. The Project has fed the completed work back into the conversation at CSU around mobile, through the Web Management Committee Operations Subcommittee (WMC-OSC) and the Mobile Coordination Committee (MCC). We have made recommendations for additions to the web style guide and developed a supported proposal for a new font that can be specifically used for mobile.

Process

The Subject Outlines are a vital component of CSU's interface between students. In essence, the Subject Outlines, outline the learning contract between the university and the enrolled students. They contain all the mandatory information, and are a compulsory component of all CSU subjects, and so require all students to access them. At present, access to the Subject Outlines is tied to CSU Interact, so the aim of the project was to remove steps in the process and make access to this important information, both faster and easier. The goal of the system is to improve access and usability on a mobile device, and consequently increase student usage.

Mobilising the Subject Outlines was CSU's first foray into the development of a web application. A web application is slightly different from a mobile website, and is far more complex. This is because it requires a more substantial logic layer and interactions with various databases to achieve more complex actions and input from users. The team's aim was to build upon the work started by the Current Student Web Experience Project (CSWE) in the development of m.csu, and to move the design and interface forward. The team aimed to create impact and to forge a new visual style, while at the same time developing critical skills and knowledge in the mobile development space.

Unlike most projects at CSU there was no need to start from scratch and build a new system. Instead, the project has aimed at merging and mashing-up existing content and systems. The application has capitalised on existing APIs to deliver content via a text file. The application then parses that file to generate menus and navigation elements. The presentation and styling is then applied, and has been designed specifically to improve the usability and readability on the small screen.

The project has built this application using available web technologies with the aim of creating a truly cross platform solution. During the course of this development the team has also investigated the use of Phone Gap, which allows applications built, using web technologies to be packaged and deployed to a variety of mobile platforms as a native application. While delivering a native application is not within the scope of this work, the team felt that it was prudent to investigate this area to ensure that all avenues and possibilities had been properly explored.

LEARNING RESOURCES

CSU has a long history of developing its own learning resources and content. The emergence of mobile technology brings with it a unique challenge for our traditional publishing points – print and online. Print files are developed specifically for the page. They have particular break points for paragraphs and chapters, and are styled with fonts of various types and sizes around the known constraints of the A4 page. Online also has the privilege of some degree of standardisation – browser types, capabilities and screen sizes. However, there is no such thing as a typical mobile. In terms of screens they tend to be significantly smaller than a desktop PC but come in a variety of sizes, and often at much higher resolution than a desktop. Mobile devices come with a range of operating systems and versions of operating system, that provide unique software challenges. These are fundamentally different circumstances to our typical publishing techniques and introduce a new array of challenges.

The Project undertook an extensive exploration of the available learning resources and available techniques, file types, development processes and software available to deliver content to mobile.

Process

The plan was to develop a number of resources for the following areas based on existing resources:

- » Academic Support
- » Faculty of Business
- » School of Policing

Each area would produce at least one of each of the following formats to provide a proof of concept to shape future development and explore the issues surrounding production.

- » Create a Lo-fi ePub file – (APA Referencing Guide) which consisted of text and images only that was designed for eReaders with a black and white display, but can be accessed on tablets and Smartphones
- » Create a Hi-Fi ePub file – (Policing subjects in Pages) including text, images, video & audio designed for tablets and Smartphones.
- » Create an Apple iBook – (Policing subjects) which included text, images, video, audio and interactive components specifically designed for iPad

Investigation

Throughout this time we investigated various learning resource conversions taken from existing learning modules including:

- » IMS, SCORM to ePub
- » PDF, Word, RTF to ePub
- » Pages (Apple Software) to ePub
- » Pages (Apple Software) to iBook

The learning resources we acquired provided various media, including text, images, video, audio and links, so would present unique challenges in delivering content. The team tested out these transformations using two methods – an automated conversion process and manual authoring. The main automated process was done through Calibre, which is an open source software used to modify, manage and configure eBooks. Due to the inconsistencies in authoring and the differences in media types, there was no way to fully automate the process. Each conversion requires a manual process to update document styles, format and ensure correct rendering of images and video.

The manual process involved taking existing text content and re-creating it in software called Pages, essentially Apple's version of Word. Text would be stripped of all styling and then copied into a new

document and restyled and formatted. This would then export to an ePub file, requiring manual editing of style documents to ensure a match between what was presented on screen and what was represented on the iPad.

The next step was to take existing content, text and rich media to create an enhanced eBook, showcasing the ability to embed and contain both text and rich media to demonstrate clear possibilities. This was tested originally with InDesign and a plugin called Mag+. However the decision was made to use Pages, as the margin of error was too large and time-consuming re-developing resources from InDesign.

The final stage was to take mainly existing content and augment it with new assets – rich media and interactivity. This eBook will showcase the possibilities of developing enhanced texts and show how interactivity and media can be imbedded in a purely digital resource. This involved the creation of an Apple iBook with text, images, video, audio and interactive components specifically designed for the iPad.

Measure.



Measure

SUMMARY OF FINDINGS

The findings from these trials are based on the two surveys conducted, one at the start of the trial one at the end. In addition to this data are written reports from academic staff and informal one-to-one interactions that occurred between participants and the project team. This feedback has enabled the project to explore how students and staff have utilised the iPads and what their views are about various aspects of mobile technology.

PRE-TRIAL SURVEY

The pre-trial surveys were used to gather information to understand the participants' general level of knowledge, experience and confidence with the devices. In Survey 1 there were 43 responses: EML309 47%, ITC594 26%, MRS222 28%, and in Survey 2, 14 responses: 4 Students and 10 Staff members. The key measures from this survey were previous use of iPads, confidence in using them at the start of the trial and their current ownership of technology at the start of the trials.

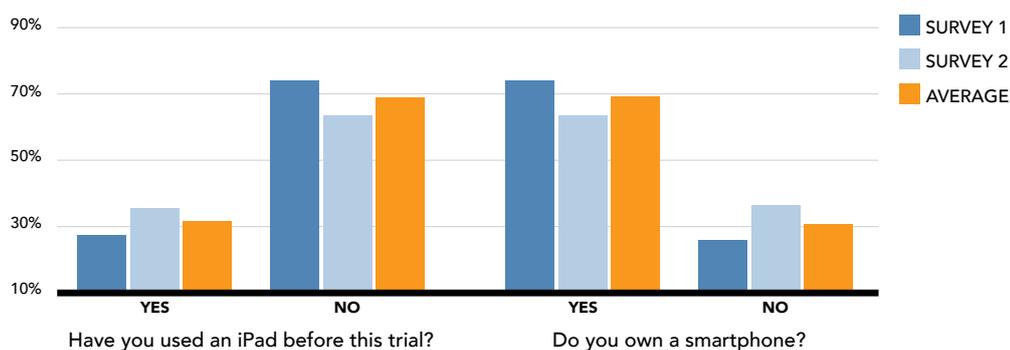


Figure 1: Previous experience with an iPad and smartphone ownership

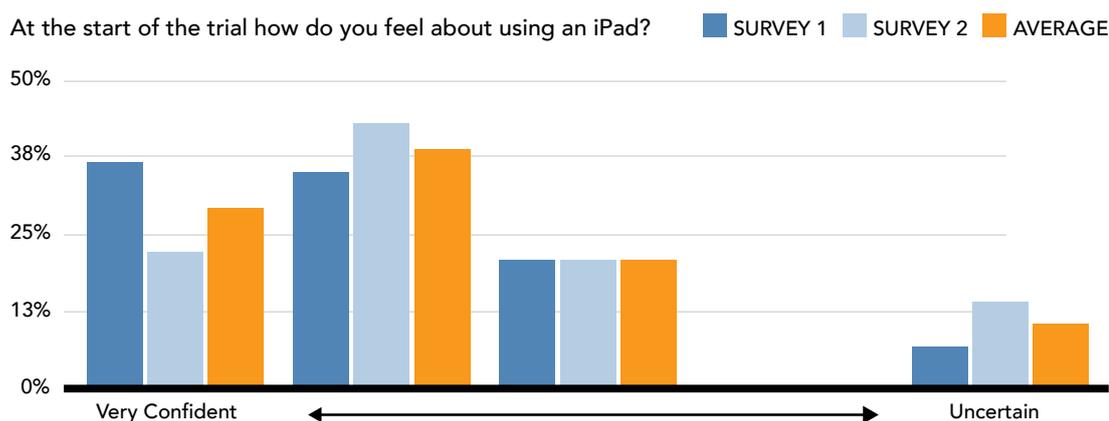


Figure 2: Question used a Likert scale to plot participant confidence.

These surveys were also used to get a better sense of their expectations of services and content related to the LMS (*Interact*) that should be available on mobile.

What tools from the LMS would you like to access on a mobile device?

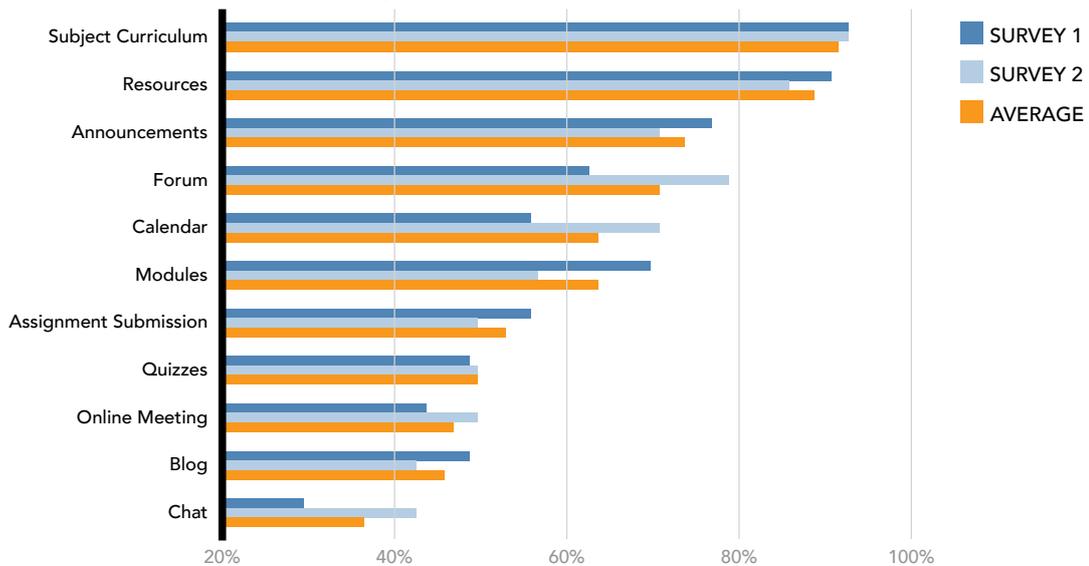


Figure 3: Feedback from student as to what tools from the LMS they would like to access on a mobile device

What aspects of learning and teaching should be available on mobile technology?

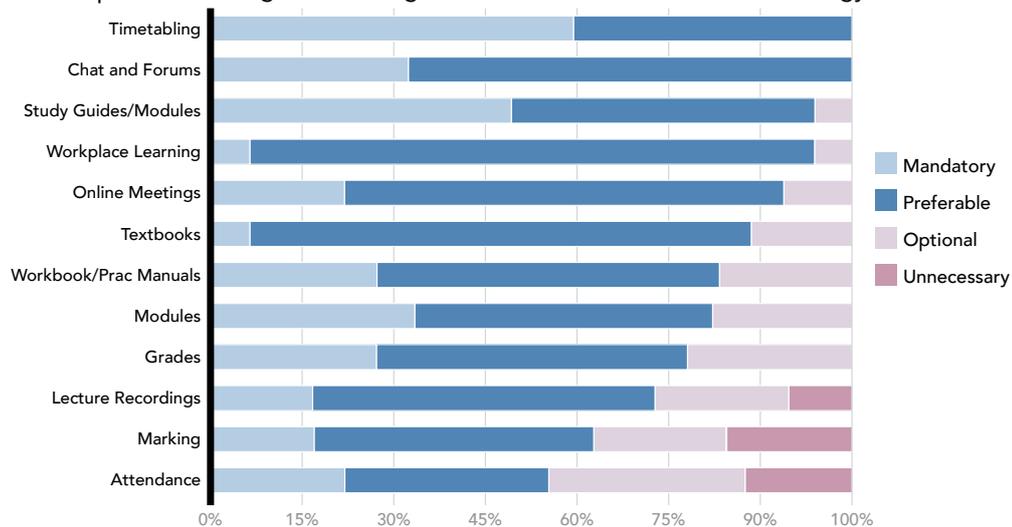


Figure 4: Feedback from participants on what aspects should be accessible on mobile technology.

EXIT SURVEY

The exit survey was used to measure what staff and students had done in the trials, how they had used the devices and how they viewed using the iPads. This survey have been broken up into three participant groups; Student Group 1 were part of the first set of trials, Student Group 2 who were the longitudinal group from MRS222 who conducted the exit survey after two sessions with the iPad, and the final group was made up of the staff participants. Participation was as follows:

- » Student Group 1 (SG1): 13 Responses (EML309 77% & ITC594 23%)
- » Student Group 2 (SG2): 5 Responses (MRS222 100%)
- » Staff Group (STG): 9 Responses (Community Health 22%, Environmental Science 11%, Dentistry & Health Sciences 33%, Academic Support 11%, Other 22%)

Activities on the iPad

One of the key outcomes of the surveys was to gain a better insight into how staff and students would use an iPad. Across the three groups usage can be broken into the following categories:

Students reported that they would spend more time accessing their subject outlines, Interact, other learning materials and their lecture when they had an iPad. Access to library, forums and textbooks remain unchanged.

The median measurements across the groups showed that **the iPad was used 6.5 days a week for around 1.5 hours each day.**

The iPad's Effect

This section of the survey was used to gain a subjective assessment of how they felt using the iPad may have affected them. Staff and students responded that the iPad wasn't a distraction in class, a distraction in their personal space nor did it make them more focused in class. The majority of staff and students did feel though that the iPad made them feel:

- » more engaged and active in class and the subject as a whole;
- » it was a benefit during classes and personal time;
- » more motivated for study and that they were learning better;
- » and that they would recommend the iPad as a study tool.

Technology Preferences

Laptops are the preferred technology to:

- » Write an Essay
- » Use PebblePad.

Tablets are the preference for the remainder of the activities explored in the survey:

- » Write a blog/wiki
- » Access Interact
- » Access student.csu (which is the central student support website) Access staff.csu (which is the central staff support website)
- » Read your learning materials
- » Take to Class
- » Take to Practicum
- » Take to Conference
- » Take Home
- » Device supplied by the University.

One activity that had a preference for paper was "Read your Textbook".

Technical Findings

Other significant technical issues were uncovered during the trials including:

- » The CSU WiFi network uses the EAP encryption method that is incompatible with some devices, in particular eReaders and older mobile devices.
- » The Lithium batteries used in mobile devices are considered to be dangerous goods, and cannot be transported by air. Sending iPads by road transport lengthens the postage time to most students. Courier services offer an alternative in some cases but dramatically raise costs.
- » Apple licensing limitations that state a device can be associated with only one Apple ID account at any given time, and you may switch a device to a different account only once every 90 days.
- » Many components of the CSU online experience are not mobile friendly and use legacy technology or those incompatible with many mobile devices, in particular Java and Flash. These issues are compounded by the inability to provide support remotely or resolve systemic issues through the project.

- » The iPads were extremely robust and build quality is excellent. No devices failed and only three were damaged through accidental drops.

PRE-SURVEY DATA

Phase 1

43 Responses: EML309 47%, ITC594 26%, MRS222 28%

Phase 2

14 Responses: 4 Students 10 Staff

Device Ownership

	Yes		No	
	<i>n</i>	%	<i>n</i>	%
Have you used an iPad before this trial?				
Phase 1	11	26%	32	74%
Phase 2	5	36%	9	64%
Do you own a Smartphone?				
Phase 1	32	74%	11	36%
Phase 2	9	64%	5	36%

NB (Yes = 3/4 students and 6/10 staff)

Do you own a Tablet device?				
Phase 1	7	16%	36	84%
Phase 2	1	7%	13	93%
Do you own an eReader?				
Phase 1	4	9%	36	91%
Phase 2	2	14%	12	86%

Confidence Using Technology

	1 - Uncertain		2		3		4		5 - Very Confident	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
How do you feel about using an iPad for this subject?										
Phase 1	0	0%	2	5%	10	23%	16	37%	15	35%
Phase 2	4	29%	0	0%	2	14%	5	36%	3	21%
How do you feel about using mobile technology for your study?										
Phase 1	3	7%	0	0%	9	21%	15	35%	16	37%
Phase 2	2	14%	0	0%	3	21%	6	43%	3	21%
How do you feel about using mobile technology for social media?										
Phase 1	0	0%	0	0%	4	9%	14	33%	25	58%
Phase 2	4	29%	1	7%	0	0%	4	29%	5	36%
How would you rate your general computer knowledge?										
Phase 1	0	0%	0	0%	9	21%	18	42%	16	37%
Phase 2	0	0%	1	7%	6	43%	4	29%	3	21%

Current Phone Usage

	Once a week		Once a day		Many times a day		Other	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
How often do you use your mobile phone?								
Phase 1	0	0%	5	12%	38	88%	0	0%
Phase 2	0	0%	2	14%	10	71%	2	14%

What Should be Mobile?

What Interact tools would you like to access on a mobile device?

	Phase 1		Phase 2	
	<i>n</i>	%	<i>n</i>	%
Subject Outline	40	93%	13	93%
Forum	27	63%	11	79%
EASTS	24	56%	7	50%
Calendar	24	56%	10	71%
Resources	39	91%	12	86%
Modules	30	70%	8	57%
Chat	13	30%	6	43%
Online Meeting	19	44%	7	50%
Quizzes	21	49%	7	50%
Blog	21	49%	6	43%
Announcements	33	77%	10	71%

	Yes		No	
	<i>n</i>	%	<i>n</i>	%

Have you used the m.csu website?

Phase 1	24	56%	19	44%
Phase 2	3	21%	11	79%

(Only 1 student had used the site)

What CSU information should be available on a mobile device?

	Phase 1		Phase 2	
	<i>n</i>	%	<i>n</i>	%
Maps	19	44%	11	79%
Class Timetable	33	77%	13	93%
Library Catalogue	20	47%	10	71%
Contact List	25	58%	11	79%
Subject Handbook	22	51%	12	86%
eBooks	27	63%	12	86%
Subject Readings	34	78%	14	100%
Subject Materials	33	77%	14	100%
Lecture Recordings	34	79%	11	79%

Phase 1 Final Student Survey

13 Responses: EML309 77% & ITC594 23%

Activities on the iPad

- » The iPad has extremely high use for Research both online and offline; CSU Library was used by more than half the students.
- » Reading usage was also extremely high with 100% of students having used the device to read.
- » Email and Facebook were the primary methods of communication from the iPad. Short form communication via instant messaging and Twitter was popular, as was Skype.
- » Students used the iPad to write notes for assignments and lecture notes but also longer forms that included actual assignments and blog/journal/wiki posts.
- » Most students viewed YouTube clips and around a third had used CSU Replay.
- » The iPad was also used as a productivity tool to make lists, timetables and record dates.
- » Most students chose to use the iPad in the classroom to take notes and do research, but also to perform more social tasks such as group work and to sharing.

Systems & Infrastructure

100% of students had used their iPad to access CSU Interact, followed by library catalogues and subject evaluations.

Time spent on the iPad

80% of students used the iPad daily, and the remainder 3-5 days a week

46% of students spent 1-3 hours on the iPad and the other 54% from 30 minutes to an hour

Students would access the iPad many times a day

Just over half of the students only used 30-40% on the iPad for study

54% of students spent more time on Interact

46% of students spent more time accessing other learning materials

31% of students spent more time accessing the Library

31% of students spent more time accessing their lecturer

The iPad's Effect

69% of students said that the iPad didn't engage them more in class, but 62% found that it made them feel more engaged with the subject

69% said that they did benefit from having the iPad for personal study outside of class

77% said that they felt that they had benefitted from having the iPad for personal use outside study

62% would recommend the iPad as a study tool, but only 31% said it should be mandatory

92% would like textbooks and other learning materials available on the iPad

Confidence Using Technology

As a general trend, students feel much more confident about using mobile technology since participating in the trial. Just over half the participants also feel more confident in their general computer knowledge after the trial.

How does your confidence about using an iPad in this subject compare now to the start of the trial?

More confident – 69%

The same – 31%

Less confident – 0%

How would you now rate your general computer knowledge?

1 – Uncertain > 5 – Very Confident

1 – 0%

2 – 8%

- 3 – 15%
- 4 – 46%
- 5 – 31%

How do you feel about your general computer knowledge now compared to the start of the trial?

- More confident – 54%
- The same – 46%
- Less confident – 0%

Technology Preferences

Tablet is most popular student choice for

- » Accessing Interact
- » Accessing student.csu
- » Reading learning materials
- » Reading the textbook
- » Taking to class
- » Taking on practicum

Laptop is most popular for

- » Writing an essay
- » Using PebblePad
- » Writing a blog

If the university was to supply a device students were split over whether it should be a tablet or a laptop – tablet 46%, laptop 46%, desktop 8%

Phase 2 Final Student Survey

5 Responses: The student feedback for this set of trials came from the students enrolled in MRS222. These students used the devices throughout all of 2012 and also away on work placements.

Activities on the iPad

- » The iPad has extremely high use for research, accessing mainly online resources such as reference material and Google Search.
- » Reading usage was also extremely high with 100% of students having used the device to read.
- » All students used email, instant messaging, social media and Skype to communicate.
- » Students used the iPad extensively to write notes for lectures, research and assignments. Some students also used the iPad to record a blog/journal.
- » Most students recorded video of their experiences while on prac and also created a video for their course using the iPads.
- » All students consumed video via YouTube
- » The iPad was also used as a productivity tool for the calendar and to do lists.
- » All students chose to use the iPad in the classroom to take notes and research, but also as classroom clickers using Socrative.

Systems & Infrastructure

100% of students had used their iPad to access CSU Interact, followed by subject evaluations and PebblePad.

Time spent on the iPad

All students used the iPad 6-7 days a week

80% of students spent 2-5 hours on the iPad per day

Students accessed the iPad many times a day, but mostly for short periods of less than 30 minutes

100% of students spent more time accessing other learning materials

80% of students said that more than half of their time on the iPad was for study
80% of students spent more time on accessing Subject Outlines
80% of students spent more time on Interact

The iPad's Effect

100% of students said that the iPad made them feel more engaged in class
100% of students said that the iPad wasn't a distraction in their personal space
100% of students said that they benefitted from having the iPad during class
100% of students said that they benefitted from having the iPad during their personal time
100% of students said that the iPad provided more motivation to study

80% of students said that the iPad wasn't a distraction in class
80% of students said that the iPad made them feel more engaged in class
80% of students said that the iPad made them more active in class

Confidence Using Technology

The vast majority of students were very confident about their use of the iPad, in particular in applications relating to social media. This is an area that the academic focussed on and the results are quite clear. It is also important to see that this confidence could be carried into other subjects and boost their general computer knowledge.

How did you feel about using an iPad in this trial?

1 – Uncertain > 5 – Very Confident

1 – 0%
2 – 0%
3 – 0%
4 – 20%
5 – 80%

How would you feel about using an iPad in other subjects?

1 – Uncertain > 5 – Very Confident

1 – 0%
2 – 0%
3 – 0%
4 – 20%
5 – 80%

How do you now feel about using mobile technology for social media?

1 – Uncertain > 5 – Very Confident

1 – 0%
2 – 0%
3 – 0%
4 – 0%
5 – 100%

How do you feel about your general computer knowledge now compared to the start of the trial?

More confident – 60%
The same – 40%
Less confident – 0%

Technology Preferences

Tablet is most popular student choice for

» Accessing Interact

- » Writing a blog
- » Reading learning materials
- » Taking to class
- » Taking on practicum
- » Take to conferences
- » Take home

Laptop is most popular for

- » Writing an essay

Tablet/Laptop Split

- » Using PebblePad
- » Accessing student.csu

Paper

- » Reading the textbook

If the university was to supply a device 80% of students recommended the Tablet.

Phase 2 Final Staff Survey

9 Responses: Community Health 22%, Environmental Science 11%, Dentistry & Health Sciences 33%, Academic Support 11%, Other 22%

Activities on the iPad

- » The contexts for iPad use were spread across teaching and research but mostly in equal amounts
- » Email was the predominant form of communication but more than half of staff are using social media
- » Many staff used the device to record video or audio
- » More than half the staff created presentations, documents and learning materials on the iPad
- » The iPad was extremely heavily used for research and very evenly spread across the CSU Library, Wikipedia, online reference material, journals, Google Scholar, Books, newspapers and search.
- » Most staff used the device calendar and used it to jot down notes, access files and share work.

Systems & Infrastructure

78% of students had used their iPad to access CSU Interact and 56% used it for the Library Catalogues.

Time spent on the iPad

Staff usage was spread across 2-7 days, but 44% were daily users

89% of staff spent 30 minutes to 2 hours a day on the iPad. One staff member said they spent more than 5 hours on the iPad per day

Staff tended to access the iPad a couple of times a day but only for short periods, less than 30 minutes. This would be interspersed with longer periods reading, researching and marking

67% of staff spent more time accessing other learning materials

33% of staff spent more time with their colleagues

33% of staff spent more time with their students

22% of staff spent less time with the textbook

The iPad's Effect

100% of staff said that they benefitted from having the iPad for work purposes

100% of staff said that they benefitted from having the iPad for their personal research outside of work

100% of staff said that the iPad provided more motivation for teaching and research

100% of staff said that the iPad made them feel more engaged in their teaching

78% of staff said that the iPad wasn't a distraction in class

67% of staff said that the iPad made them teach better

67% of staff said that the iPad made them research better

56% of staff said that the iPad made them feel more engaged in class

22% of staff said that the iPad made them more active in class

Confidence Using Technology

The vast majority of staff saw an improvement in their confidence by the end of the trial. This is also evident in their general computer knowledge and reflects a gain in their digital literacy. The staff tended not to be as brash as the students, providing a much more even spread between Unsure and Very Confident.

How does your confidence about using an iPad in this subject compare now to the start of the trial?

More confident – 89%

The same – 11%

Less confident – 0%

How do you feel about your general computer knowledge now compared to the start of the trial?

More confident – 67%

The same – 33%

Less confident – 0%

How would you feel about using an iPad for your work?

1 – Uncertain > 5 – Very Confident

1 – 0%

2 – 0%

3 – 11%

4 – 44%

5 – 44%

Technology Preferences

Tablet is most popular staff choice for:

- » Accessing Interact
- » Writing a blog
- » Accessing staff.csu
- » Reading learning materials
- » Taking to class
- » Taking to conferences
- » Taking home

Laptop is most popular for:

- » Writing an essay

Tablet/Laptop Split

- » Using PebblePad

If the university was to supply a device 78% of staff recommended the tablet.

Compiled Student Feedback

The following feedback was garnered from the students through open comments in the surveys.

Most Useful Application

- » I found it really useful to type notes on the iPad during class
- » The note pad was the most useful application to use in class for taking notes on class topics and information on any events/assignments coming up
- » Socrative and Chalkboard in conjunction with Pages. Take notes in class and add drawings or pictures and record class video or sounds
- » We used various apps to make virtual storybooks for children where you could draw your own pictures and add words, audio and voice overs. I found this really useful and ended up using it in another class for an assignment which got really good feedback
- » iPad was the most useful as it was used in a major part of our English lessons for writing blogs, while 'Notepad' was great for just taking notes within a normal lecture or tutorial
- » It is such a portable device, it made it very easy to access the Wi-Fi at uni from almost anywhere
- » Looking up the syllabus and locating information quickly in class
- » It was useful for bringing up websites, syllabus documents and resources, whilst typing the assignment on my laptop or iMac
- » Getting free and paid for copies of relevant literature. Taking notes and having a to-do list was also great
- » Quick easy access to the internet. Just ability to quickly search things online

Research

- » Taking notes during lectures and tutorials
- » Resources such as eBooks
- » Using IWB (Interactive White Board) to show the class

Creating content

- » Learning how to use technology
- » Completing our assigned English text types
- » Socrative and Slideshow lectures, like Slideshare

Positive Benefits

- » Less likely to carry laptop around with me. Also helped with study, where I had the Laptop or iMac on with the word processing document and used the iPad to find websites/resources. Made the screen less cluttered and more organised study.
- » The iPad made it easier to carry and store information rather than carrying a book/ Subject Outline to class and writing
- » Easy access to PDF files
- » Loved being able to relax in an armchair and do reading for uni!!! My husband adored being able to do internet shopping from his armchair instead of going to the computer; it was also great for sharing stuff with others in an informal environment
- » being able to look up each K-6 syllabus was much easier than bringing all the books to class and being able to quickly look up things to assist me during class was really good
- » Allowed me to get away from the desk, and don't need textbooks
- » Use while travelling
- » Not having to carry book to class, recorded notes on iPad

Problems & Issues

- » Giving the iPad back
- » Typing is slow for assignments, which I solved by connecting a wireless keyboard. Apart from that, some lecturers seemed to assume iPads were being used for things other than study in class/lectures and were perhaps not familiar with the possibilities of their use

- » Some of the activities that we were required to do were time consuming as we were not competent with using the iPad to begin with, for example, drawing, labelling and creating graphs. These activities would have been better done on paper as it would have been easier and taken less time
- » Issues with apps and the distraction of the iPad during lectures and tutorials
- » I had to learn a lot of new technology and felt I spent a fair bit of time learning about the technology rather than applying myself to the subject, but that is what happens when you use new technology
- » Finding it hard to work around iPad. Some of the little things that I wanted to do but couldn't was annoying
- » Losing work due to silly mistakes like clicking the red button in the corner by accident and not being able to retrieve the work
- » deleting info by accident, there was no way of getting it back such as the undo button on Word
- » screen too small to type all info, keypad covers the page where you need to type and you cannot see what you're typing – frustrating at times
- » Was hard to do assignments on
- » The iPad is distracting when there is such easy access to internet and social networking apps.
- » Internet access on placements
- » Sometimes the CSU Internet wouldn't work for days on end on the iPad, but I think this was an issue with the Wi-Fi rather than the iPads as it didn't happen to just me
- » Difficulty with university WiFi not being able to connect for intermittent periods of times

Where should CSU go from here

- » An increase in the availability of more tablet-friendly course content such as online lecture videos and eBooks.
- » I think that iPads should be subsidised or given to all students in education courses. I know the Apple store offers a 10% discount for uni students, but the way things are going with smart boards and the increase of technology in classrooms, it seems that without one, students are being left behind. Not all of us can afford to purchase them, so if the uni gave them to students (with the exception that leaving students need to hand them back) and allowed graduating students to keep them, not only would it improve student ability to learn, but open up massive possibilities for teaching staff
- » If iPads were utilised appropriately I think they would be a great device for students to use at University but due to the easy access to internet, social networking, search engines and YouTube they are too distracting within the classroom
- » To educate students in the use of different technology mediums
- » I think that having an iPad for uni would be extremely useful and I think everyone would agree that they would much rather carry it around than textbooks and other learning materials for their subjects, although I don't think assignments should be set by lecturers that specify having to use the iPad. There should still be an option.
- » I think we need to continue the iPad learning experience
- » More facilities
- » I believe giving out small laptops, such as high schools have been given, would be more appropriate and will have more use personally and for study.
- » I'm not sure if the iPad was the only factor in this, but in my class I went from a Pass in previous sessions to a Distinction. I think that my skills and knowledge were better displayed in my assignment

Most Important lesson

- » That everything can be much simpler! Aside from typing an essay or notes, the iPad made studying significantly easier, quicker and simpler. To be honest I think it was wrong that the university didn't offer to at least subsidise purchase of these for students who were in the trial, because it changed the way we studied and it is a big transition to go back to how we were doing it before
- » How to use an iPad for study purposes
- » That technology should not replace old methods such as using pen and paper and can be unreliable and not suited to all tasks
- » I learn a lot about using technology and how many amazing educational apps are out there
- » The ability to easily read and study on the iPad. Video lectures I downloaded were also great
- » How beneficial an iPad can be in class. I never really thought of an iPad as an educational tool but after using it for a semester I now realise how beneficial it was to my studies. Reading things online was the best thing and looking up the syllabus
- » It allowed for my education to be more interactive and engaging. It was really helpful
- » How easily you could incorporate technology into teaching a subject
- » How to take benefit by using while moving
- » you can actually type on a program on the iPad, i had no idea there were programs for iPads, although UPad is nowhere near as good as using/accessing Microsoft Word to complete assignments
- » How the iPad can be an effective marking and lecture delivery tool
- » The important role technology plays in our learning now
- » How to effectively use mobile devices to improve learning experiences
- » Classes are better with iPads

Learn.



Learn

INITIAL FINDINGS

The initial findings are informed and derived from the feedback provided by the staff and students involved in the trials; the Project team providing support for the investigations and development work carried out. They document the combined learning of the Project and are a reflection on the experiences and thoughts of those who participated. They represent real world experiences and express the positive and negative aspects of the Project's journey into mobile learning. It is hoped that they provide insight into the reality of using mobile technology in a learning and teaching environment within the context of CSU; the issues and problems that arise and the potential that the technology offers for innovation.

THE NEW NORMAL

Over the life of the Project we have seen mobile emerge and blossom as a new standard. It has been a meteoric rise that has come almost out of the blue and without any precedent. Mobile has challenged all predictions, broken all records and transformed the technological landscape. What we are witnessing is the birth of a 'New Normal'.

Mobile can no longer be considered an 'add on' or a 'nice to have'. It is the standard technology that more people around the world have access to than anything before it, including phones, cars, radio and television. It is also worth noting that this is not the death of any other computing devices, and mobile will not replace the laptop or the desktop. **The new normal is a user-centric ecosystem that encompasses multiple devices, and one where increasingly mobile comes to represent the primary device, because it is compact and affordable.**

The statistics right across the world suggest that this is not 5 years down the line, but is happening now. The environment is not changing – it has changed already. *"User behaviour always evolves much faster than companies can keep up"* states User Experience and Content Strategist Karen McGrane, and this is where we find ourselves. The institution is experiencing significant cultural and technological challenges due to the changes in the expectations and choices of our staff and students. **CSU is entering a stage where we need to change how we think about technology, less about single solutions, more about operating in ecosystems.**

There is no single device, app or service that can provide the solution. Instead, it is necessary to take on a user-centric model and expand our experience beyond the physical device, ensuring access is available on multiple devices, key information is synced, systems are adaptable and content can take many shapes and forms.

The reality is that we are living, working and learning across multiple devices and mobile represents just the first wave of embedded and contextual technology. The new normal is inclusive rather than exclusive, complex rather than simple, expansive not restrictive.

DEVICES ARE DESIGNED TO BE PERSONAL

Mobile technology is essentially a personal technology platform, providing a relatively inexpensive computing device that is highly customisable, configurable and supportive of the individual user. While it can be used for rollouts to groups this compromises many of the affordances that a personal device can offer to a student or staff member.

Mobile devices are designed for personal use and 1:1 rollout and are difficult to set up, manage and maintain for group or shared deployments. This is due to a number of reasons:

- » most devices need to be attached to a personal account for the purchase of applications, data sharing and backup. These accounts are not designed to be set up en masse or linked to an institution. They are specifically set up for individuals and for these accounts to be managed on a personal level. Specific to Apple devices, are Terms and Conditions that hinder sharing or loaning of devices, because devices are attached to an account for a certain period of time
- » most apps are set up with only a single user in mind. Logging into some apps from a device will save details and private information to the device. Therefore, sharing a device means that the user details are exposed and open to be exploited by other users
- » infrastructure, such as WiFi is also set up to be linked to a specific user. This has specific implications around data charges, privacy and proper usage

Recent developments such as the Apple launch of a local version of the Volume Purchasing Program do provide better tools to manage app purchases on a large scale. The Apple Configurator tool also creates the option for the rollout of shared class devices. However, this is often at the expense of allowing for any individual control or personalisation, which can often be at the detriment of the user experience.

DEVICE LIMITATIONS

The physical hardware, operating system and software configuration of mobile devices means that **not everything is better with this new technology**; some tasks are more easily and quickly done using 'old' technology.

Mobile technology provides a new paradigm of interaction through **the touch interface, which eliminates the reliance of additional peripherals such as the mouse and keyboard**. However, this is typically at the loss of the affordances of those tools, i.e., the ability to type quickly and error free or the nuance of a virtual pointing device rather than 'fat fingers'.

The project also found other areas where the devices were limited:

- » some students found that the WiFi-only models were limiting their mobility because they lacked access to infrastructure off campus
- » the mobile device became a distraction at times because it is always on and always connected
- » some core tools at CSU, such as Interact tools, especially Online Meeting (Wimba not Adobe Connect) were not mobile-friendly devices
- » typing on the iPad's virtual on-screen keyboard was often raised as an issue but the addition of a physical keyboard (which doubled as a case) was a viable solution to this problem
- » lack of like-for-like applications was a common problem. Those familiar with applications like Word and Outlook on the PC were often faced with a lack of suitable replacements and equivalent features available on the mobile device
- » this was accentuated by the lack of file type support and the ability to adjust current workflows that leverage 'standard PC' features, most significantly network storage on P and S Drives

Some of these limitations are not actually the fault of the device, but are dependencies on external software companies and the lack of compatible infrastructure at the university. Over time there is an expectation that these shortcomings will be overcome, but from our infrastructure perspective this will require work to be carried out by CSU.

DEVICE ADVANTAGES

Interestingly the same physical hardware, operating system and software limitations of mobile devices was often seen as an advantage to other users.

One of the most significant advantages is **portability**. The size and lack of additional peripherals meant that the iPad could be carried around and used significantly more often than many other forms of technology. The iPad has complemented their work processes and become an important tool to create, reference, research and communicate across locations and environments. This portability became increasingly important for students in workplace learning, as the iPad became central to study and communication because it was always present and available.

The **large internal storage** also had significant benefits. For example, marking paperless assignments was made easier by reducing the physical requirement of paper, but also allowed academics to mark wherever they liked, and rather than being tied to a workstation they could mark outside, in a coffee shop, the library or on the couch at home. Students and staff both discussed how the device also made having access to research readings much simpler and portable.

The **touch interface** has a specific affordance with its ability to replicate natural handwriting. The addition of a stylus has enabled many academics that require or prefer natural handwriting to keyboard and mouse. This has been extensively used by academics and staff teaching mathematics, who prefer the speed and accuracy afforded by this type of control. They are quickly able to create and demonstrate complex mathematics and processes in a much more naturalistic manner to the benefit of themselves and their students.

Smart mobile devices are not single purpose objects, but **a combination of various technologies creating distinct affordances**. Not only does a device provide a computing power to run applications, but is also equipped with a variety of sensors, GPS, microphone and camera that transforms them into extremely capable and adaptable devices. This multi-functionality creates a truly multipurpose tool, which can be applied to a wide variety of tasks across the discipline areas, such as capturing the world around them through video and sound, track positioning and providing location-based experiences, linking and connecting people around the world. It is truly powerful **when these functions are combined, creating almost limitless applications and new ways of developing engaging, practical learning and teaching possibilities**.

CREATING SPACES

One of the unique affordances of mobile technology is its ability to create new learning spaces. eLearning was often described as 'anywhere, anytime', but mobile technology allows learning and teaching to become something that is 'everywhere, all the time'. It is a subtle difference but with significant impact. The ability of this technology to connect, combined with powerful applications to consume and produce **allow the device to create a space**. This permits a new user-centric model where space is defined by the user and the device, not the physical location or proximity to a campus. This has specific benefits and implications for staff and students at CSU.

The allowance of the technology to create new spaces releases us from the desk, or any other physical inhibitor. It means that staff and students can move into new physical environments and leverage spaces appropriate to the task:

“The device freed me up to work in environments that were more conducive to creative activity. It also allowed me to show my students these places. For example, we held one writing class at the botanical gardens...to capture pictures, sound etc. After a time, we came back together to share...about a particular section of this space.”

Academics also shared experiences of shifting from traditional spaces for convenience and comfort, *“using the iPad for marking on the train and sitting up in bed”*.

This also applies to students on practicum, where they can incorporate the device into the specific learning experience much more easily, as well as staff who are able to capitalise on the overall portability of the device:

“Once I got the iPad I did not need to lug the laptop around as much. I also think that getting away from my desk may have had physical benefits, but these may have just been mental benefits (but it was beneficial nonetheless).”

THE LEARNING CURVE

Most staff and students agreed that the setup and learning to use an iPad would be quite quick and easy, and that there is no need for prior learning or skills. However, while intuitive in design, the iPad still has a significant learning curve associated with its adoption. The main reason for this is that it is not simply a new device or tool that needs to be learnt, but mobile is significantly different to traditional desktop computers, utilising a variety of new and complementary technologies.

There is a need to adapt, not only to the new device, but to learn a variety of new concepts and methods of working with the technology.

Some of these include:

- » lack of a visible file system is disorienting and a massive difference to traditional computing
- » lack of available applications, in particular like-for-like versions of desktop standards like Word and Outlook
- » a number of incompatible file types, in particular Flash-based content
- » cloud computing services are integral to the functionality of the device so a range of new services are required to be signed up for to maximise the effectiveness of the user
- » students are not as sophisticated as we think, being good at fairly low level tasks and basics, but struggling with more complex tasks
- » not all students are confident using mobile devices – “It took quite a long time to get past the need to focus on how to use the technology and the apps, so that students could concentrate on the skills and concepts related to subject content.”
- » lack of information and knowledge available around apps, effective pedagogy, information around the use of mobile at CSU or official and ‘supported’ applications.

The Project team has found that setup tends to be the most difficult part of the rollout, and the most effective way to handle this was to be on hand through the initial phase, **providing face-to-face support during those initial stages**. In addition, the Project team developed and provided walkthroughs, documentation and video tutorials to support DE students and off campus staff.

Staff and students alike found the speed of the trials limited their ability to explore and test the limits of the device. A lack of available documentation and information around mobile devices, applications, software and usage, was highlighted by many participants. There is a need for the many existing users and for any future systemic rollouts, for CSU to provide more information and

advice. One academic commented on the need for “an instant advice service” where you could ask “I want to do this...What’s currently the best app to do that?”. The Project has worked to establish some community of practice style, peer-supported groups and has provided assistance through Yammer. The Project is planning to complete the development of a Mobile Hub in 2013 to meet some of these needs, and to engage with various stakeholders to provide a one-stop-shop source of information around mobile.

ADDING COMPLEXITY

There is an issue with mobile enforcing a technological determinist approach that can often overcomplicate tasks and actually add complexity and reduce efficiency. **Completing some tasks and processes is more complex on mobile devices than some low-tech options** – paper and pen can often be a quicker, easier and cheaper. The application of mobile technology, like all technology, should improve the user experience and should be applied only where appropriate.

FUTURE LIBRARY OPPORTUNITIES

The 90 day circulation period due to Apple licencing, means that the iPads remain underutilised. At best, each can be borrowed 4 times per year. The only alternative is to configure the devices and preload them with apps before lending, which would require purchasing extra Apple computers and apps, and limiting student use. **A decision needs to be made as to whether the opportunity to experiment and learn about the devices is more or less important than the number of loans.**

Further marketing and promotion of the iPads may help with their circulation. This could include a concerted campaign on the Library and Student website, Facebook, Student News and so on, including information about iPads on the Library Services website for students on placement.

The use of iPads by the Faculty Liaison staff has been successful for demonstrating online resources and in online meetings. There is potential for Faculty Liaison Librarians to play a greater role in providing professional development for teaching staff.

Other Australian university libraries are offering classes, and demonstrating ways to use iPads and apps for learning. Feedback from the Library Information & Liaison Services staff, suggests there is a need for training. The Division of Library Services does not provide on campus classes, and there are aspects of this type of training that should be addressed by Learning Skills Advisors. However, there is potential for Library and Learning Skills to offer online iPad and app training through Adobe Connect, and support for a website that recommends apps.

Investigation of suggested options for lending Sony Readers is necessary. Alternatively, it is important to consider alternative uses, such as Faculty Liaison demonstrations and training for academics, or offering them to Student Service’s Disability Liaison as potential resources for students.

TECHNOLOGY PREFERENCES

As part of the exit surveys staff and students were asked what their technology preferences were and what should be mobile. This was done in an effort to understand the areas that CSU should focus on in order to develop a more user-focussed approach for future planning and projects. We also analysed the feedback from students in other areas of the survey to investigate further how they have been using the device, and for what purpose, so as to provide a richer perspective.

Staff and students commented that the device could not replace their laptop/desktop. The lack of a physical keyboard was prohibitive for many students, in particular for writing longer articles, essays and reports. The lack of like-for-like applications was also significant in this area, as was the

unconventional file management system the iPad uses, which made it difficult to move and transfer files without a reliance on other devices or Cloud services.

Staff and students were asked directly what their technology preference (laptop, desktop, paper, tablet & Smartphone) was for a number of tasks related to teaching, learning and research. Student Group 1 (SG1) participated in the first set of trials in Session 1 and Student Group 2 (SG2) continued through till the end of the year.

The combined totals are quite one sided:

Laptops are the preferred technology for

- » writing an essay
- » using PebblePad

Tablets are the preference for the remainder:

- » writing blogs/wikis
- » accessing Interact
- » accessing student.csu
- » accessing staff.csu
- » reading learning materials
- » taking to class
- » taking to practicum
- » taking to conferences
- » taking home

If the university were to supply a device it should be a tablet.

One task had a preference for paper, which was “Read your Textbook”.

However there are some areas where there are significant differences in responses:

- » using PebblePad on the laptop was only SG1’s preference; SG2 and the staff were evenly split
- » results for writing blogs & Wikis were varied between student groups – SG1 preferring laptops and SG2 preferring tablets.
- » SG2 overwhelmingly preferred to access Interact and read learning materials on the tablet compared to SG1 and staff responses
- » staff and SG1 were much more inclined to read textbooks on a tablet but SG2 were overwhelmingly preferred paper
- » 100% of staff and 80% of SG2 preferred a tablet to take to class, significantly higher in comparison with the 54% from SG1
- » 80% of SG2 students who went on work placement during the trial preferred the tablet to take to practicum
- » 78% of staff going to conferences preferred the tablet compared with the 22% who chose their laptop
- » 89% of staff chose the tablet as their preferred technology to take home
- » In the final question “If the university were to supply a device it should be a...”, the SG1 participants were split, 46% for both laptops and tablets. However, in contrast, the SG2 and staff responses had a more consistent split of 80/20% and 78/22%

REWARD FOR MOBILITY

The mLearn Project has not only attempted to find out how mobile technology can be applied to learning and teaching, but also to investigate the possible rewards for its adoption and rollout. While the Project has not conducted financial or cost/benefit analyses as part of its brief, some of the initial

financial impacts and teaching and learning related outcomes can be commented on, from which some emerging themes can be seen:

- » Improved digital literacy
- » Support for current initiative
- » Increased engagement & flexibility
- » Enhanced communication
- » Reduction in costs

Improved Digital Literacy

The discussions and survey data from the program demonstrate that staff and students are reporting improved confidence and knowledge working with the technology. Students and staff have demonstrated an improvement in digital literacy by taking on increasingly difficult tasks, adopting new technologies and practices, and taking technological leadership within their faculties. In some cases this has come from surprising sources, as the technology and freedom provided in the Project have created an environment for experimentation and learning. Conversations have progressed from low-level discussions around how to use the device to more detailed technical questions around associated technologies, such as Cloud integration, QR codes and augmented reality.

Support for Current Initiatives

Mobile technology provides a platform to support current university initiatives, such as eStudent, paperless marking and an increasing move to online and blended modes of teaching. The trials have seen a large number of staff from the Project participating in paperless marking and other current initiatives. The iPads provide specific affordances that could allow them to further support a range of sustainable, pedagogical and technological initiatives across the university. They provide a platform for change and embody a very real and tangible alternatives, such as the ability to increase sustainability at CSU by reducing print materials.

Increased Engagement & Flexibility

Students and staff have been given much greater flexibility through the technological affordances and improved engagement with course and subject work. The devices are able to provide rich and engaging content, through apps and digital publications that take advantage of the unique abilities of mobile devices, sensors and digital affordances like 3D and interactivity. They can also facilitate an increase in work flexibility by providing the capability for staff to work remotely. They improve the options for flexible learning practice by leveraging the portability of mobile devices for digital content and wireless data connections.

Enhanced Communication

Mobile device provide opportunities for opening new channels with staff and students across a range of social media and online tools, improving access to current and future communication technologies. If rolled out more widely, this could improve communication options for CSU to students and peer-to-peer, that can take advantage of new technologies, such as social networks, video chat, text messaging and webinars.

Reduction in Costs

In one of the Project trials, a significant reduction in travel expenditure was achieved through the provision of iPads, providing a stable platform for contact while on placement. Instead of location visits, supervisory sessions were conducted via Skype and FaceTime and non-essential communication over social networks. Staff and students could also benefit from the reduction in costs of learning resources, such as textbooks or learning materials traditionally printed by CSU. Students could also reduce costs across a range of areas including hardware, textbooks, print and

travel, through the widespread adoption of mobile technology. These savings could assist students on the whole, and allow CSU to provide equity to specific cohorts of students by improving their ability to access CSU services, content and overcome issues related to costs and location. Costs could also be lessened through improved efficiencies providing staff greater flexibility in work location and time.

THE IPADS

This section will detail the Project experience with the iPads over the last year. The Project has taken a 'best of breed' approach for the devices being trialled, and at the end of 2011 iPads were chosen. Despite the number of recent developments in operating systems and additional hardware manufacturers entering the tablet space, it is still felt that the iPad is the best tablet solution on the market. Some of the reasons for this include:

- » both WiFi and 3G connectivity options provide access on and off campus. 3G is particularly suited for off campus usage particularly for workplace learning and remote locations
- » abundant app store and development ecosystem
- » largest market share and units sold worldwide
- » infancy and unavailability of other operating systems (Android, Windows) for tablets
- » lack of thriving app development for tablet devices for other platforms
- » consistency of user experience across devices provides a simpler system to manage
- » suitability for use across the course profile
- » enterprise management options are available, Mobile Device Management integration, and of potentially more significance, the Volume Purchasing Program for apps
- » the app ecosystem is thriving and 83% of developers have iOS listed as the platform of choice
- » the peripheral market is thriving and can augment the device and increase its applications in real life contexts
- » publishers have adopted the platform for making textbooks, enhanced texts and apps available to replace and supplement print texts
- » iOS is the most maintained operating system with adoption rates of new versions significantly higher and well managed than competing platforms

Connectivity

One of the main features of the iPad is that it is available with both WiFi and 3G connectivity options. Many tablet devices are available with WiFi only, which can be quite limiting in terms of their portability because of this dependency. The cellular data network, provided by Telstra, is able to be used in conjunction with the on campus, or at home WiFi, and extends the range of the device far beyond the normal location constraints. The trials have found this is particularly suited to off campus usage, in particular for workplace learning students, and those operating in rural and remote locations.

Some students found that the WiFi models were limiting their mobility. The required connection restricted the locations and environments in which they could operate, that is, some only to the university, as they had no WiFi at home.

While mobile data was never intended to be used as the primary connection for the device, 3G was an important component in extending its range, particularly for staff and students away from campus and home. For students on work placement and staff wishing to work remotely 3G became a lifeline and allowed them to operate outside of the normal constraints.

Content

The iPad created and established the tablet market and because of its market share and the sheer number of units sold, it has become the **first choice for developers and publishers when developing content**. In a recent survey, the developers of cross platform (iOS and Android)

development tool Titanium, responded that 83% have iOS listed as the platform of choice (Shirer, 2012). Over the last year there has been significant growth in app development for tablet devices for other platforms, but they are in essence playing catch-up. Another key area to note is the number of traditional publishers that have adopted the platform for making eBooks, textbooks, enhanced texts and apps available to replace and supplement print texts. **From a content perspective the abundant app store, signed up publishers and development ecosystem, make the iPad suitable for use across the course profile.**

Content Provisioning

The iPad is almost completely reliant on an Internet connection for functionality. The device is heavily dependent on Cloud storage and access to a PC to sync, manage and transfer content, settings, files and backup. This imposes some challenges relating to the provision of content, in particular traditional learning resources.

Files cannot be copied from physical storage straight onto the device, as there are no inputs for third party peripherals. Instead, files must be accessed online or transferred via the iTunes application on the user's PC. The reliance with online storage has significant implications for the provision of copyright material as it exposes CSU to different copyright statutes, which are more limiting than those applied to print or digital copies on a disc. This has significant implications for subjects or study areas heavily reliant on provided readings.

The reliance on online storage also poses some issues with regard to access and equity. WiFi connections are dependent on physical infrastructure to be in place in the student homes, in the workplace or on campus. On campus, students are covered by CSUConnect during their time in class or on the grounds, but once they leave they are left to their own devices. This is felt far more acutely by those studying in blended or distance modes, as they are completely reliant on providing the infrastructure themselves.

The 3G and mobile data options are a work around for many students and staff, but suffer from a dependency on an external service provider. Students may live in remote areas that have poor or no service available. Cellular data is also far more expensive and limited than that available from a home broadband plan. **An increase in the adoption of services that have high data requirements, in particular those with rich media, such as video lectures and online meetings, may place an additional burden and cost onto students.**

Support

The Project has found that support requirements have been minimal for the iPad. The rollout of a single device has provided an environment where there are "Known knowns and known unknowns" improving risk management, support provision and reducing ongoing issues. Past the initial setup stage, ongoing support requests have been non-existent. There have been a number of students and staff with single isolated issues, but these are often problems with outside platforms or interfacing with CSU infrastructure. These have been quickly resolved when the team can help, and ongoing issues logged via support requests.

The iPad has provided consistency of user experience across devices, making it a simpler system to manage. It has also helped to establish an organic community of practice, which is able to inform each other of practices and techniques, reducing the need for direct intervention.

No devices have failed, but there have been three devices damaged. These have been accidental drops and have resulted in smashed screens, but with hardware still functioning.

Extensibility

The designed simplicity of the iPad is one of its key selling points, the availability and proliferation of a peripheral market can augment the device and increase its applications in real life contexts. The Project has trialled a variety of keyboards and stylus to test the iPad's ability and efficacy in a variety of tasks.

The keyboards provided a much-improved experience for those whose main objective is the creation and editing of large amounts of text. When combined with the portability of the device, the keyboard adds a new dimension allowing the user to replace or extend the use of a larger, bulkier laptop or desktop.

The styli were used in a variety of mathematical applications to test their efficacy in improving handwriting and mark-up to replicate the functionality of pen and paper. Mathematics is a specific discipline area where handwriting is the quickest and most effective way of communication. Complex equations are easier to write and annotate the process of working through a mathematical problem.

There are a vast amount of other peripherals that the Project has not explored, which could easily be used in various discipline areas to augment and extend the capabilities of the iPad. There is a range of new and upcoming possibilities in the medical field, as well as in the arts and digital media. **These peripherals have the ability to change and adapt a very generic and adaptable device into a very specific and high spec tool, often at a much-reduced cost than a single purpose device.**

Build Quality

One of the unexpected aspects of having to support the iPad has been the lack of hardware issues. **None of the devices used throughout the Project has had any hardware or operating system failures.** Three devices were damaged by accidental drops, which resulted in smashed screens, but the underlying hardware was still intact. Comparing the quality of materials, fit and finish to the other devices purchased by the Project for the testing suite, the iPad is ahead of the field. The glass and aluminium body holds up particularly well to long periods of use and everyday wear and tear, and the plastic bodies on other devices may have difficulty in maintaining the same level of quality over the same periods of time.

Data Usage

The Project provided all 3G devices with 10Gb of data to ensure that access and equity were not issues. During these trials only one student and one staff member exceeded the data available. The student had to rely heavily on their iPad during a placement in a regional area, because of the lack of available services and infrastructure. The staff member forgot to turn off roaming when overseas, so expended their allowance at a significantly accelerated rate.

Students were concerned about data usage especially those using 3G. Despite all costs being covered by the Project, students did show an unexpected concern. Once shown how to check progress, they were pleasantly surprised, especially as some students were heavy Skype users during their practicum.

Given that there were only two requests for additional data, it can be safely assumed that in most cases heavy data usage occurred over WiFi and not 3G. Most staff and students reported that they used CSU Connect and their home WiFi far more than the 3G connections. A number of other conclusions can be inferred from this:

- » most use of the iPad was on campus or at home
- » operating system limitations on the download of larger apps may have prevented some downloading

- » 3G was used to augment WiFi and used only when it was unavailable due to location
- » some staff and students reported using 3G when there were issues with CSU Connect, as it provided a safety net in these situations

The Tablet

The form factor of the tablet has been shown to be beneficial in an educational context. The larger screen and ergonomic design allow the device to be both portable and functional for a variety of tasks. Reading and writing tasks were performed extensively on the iPad and the large screen size was an important factor. In comparison with a Smartphone **the larger screen makes it easier to read, improves usability and functionality for a number of tasks, such as email, marking, mathematics, writing and often extends functionality by providing a richer and more fully featured interface to allow more complex and intricate tasks.**

The feedback from participants shows that the device will not replace their laptop/desktop. This fits the current trend in post PC computing, where tablets do not replace other devices, instead users add technology, so that they are interacting with multiple devices. The limitations of the device also impact on this decision as they are not as full featured as a standard PC:

- » sacrifice features to be more portable and provide longer battery times
- » ability to write essays is impacted as well by the lack of a physical keyboard
- » lack of like-for-like software equivalents
- » lack of a visible file system

However, the mobility of the iPad has complemented many teaching and learning processes and become an important tool to create, reference, research and communicate across locations and environments. **It fits seamlessly into their current practice and in many cases improves their ability to connect and perform.** It provides them with a form factor where they feel comfortable to read, which is one of the many complaints of PCs and the increasing move online. The tablet provides an interesting platform in the education sector, as it bridges the personal Smartphone and the work-oriented PC. Its role can be seen as additive, as it does not reduce functionality or purpose from these two universal devices, but adds a new dimension. As an interactive and media-rich consumption device through to an all purpose portable creation tool, the tablet has created a new niche for technology, one that embodies the potential for a better connected and authentic learning environment.

MOBILE DEVICES

Mobile Devices offer educational institutions significant opportunities over other types of hardware for a number of key reasons:

- » align closely with strategic moves by this institution and publishers away from paper, by offering a highly capable alternative
- » incorporation into our workplace and learning and teaching practices will create a platform for institutional growth and innovation

Device Sizes & Uses

The Project has been working in an increasingly volatile marketplace as mobile technology evolves rapidly with new models, devices, operating systems and applications. Change tends to happen on a daily basis. At the beginning of the Project, devices were typically broken down into tablets and Smartphones, however the last year has seen the blurring of those distinctions. There has been a push to develop a range of in-between screen sizes, so that the landscape now typically looks like this:

- » Smartphones 3-5” displays

- » Phablets 5-7” displays
- » Mini Tablets 7-8” displays
- » Tablets 9-11” displays

The varying sizes lend themselves to a range of specific purposes and tend to come with their own set of unique pros and cons.

The Smartphone tends to be the ‘hero’ device attracting the majority of sales and its small size lends itself to being the most portable and frequently used. The phone component tends to link the device to a personal plan as devices are contracted through telecommunications companies. These contracts tend to make them excellent personal devices, but difficult to rollout or provision in any other way, unless explicitly required for the employer. The contracts are typically 24 months, which means turnover of devices is far more rapid than other technologies and creates an ecosystem that is more current and up to date in terms of latest standards.

The next size up is the Phablet, a crossover between a tablet and phone, and tends to suit those who want a device that is more capable for creating purposes, but the portability of a Smartphone, hence the need for larger screen real estate. They often come with a stylus that allows notepad-like functions. These devices tend to come with a phone so the same contractual arrangements apply. The Phablet is perhaps in a niche of its own for those willing to compromise on the portability of the phone or the functionality of the tablet.

The Mini Tablet range suits those who want to primarily consume content as the device likely to be lighter and better fits a hand. These devices are fantastically portable, have large data capacity and long battery life, compared to phones because of the extra size. This makes them extremely popular for those wishing to read, watch and listen, and offer a far more immersive and rich media experience than an eReader. The smaller size however impacts their ability for typing, sporting a small keyboard more suited to thumbs than a traditional ergonomic typing position. The smaller screen also diminishes the available screen real estate which many developers struggle with, either cramming a full tablet into the smaller space or upscaling the Smartphone version.

The tablet size provides the larger screen for more interactions and adds functionality for touch interactions and consumption of media. This is the territory carved by the original iPad, with a footprint slightly smaller than an A4 page. These devices provide the optimal blend for mobile experience. They are far more portable and lighter than their laptop equivalents and have much longer battery life. They come without the contractual implications as most devices sold are WiFi only, but many allow cellular data to be used that can be additionally purchased independently.

Recommending Devices

For an institution moving forward with a mobile strategy, recommending a single device would not be prudent. A better way to approach this would be to examine the affordances of the different types of devices, and where they may fit into a more rounded and inclusive strategy.

Smartphones

The Smartphone is already deeply embedded in Australian society and should be considered the heart of any mobile implementation strategy. In June 2011, 25% of the adult population of Australia had a Smartphone, and by June 2012 that figure was 49% (ACMA, 2013). Such market penetration and the associated difficulties around personal contracts would preclude provision of devices, except to staff for work purposes. **The adoption of an enterprise-wide BYOD to Smartphones would be the most suitable.**

A mobile strategy needs to accept the diversity of this group of devices and enable an open and agnostic approach to support. This would include:

- » ensuring web over app for access to essential or required services, i.e., building a web presence as preference to ensure a cross platform and device agnostic approach
- » app development matches student and staff ownership, i.e., analytics and climate surveys of staff and student ownership should become consistent metrics for analysis

Phablets & Mini Tablets

These products are a niche of their own for those willing to compromise on portability or functionality, and would preclude provision unless they were specifically suited to an application. CSU should ensure that the same **enterprise wide BYOD policy applies to this device group**

Tablets

For educational institutions the tablet is the most suitable device type for a number of key reasons:

- » still not as prevalent as Smartphones among the general public and do not come with any associated issues around contractual obligations
- » larger screen provides increased sizing and improved readability to provide a viable alternative to print
- » extra size allows for a larger battery and the extra screen real estate allows for an optimal typing, writing and drawing experience
- » devices are the easiest to provision and rollout to staff and students, and have proven success across a range of institutions including CSU

CSU needs to ensure support for a BYOD policy for these devices, but should investigate complementary provisioning models to groups of staff and students. A range of provisioning models could address issues around equity and access, course requirements and professional development.

PROVISIONING DEVICES

Why should CSU Provision Devices?

The mobile device market is extremely suitable to a BYOD model but it comes with significant risks and implications for institutional resources. In particular, there will be a requirement for increased support simply because of the dispersed and diverse profile of devices available. This diversity is only set to increase in the next 12 months as new operating systems, **FirefoxOS**, **Ubuntu Touch** and **Tizen**, are being rolled out. This is on top of the significant fragmentation of Android operating systems and massive range of devices with wide ranging capabilities.

This diversity creates significant issues for the development of specific solutions for mobile devices and impacts the ability of the university to provide best of breed solutions instead of low-common denominator answers. In terms of developing apps and delivering content, it presents significant challenges as there is no ability to develop a one size fits solution, instead requiring a range of solutions, which increases cost and time for development.

Provisioning devices means taking a single vendor approach, not necessarily a single device approach, but one where there is a common operating system, hardware specifications and device types. A single vendor approach comes with the risk of lock-in, but also has significant benefits for the university:

- » Reduction in support requirements as there are “Known knowns and known unknowns” improving risk management, support resources and issues can be replicated and responded to in a timely manner.
- » An organic community of practice can form around a common ecosystem capable of supporting each other with regard to practices and techniques reducing the need for direct intervention.

- » Simplification of development and testing due to platform consistency applies to the development of content, resources, applications and systems.
- » Devices can be managed to a greater degree and open new opportunities for different types of ownership models, such as leased, loaned or contracted

Provisioning Models

From initial discussions in the Project the implementation of a range of provisioning models addressed concerns around costs and sustainability, and provide the institution with a best practice model. It could also provide a way for CSU to leverage its relationships with corporate interests to develop some new, innovative methods ensuring our students and staff are provided with cutting edge, high quality equipment.

Some example models could include:

Institution Provided – CSU would provide the device to staff and students to own and cover costs, or recover through other measures. This would only be suitable in small numbers but could be used to provide assistance to Indigenous and low SES students.

Institutional Loans – CSU would provide the device as a loan to staff or students. These could be similar to leasing arrangements and made contingent on employment and enrolment. The institution would need to make the large initial investment but would be able to recoup costs. This would lessen the upfront impact on students, faculties and divisions.

Institution Sourced – CSU would act as an agent for various hardware providers and leverage bulk buying and discounting to reduce costs. Existing internal services could be expanded to students who would benefit from savings.

Vendor Sourced – CSU would establish working relationships with vendors to provide staff and students with discounts, with all sales conducted outside the university. This would require negotiations with external manufacturers and/or vendors, but could result in significant savings without major internal investment.

Data Contracts – CSU could negotiate an agreement with a telecommunications company to provision devices to staff and students. Each contract could operate outside the university but leverage the bulk buying capabilities to reduce costs to students. This arrangement could extend to allow CSU data to be un-metered, in effect providing students and staff with free data for their work, learning and teaching. This method could leverage on the type of margins that retail sellers earn from sales, but could be used to offset costs to students.

Rollout Options

Along with choosing the provisioning model, there may also be scope to investigate deployment models. Most tablet solutions can support **managed and unmanaged deployment** models, providing flexible solutions to individuals and institutions. Each method has specific pros and cons that need to be matched to the specific purpose and goal of any deployment to ensure suitability.

Managed

The processes around Managed Devices are similar to current methods used in DIT. The university would retain ownership and management control of the device and would also need purchase software to be made available. **This method requires a manual initialisation process where an ‘image’ is created, and then rolled out across the other devices.** The image can contain protocols to simplify the setup of some processes like email, restrict functions and features on the device, allow tracking to ‘find’ devices and preinstall applications and web links. There are however significant

drawbacks to this methodology. Devices are essentially locked to the original computer that managed the setup, and require a back-to-base approach for management of devices needing the devices to be physically sent back to their original setup location. To provide many management features **the devices essentially become locked down and any customisation, installation of other apps or data on the devices is unable to be backed-up or maintained by the user.** This model would be suitable for applications such as creating class sets of devices that can be borrowed and returned, but never owned or customised. This kind of arrangement would be similar to a computer lab model.

PROS:

- » Devices can be set up to be loaned & shared to provide similar functionality as a computer lab
- » This computer lab model is portable and less reliant on physical infrastructure.
- » Provides a way of giving access to apps, interactive texts, rich media for classes and groups

CONS:

- » Manual process of setting up can be both difficult and time consuming. Additional equipment would be required for large deployments.
- » Back-to-Base support requirements limit flexibility and increase the need for additional support and ongoing maintenance.
- » Any devices that are loaned and are not using this model may violate Apple's Terms and Conditions, which have specific requirements around a user's Apple ID and how it can be applied to a device.
- » There are options to reduce the management features on the devices but in these circumstances there is little benefit.

In a general sense a managed deployment would suit applications where devices are required to be managed, such as a lab environment, loan devices, or where support requirements need to be kept to a minimum and externalised.

Unmanaged

Unmanaged rollout is essentially handing the device over as new in the factory default. **This method requires a user to manually setup the device they receive.** This is the model that the project deployed for all its trials in 2012, as it provided the most flexibility and allowed greater ownership and buy in from the students and staff. The users are allowed complete freedom to set up, install and use the devices however they want. **The devices are essentially totally open to all customisation, installation of other apps and data on the devices is backed-up or maintained by the user.**

This model would be suitable for all other applications other than creating sets to be borrowed and returned. It is similar in scope to the Bring Your Own Device (BYOD) model, but takes advantage of the university for purchasing, logistical rollout and support. In terms of software, Apple has recently enabled the Volume Purchasing Plan, which would allow the university to buy apps in bulk and then distribute them to staff as redemption codes.

PROS:

- » Provides maximum flexibility and customisation from the user's perspective to encourage personalisation and usage.
- » This method improves digital literacy by encouraging ownership of the device through responsibility. With the correct support this has seen the growth of significant and applicable skills and knowledge in staff and students.

CONS:

- » Requires users to set up the device themselves, which can be simplified by rolling out documentation, tutorials and face-to-face support.

- » Users are responsible for backing up and maintaining the device. This is a simple process but does require users to learn the process.

An unmanaged approach does put the onus on the user to maintain and manage their own device. This goes against the traditional approach to provisioning technology at CSU and many institutions, however some of the **distinct benefits to this are a greater sense of ownership and the development of better digital literacy**. Users are required to learn and understand their device to a further degree, but are able to customise and personalise their experience to suit themselves. This model is a trade off between the provision of additional support and development instead of management services and infrastructure.

SUPPORT

It is vital that part of the decision-making in this area includes support. Overall, the Project has seen a reduction in support requirements through the adoption of a single vendor approach, which has improved the efficiency and efficacy for our rollouts.

In the surveys, staff and students were asked to choose which support resources were the most useful from the following:

- » Documentation
- » Walkthrough Videos
- » Interact Site
- » Forums
- » Face to Face
- » Other

Staff and students overwhelmingly found face-to-face support to be the most useful. This can be confirmed by the Project team, as it appeared to be the most productive way to rollout the technology, up skill staff, and provide feedback and ongoing support. During the staff trials the Project also tested the establishment of an organic community of practice. These events were informal but provided a chance to meet with technical staff. It was observed that these sessions would quickly concentrate on peer-to-peer learning, as staff shared their experience, so facilitation became the main role for the Project.

VENDOR ALTERNATIVES

At the launch of the Project there was really only one tablet – the iPad. Throughout 2012 we have seen a huge range of android devices being released and newcomers, like Microsoft, come to the mobile party. The following table maps out the three main tablet candidates in the current crop of operating systems (May 2012) and how they compare in a number of key areas.

Model	Apple iPad	Window Surface	Samsung Galaxy Note
<i>Device Type</i>	Tablet	Tablet	Tablet
<i>Operating system</i>	iOS	Windows 8 RT	Android 4.0
<i>Wi-Fi</i>	Yes	Yes	Yes
<i>Cellular Data</i>	Yes	No	Yes
<i>External Storage</i>	No	Yes	Yes
<i>HiRes Resolution</i>	Yes	No	No
<i>Software Availability</i>	Hi	Low	Med
<i>Software Compatibility</i>	Med	Med	Med
<i>Build Quality</i>	Hi	Hi	Med
<i>Peripheral Support</i>	Hi	Low	Med
<i>Internal Storage</i>	Hi	Med	Low
<i>Support Requirements</i>	Low	Low	Low
<i>Device Price</i>	\$539 - \$1009	\$559 - \$679	\$585 - \$835
<i>Cover Price</i>	\$45 - \$80	\$140 - \$150	\$45 - \$60
<i>Total Price Range - RRP</i>	\$584 - \$1089	\$699 - \$829	\$630 - \$895
<i>Comments</i>	* Pricing scale includes WiFi and 3G		* Pricing scale includes WiFi and 3G

NEXT STEP

Moving forward towards developing a better plan for mobile will require collaboration and consultation between divisions, faculties, staff and students. **The first step would be to establish a working group to investigate how CSU can support a rollout of mobile devices to both the staff and student bodies.** This group will be tasked with providing details relating to the issues involved in a rollout, and a variety of provisioning models based on financial and sustainable practices.

This working party would be tasked with:

- » Opening a specific and focused dialogue with each school and division to develop requirements, opportunities and affordances that mobile technology could deliver. Discuss the device specifications, software and hardware requirements for a range of discipline-specific tasks and possible research opportunities.
- » Opening up dialogue with potential commercial partners and investors. Mobile technology could offer a range of new commercial opportunities for CSU, with many companies interested in establishing relationships in this area. This would be mutually beneficial in terms of exposure and marketing of CSU as a progressive and modern university and possibly lead to new income streams.

From the specifications developed the cost of provisioning models would be developed including ongoing management of devices, lifecycle and deployment. This should be done in conjunction with Finance and DIT to consider appropriate funding sources. Judging the current climate should be based on a 24-month turnaround of devices.

ISSUES

The mLearn Project has faced many challenges introducing a range of new technologies into the CSU ecosystem. Most technical challenges could be overcome through consultation between the users, the Project team and DIT. Other challenges around practice and process were able to be met through the diligent work of the academics and the support of the Project team. However, a number of ongoing issues have arisen that cannot be simply fixed and require more consideration and effort.

CSU Connect

For internal students the advent of CSU Connect has been immense. It has simplified access and created a system where more devices can now be connected. These improvements can be seen in the level of uptake and the amount of traffic this component of the network now attracts.

The coverage on most campuses is exceptional with very few areas that do not have an acceptable signal. However, **the most complained about component of the project has been CSU Connect.** The student surveys and feedback from staff highlight a number of key concerns:

These issues are often not singularly experienced and are regularly combined – so lack of a stable connection, the Sleep/Wake cycle and the IAS authentication all happening simultaneously, which often creates an overwhelmingly frustrating user experience. This negative user experience is what the staff and students have fed back to the Project asking specifically to identify problems and areas that impact on the experience of using mobile devices at CSU. A bad user experience is not something that will often be reported through standard reporting functions – service desk and student central – so DIT is most probably operating in the dark.

Another problem occurred in the Library trials of the Sony Readers on CSUConnect as the network encryption method (EAP) is not supported by the Reader. Instead, a personal Wi-Fi point must be used with security type Open, WEP or WPA.

The issues related to User Experience are going to be increasingly relevant and important as it becomes relied on for assessments, class work, subject administration and access to online content and resources. With the number of devices now available, especially those that have no ‘wired’ alternative, the WiFi network will be critical for the core business of the university. The reliance on WiFi for mobile devices means that CSU Connect is a vital component of CSU’s overall mobile strategy, so it is important to highlight a number of areas that would improve the experience:

An Agile Approach

The Project’s development of the Subject Outlines as a web application has been accompanied by a range of new issues and challenges. **The use of an agile development process has ensured that the team has been able to adapt quickly to changes in circumstances**, particularly the rapid technological changes in the mobile space, which has also led to some significant delays. **These delays have been primarily caused by the friction of an agile development approach trying to mesh with CSU’s existing waterfall methodology.** In essence, these are two systems operating in different ways, agile as a cyclical process and waterfall as a staged progression, but it was hoped that the two would be able to complement each other. However, the experience of mLearn has highlighted that the current methodology and process relies on a strict process and documentation workflow to be followed, so what eventuates is a two speed system, where the gears tend to jam and clash at key points in the process.

The mLearn Project has always been driven to explore the practicalities of mobile in situ, and it is only through this experimentation that we have been able to measure and learn from the process. The requirement for mobile development to be agile, adaptive and iterative is linked explicitly to the realities of the marketplace and the technology sector, as it undergoes massive growth, expansion and investment. **Change is the norm in the mobile space and agility is a requirement, not an option.** In some ways this is in contrast to CSU’s requirement for its IT systems to be risk averse, stable and planned for the long term. This is not to undermine the fundamental business

requirements, but **additional scope and capacity for agility, is becoming increasingly vital for innovation, particularly in the learning and teaching space.**

Learning Resources

After investigating, the Project found that existing formats are too specific for their delivery, and **the mobilisation of existing resources is too difficult to adapt to a huge variety of mobile devices.** This is also challenged, but there is a lack of consistency in development processes – some being done by media services to a high level of skill, others done by less capable academics and using software that creates a proprietary level of code to the content. The final level of complexity comes from the diverse content across our broad course profile. There are so many different types of content across the courses and discipline areas, which often require bespoke and customised solutions.

In essence what we have found is that **a solution to mobile requires not a ‘one size fits all’ approach, but a way of creating content that is adaptable to many points,** such as a way of creating and authoring content once it has the ability to be adapted to many end points (print, web, app, eBook), and the ability to Create Once Publish Everywhere (Jacobson, 2009). Content has traditionally been linked directly to presentation – books were developed to be printed, web pages for web sites, video for TV. However, new digital formats and devices are challenging that behaviour. **To provide a consistent user experience, content needs to flow like water, changing its shape to match every presentation channel.** In 2013 the Project aims to address this by developing a proof of concept that would allow the development of adaptive educational resources.

Conclusion

The methodology employed by the project has provided an excellent model for introducing and trialing new technology. The project has been able to conduct a variety of trials across different faculties, disciplines, locations, applications, staff and student cohorts. Conducting real world trials on a small scale has proved easier to support and the team has been able to respond quickly to issues, significantly reducing their impact. The trials have provided us with many lessons as to what works and what does not within our current situation and because they have been conducted in situ - with our students, the current technology and infrastructure - they have provided insight and a better understanding our present environment and capabilities.

The project has made a rigorous attempt to be expansive and touch on a wide range of areas related to our institution, our staff and students to discover the issues and opportunities associated with mobile technology. What we can say is that mobile represents a significant opportunity for CSU but presents us with many challenges and questions to explore.

Mobile is now the New Normal and can no longer be considered an add-on or a nice-to-have; it is the standard technology that more people right around the world have access to than any technology before it - including cars, radio and television (Ahonen, 2011). Mobile is changing technology (Evans, 2013) and represents the dawn of a new normal that is a user-centric ecosystem that encompasses multiple devices - tablets, phones, laptops and desktops. An ecosystem where mobile devices increasingly represent the primary device because it is compact and affordable. We are already living, working and learning across multiple devices and mobile represents just the first wave of embedded and contextual technology. Higher education is entering a stage where we need to change how we think about technology, less about single solutions, more about operating in ecosystems. There is no single device, no single app, and no single service that can provide the solution because the new normal is inclusive rather than exclusive, complex rather than simple, and expansive not restrictive.

References

- Australian Communications and Media Authority (ACMA), (January 2013). Report 3—Smartphones and tablets: Take-up and use in Australia. Communications Report 2011–12 series. Retrieved from http://www.acma.gov.au/WEB/STANDARD..PC/pc=PC_600063
- Beck, K., Beedle, M., van Bennekum, A., Cockburn, A., Cunningham, W., Fowler, M., ... Thomas, D. (2001). Principles behind the Agile Manifesto. Retrieved from <http://agilemanifesto.org/principles.html> [viewed 27 May 2013].
- Cramm, H., Seguin, J., & Adler, R. (2011). iDevices and occupational therapy. *Occupational Therapy Now* 13(3), 19
- Jacobson, D. (2009, October 13). COPE: Create once, publish everywhere [blog post]. Retrieved from <http://blog.programmableweb.com/2009/10/13/cope-create-once-publish-everywhere> [viewed 27 May 2013].
- McGrane, K., Kadlec, T. (October 18 2012). Content Strategy for Mobile. Fresh Squeezed Mobile Podcast. Podcast retrieved from <http://fsm.bdconf.com/podcast/content-strategy-for-mobile>
- Rajasingham, L. (2011). Will mobile learning bring a paradigm shift in higher education? *Education Research International* 2011 1-10
- Ries, E. (2011). *The Lean Startup*. New York: Crown Business.
- Shirer, M., (August 2012). Voice of the Next-Generation Mobile Developer. Appcelerator / IDC Q3 2012 Mobile Developer Report. Retrieved from <https://pages.appcelerator.com/Q32012AppceleratorIDCSurveyReport.html>
- Tomori, K., Uezu, S., Kinjo, S., Ogahara, K., Nagatani, R., & Higashi, T. (2012). Utilization of the iPad application: Aid for decision-making in occupational choice. *Occupational Therapy International*, 19(2), 88-97
- Windman, V. (2012). Occupational therapy apps. *Technology and Learning*, 32(7), 26

Image Attribution

Tools designed by Alban Champliau from The Noun Project

Evaluate designed by Scott Lewis from The Noun Project

The mLearn Team

The team working on the mLearn project are divided into the Steering Committee, that oversee the project from the perspective of different stakeholders, and the Project Team that carry out the day-to-day tasks.

The Steering Committee

- » Sponsor – Philip Uys – Director Strategic Learning & Teaching Innovation
- » Project Manager – Michael Van Der Veeke
- » Project Lead – Tim Klapdor – Innovation Technology Officer
- » Marian Tulloch – Executive Director Student Learning
- » Di Ireland – Director Enterprise Architecture & Liaison
- » Andrea Crampton – Learning & Teaching Sub-Dean Science
- » Alice Ferguson – Director Client Services, Library
- » Liz Smith – Director Academic Support
- » Carole Hunter – Educational Designer

The Project Team

- » Vanessa Salway – Librarian
- » Ivan Saric – Solutions Coordinator
- » Roderick Haggith - User Interface Developer
- » Tyswan Slater - Graphic & Interface Designer
- » Rob Stone - Graphic & Interface Designer
- » Jared Hilliers - Graphic & Interface Designer (past member)

The project would not have been possible without the investigative work done by the ILSC commissioned Mobile Learning Investigation by James Brann, Lisa Griffin, Simon Thomson, Matt Morton-Allen, Philip Uys & Tim Klapdor. You can [read the report here](#) which includes a range of use cases and personas.

mLearn 2012: Lessons Through Exploration
by Tim Klapdor
Copyright: 2013 Charles Sturt University.

This work is licensed under a Creative Commons Attribution-Non Commercial-NoDerivs 3.0 Unported License.

