TRINITY COLLEGE
THE UNIVERSITY OF MELBOURNE

REPORT ON THE STEP FORWARD IPAD PILOT PROJECT

14 JANUARY 2010

Glen Jennings, Trent Anderson, Mark Dorset and Jennifer Mitchell

CONTENTS

Executive Summary and Recommendations 3

Key Findings: 4

Key Recommendations: 4

Main Report 5

Survey and interview results 7

Central Proposal from Staff and Students 11

Comparison of iPad with other mobile devices 11

A note on Care and Servicing 12

Creativity, Information Transfer, Trinity's International Reputation, and the Market Place 12

Planning, Training and Support to achieve our goals 14

Conclusion 14

Appendix One 15

Appendix Two 16

Appendix Three 18

Attachment One 19

EXECUTIVE SUMMARY AND RECOMMENDATIONS

A survey of all TCFS academic staff in 2010 indicated a lack of familiarity, skill or confidence with a broad range of educational technology. The 'Step Forward' Pilot Project was designed to introduce and test iPads for August Entry students and to promote educational innovation and technological competence among TCFS academic staff. Key aims of the 'Step Forward' Pilot Project were to evaluate the technology and pedagogy of iPad use and to recommend whether or not iPad adoption would be worthwhile in the wider TCFS Program.

The 'Step Forward' Pilot Project was the first time that TCFS academic staff had the opportunity to use mobile devices with Internet access directly from the classroom.

iPads were chosen as the test models primarily because of educational flexibility and value, cost, weight, size, battery life, their low-maintenance, and the fact that the touch-screen technology enabled all learning styles including visual, auditory and kinesthetic.

The pilot also tested a small number of other similar devices including netbooks, laptops, e-book readers and an Android-based Samsung Galaxy Tablet.

The 'Step Forward' Pilot Project involved the following nine academic subjects:

- Chemistry
- Drama
- Environment & Development
- English for Academic Purposes
- Economics
- History of Ideas
- Literature
- Maths
- Physics

Other staff permanently allocated iPads during the pilot included:

- Education Technology Manager
- Associate Dean (Academic Operations)
- ITS Client Services Officer
- Literature Lecturer (September Extended) and key speaker at the TCFS Conference
- Subject Leaders in Literature and Maths 1
- TCFS Chaplain
- Manager Academic Administration
- ESL Co-coordinator
- Administrative Assistant (Swanston Street)
- IT Manager Client Services

44 August Entry students were allocated an iPad.

Pilot project staff and students were surveyed and interviewed about iPad use and were asked to make recommendations. Pilot staff also engaged in information creation and exchange via meetings, a dedicated email list, a dedicated wiki, a blog, through films of their iPad use in class and in academic meetings. In addition, all TCFS staff were involved in the iPad project through demonstrations of the device and various applications at the College's academic conference in September, through the Conference's plenary session and list of recommendations, through films of the iPad project posted in Trinity's portal, and via various demonstrations and meetings. Approximately ten staff not in the pilot project also used an iPad on temporary loan.

KEY FINDINGS:

- Pilot project staff and August Entry students overwhelmingly recommend iPads for use by other TCFS staff and students: 76.2% of staff and 80% of students
- iPads are effective, durable, reliable and achieve their educational aims of going further, faster and with more fun
- iPads have advantages for TCFS over other technologies such as netbooks and laptops
- iPads are not a replacement for desktop/laptop computers or other educational technologies but are an enhancement
- High quality audio-visual equipment in the classroom (such as flat screen TV monitors and document cameras), along with timely IT support, are required to enable full integration and best use of the iPads. Such equipment and support are crucial if the educational aims of iPad use are to be realised rather than thwarted
- iPad use reduces printing and paper use
- Past TCFS students and current TCFS students in other intakes have expressed interest in iPads and a wish that they had the chance to use iPads at Trinity
- TCFS staff responded positively to the demonstration and discussion of iPads at the September Academic Conference 'Engaging Students in the 21st Century.' The Conference plenary session expressed a desire for more iPads and AV equipment in Trinity from 2011
- The 'Step Forward' Pilot Project raised Trinity's global profile as an education innovator
- The market took note of the 'Step Forward' Pilot Project and this innovation has received positive interest from agents and parents of prospective students

KEY RECOMMENDATIONS:

- Proceed with the roll out of iPads to all TCFS academic staff in 2011
- Incorporate iPad and related technology training for all TCFS staff in 2011
- Ensure sufficient staffing to service the technological and pedagogical needs of the program (including an Education Technology Manager and a dedicated IT staff member)
- Expand on the work of the original iPad trial and prepare for the full roll out of iPads to all staff and students by using iPads for August Entry 2011
- Proceed with the roll out of iPads to all TCFS students in 2012

A final word from a student (surveyed on 5 January 2011):

I feel very lucky to have such a rare chance studying in a brand new way with the iPad and I'm moved by this surprising piece of new high-tech. If it is possible I really want to keep it with me and I would like to recommend to my mum cause iPad is also very helpful in our daily life. Finally, I'm looking forward that this project will be well developed in the future.

MAIN REPORT

A proposal approved by the Education Strategy Committee of Trinity College in mid 2010 set the expectations for the 'Step Forward' Pilot Project and for this report:

- "The pilot evaluative data, gathered by both survey and qualitative methods will be expecting to see positive educational outcomes in students and staff.
- Demystifying 'technology in education' for staff by the end of 2010 by promoting a change in culture at Trinity.
- Demonstrating iPad use to other TCFS staff not included in the trial in 2010.
- Observable competence in students at accessing and utilising information and resources for more independent learning.
- Assessing the flexibility, reliability and suitability of the iPad and associated services as much as possible for inclusion of further advances as part of 2011 budget planning."

The iPad project at Trinity College inherits decades of high quality education research that emphasises the benefits of properly planned and resourced 1:1 laptop programs that incorporate adequate training for staff, encourage creative learning, and do not mechanically impose a single technology. (See Appendix One)

The iPad itself is very new technology - it was released in Australia only on 28 May 2010 - so there is no longitudinal study of iPads to confirm the experience of 1:1 laptop programs. But the Trinity iPad experience itself is a useful contributor to the research, and the swift adoption of iPads across the globe in 2010 has generated a good deal of interest and information.

One recent example includes the Monash University Australasian Tablets in Education Conference (ATiEC) of December 2010, attended by three participants in Trinity's Pilot Project. This conference included many papers and discussions on iPads and other tablet devices, and the overall academic rating of iPads was very high. In the words of one August Entry lecturer who attended ATiEC: "After the second day [of the Conference] and especially after the last session which was a panel discussion on iPads versus Tablets, I was convinced that Trinity has made the right decision in the choice of the iPad."

The August Entry program was chosen to be the pilot group because of the relatively small size of the cohort, the broad subject range of the program, and the timing of the program. August Entry dates allowed enough time for the purchase and deployment of the newly-released iPads, and sufficient scope to assess the progress of the pilot by early 2011 when a decision would need to be made about future directions for technology in TCFS classrooms.

The total number of subjects in the August Entry Program is nine. And thirteen staff in the following nine August Entry subjects received iPads:

- Chemistry
- Drama
- Environment & Development
- English for Academic Purposes
- Economics
- History of Ideas
- Literature
- Maths
- Physics

A further eleven staff were allocated iPads as direct contributors to the Pilot, including the:

- Education Technology Manager
- Associate Dean (Academic Operations)
- ITS Client Services Officer
- September Extended Literature Lecturer (and key speaker at the September Conference)
- Subject Leader in Literature
- Subject Leader in Maths 1
- TCFS Chaplain (and Chill Out coordinator for August Entry)
- Manager Academic Administration
- ESL Coordinator
- Administrative Assistant (Swanston Street)
- IT Manager Client Services

Approximately ten other staff also borrowed iPads on temporary loan (sometimes for only a few days). Unlike the students and staff with permanent use of iPads, these temporary loan users did not contribute directly to the surveys and interviews that serve as the basis of this report.

A key characteristic of the Pilot Project was that the iPad was not imposed on any staff member or on any academic subject. In fact a number of subjects were not scheduled to participate in the pilot but signed on just before the August Entry course began at their own request. However, it is worth noting that two academic staff in one subject did not use their iPads and so the devices were relinquished at their request and reallocated in November 2010. The Subject Leader of that subject was given one of the returned iPads and he then tested the device, compared it with other tablet devices, and contributed to the final survey on behalf of his academic subject.

So although nine academic subjects were slated to use iPads in the classroom from the commencement of the August Entry Program, in practice eight of the nine actually used the iPads in the classroom with students. The two staff who did not use and then relinquished their iPads did not contribute to the final survey and interviews. This left the pilot with twenty two staff contributors.

Forty four students were allocated iPads. Given the option of using the iPad only while on Trinity grounds or taking the iPad for a permanent loan from the beginning to the end of the August Entry Program, all students chose to take the iPad as a permanent loan. This meant that they could use the iPad in the classroom and also at home and while mobile.

The broad range of academic subjects and administrative roles represented in the pilot group, and the fact that staff and students had the iPads permanently, ensured that the iPads were tested extensively and in a variety of settings by sixty six individuals. The two surveys of participating students and staff resulted in a total of 106 written responses. These surveys were supplemented by follow-up meetings and personal interviews with staff.

SURVEY AND INTERVIEW RESULTS

Pilot project staff and students rated the iPad very positively:

Feature	Good or Very Good/Student	Good or Very Good/Staff
Durability	60.0%	90.5%
Battery Life	60.0%	90.5%
Ease of use	66.7%	90.5%
Reliability	63.4%	85.7%
Receiving Content	56.7%	90.5%
Creating Content	26.7%	42.8%
Enhancing the Educational Experience	66.7%	71.5%

For the above seven features of the iPad, no student rated any of the features as very bad. (The ratings were from 1 to 5, with 1 as the worst.)

For the above seven features only one staff member gave a rating of 1. (This was for the single feature "Ease of use" which he rated as one because "I find the size restricting for my fingers.")

Rating Average (out of 5)	Student	Staff
Durability	4.0	4.62
Battery Life	3.8	4.48
Ease of use	3.8	4.29
Reliability	3.7	4.24
Receiving Content	3.6	4.29
Creating Content	3.1	3.38
Enhancing the Educational Experience	3.9	4.00

From their own experience, pilot project staff consistently rated key features and applications of the iPad as easy to use. Asked to consider what they would recommend to other academic staff for a potential broader trial in 2011, the staff recommended the following eleven features and applications, rating them from a low of 62% to a high of 95%.

Pages	76.2%
Keynote	81.0%
Mail	95.2%
Audionote	61.9%
eBooks	71.4%
YouTube	81.0%
Safari	71.4%
TCOLE	90.5%
Student Attendance	81.0%
Wi-Fi Connectivity	81.0%
Connectivity to a projector or TV screen	76.2%

Staff have indicated that paper use has decreased because of iPads:

Paper Usage	Not changed	Increased	Decreased	Unsure
Teaching material	9.5%	0.0%	61.9%	28.6%
Assessment material	20.0%	0.0%	40.0%	40.0%

Students and staff reported good educational outcomes from their iPad experience. In general these outcomes can be categorised under four headings:

- Active learning techniques
- Individualising content for students
- Real time access to information
- Collaborative learning

The flavour and content of these positive educational experiences are best captured in quotes from the participant's themselves. (*Please see Appendix Two for further examples.*)

Staff Member 1:

The greatest benefit is the iPad's power to present textual and AV material for analysis within lessons and provide them directly to the students. This has engaged the students more, made challenging content less overwhelming and provided the basis on which I can guide them to a clearer understanding of idea and argument analysis.

Staff Member 2:

The iPad made it possible for students to make connections between different ideas in literature classes because it enabled the teacher to draw on different media and enabled students to identify the relevance and application of material beyond the confines of the classroom.

Staff Member 3:

I found the classroom a more collaborative learning space. I was less expert and more co-pilot or navigator in some very exciting personal journeys of discovery.

Staff Member 4:

I believe that the world that current students work in will be highly collaborative, online and involve portable technology. By giving them a chance to taste that ahead of the curve will allow them to adapt better into what I perceive the future will be.

Staff Member 5:

In my case the main benefit of the device has been outside the classroom where students have shown a greater willingness to get onto TCOLE from their iPads.

Student 1:

Eco-friendly. Easier and quicker to obtain and share information.

Student 2:

Portable (compare to laptop).

Student 3:

Easy for searching information, not need to bring those heavy books.

Student 4:

Can surf the internet to gather information. Practical - while typing in Pages, we can instantly search the meaning of the word we don't understand.

Student 5:

Raising ... interest in studying, not wasting time copying down all the notes but just need to look at the notes being downloaded from the Portal and listen carefully to what teacher is saying.

However, there were some negative comments and experiences related to iPad use, or some perceived shortcomings and potential problems that need to be addressed. In general these concerns can be categorised under four headings:

- Inadequate AV facilities and IT support
- Technical limitations of the iPad
- Training needs
- Distraction

(*Please see Appendix Three for further examples.*)

Staff Member A:

The main draw back of the iPads was the inability to transfer information across applications without connecting the device to another computer. Both I and my students found this inflexibility placed a frustrating and unnecessary limit on the iPad's use as a report writing device. Apple will need to fix this issue.

The well-known issue of the inability of the iPads to handle Flash also unnecessarily limits its use online. This is a major drawback as one is forced to look up alternative sites that do not use Flash or to see if video material is available on YouTube. It is not always possible to find the same information or AV material and even when it is, it is a massive waste of time. Again this is an issue that Apple must fix.

Lastly, monitoring how students are using the iPads can be an ongoing issue as they can provide a source of distraction from class activities. This is not a large problem, rather it fits within the typical classroom management issues faced by teachers dealing with younger student cohorts.

Staff Member B:

I find the keyboard quite small for creating content. I much prefer to prepare Keynote or Pages documents on my computer and then email them to myself to use on the iPad. Even before I had Keynote installed on my computer, I was using PowerPoint and then opening it in Keynote on the iPad.

Staff Member C:

My main concern isn't with the iPads but ensuring that the teachers are given enough training, attention and support to assist them as they become more familiar with the technology and the peripheral technologies involved (TCOLE, AV equipment, etc).

Staff Member D:

One concern may be distraction, but still can be controlled.

Student A:

It is too easy to delete documents. Because of touch screen, I lost several important notes without care.

Student B:

iPad sometimes distracts me by games and chatting tools.

On the issue of distraction in the classroom it is important to note that students themselves are clear about appropriate and inappropriate usage. This consciousness - and criticism of themselves or their peers when iPads were used inappropriately - is something that can be encouraged and harnessed in the classroom and beyond. Such awareness is potentially a powerful force in a student's independence, responsibility, and self-monitoring.

Moreover, while many staff considered distraction to be a potential problem of iPad use in the classroom, survey and interview results show that in practice staff did not find their students distracted or tempted away from their academic work by their iPads. A typical staff comment was noted above:

[Distraction from classroom activities] is not a large problem, rather it fits within the typical classroom management issues faced by teachers dealing with younger student cohorts.

Nonetheless, it should be recognised that the August Entry cohort is small, and the bulk of teaching is done in tutorials where teachers and students are in very close proximity and in a dynamic relationship of dialogue and interaction. If iPads become standard equipment for students in large lectures within TCFS in the future, lecturers will need to be aware of the potential for distraction from students who could access the Internet or play games on their iPads (just as lecturers should be aware now of the potential distraction from mobile phones, comic books, notes from classmates, and the myriad of other distractions found in lecture theatres).

CENTRAL PROPOSAL FROM STAFF AND STUDENTS

To the key question "would you recommend use of the iPad to other staff and students at Trinity?" the endorsement from the pilot project respondents was overwhelming:

Would you recommend?	Yes	Unsure	No
Student	80.0%	6.7%	13.3%
Staff	76.2%	23.8%	0.0%

COMPARISON OF IPAD WITH OTHER MOBILE DEVICES

All pilot project participants were allocated an iPad with wireless and 3G capability. But for the sake of comparison a small number of other devices were tested by a range of Trinity academic and administrative staff.

These devices included:

- iPod Touch
- Dell Inspiron Mini 10 (1080)
- Apple MacBook Air
- Samsung Galaxy Tab
- Amazon Kindle Reader

(NB: The iPad range starts at $629 for Wi-Fi only, pricing in the chart below is based on the Wi-Fi + 3G model)

	iPad	iPod Touch	Dell Inspiron Mini 1018	MacBook Air	Galaxy Tab	Amazon Kindle
Weight	.68kg	.101kg	1.33Kg	1.06kg	0.38kg	.241kg
Battery Life	10 hours WiFi/Video/Audio	40 hours audio, 7 hours video	5 hours WiFi/Video/Audio	5 hours with wireless	6 hours	Up to a month with wireless off
E-Books	All, other than protected adobe	All, other than protected adobe	All, other than those from iBooks	All, other than those from iBooks	All, other than protected adobe and those from iBooks	MOBI, PRC, TXT, TPZ, AZW, PDF
Cost (RRP)	$799	$268	$399	$1139	$999	US$189
Software Cost	Free to $12.99 generally	Free to $12.99 generally	Free to $99 generally	Free to $59.99 generally	Free to $12.99 generally	Free to $9.99 per book
E-Mail	Yes	Yes	Yes	Yes	Yes	No
Ease of use in Lecture Theatres	Easy	Easy	Somewhat difficult	Somewhat difficult	Easy	Easy
Startup Speed	Instant	Instant	Near Instant	Near Instant	Instant	Instant
Resolution	1024x768	960x640	1024 x 600	1366x768	1024x600	600x800
Operating System	iOS 4.2	iOS 4.2	Windows 7	Mac OS X	Android 2.2	KindleOS
Camera	No	Yes	Yes	Yes	Yes	No
Screen Size	9.7"	3.5"	10.1"	11"	7"	6"
IT Device Management	Easy	Easy	Difficult. Additional concerns about viruses and spyware	Medium	Medium	Easy
End-User Usability	Very Easy	Easy	Medium	Medium	Medium	Easy
Application Distribution	End user through moderated App Store, can be centrally managed using mobile device management	End user through moderated App Store, can be centrally managed using mobile device management	Variety of options including central device management, user based install (if given admin rights)	Variety of options including central device management, user based install (if given admin rights)	End user through unmoderated multiple app stores, can be centrally managed using mobile device management	Apps are not available
Application Relevance	Strong	Acceptable (no pages, keynote for example)	Strong	Strong	Acceptable (many but not all apps available on Android)	Apps are not available
Flash/Java	No	No	Yes	Yes	Flash	No
USB Key	No	No	Yes	Yes	No	No
Telephony/3G	3G Data Only	No	No	No	Yes	No

The comparison took account of numerous factors relevant to TCFS, including the relative merits of a multi-purpose device compared to a single-purpose device. The comparison therefore paid particular attention to the broad range of educational uses of any proposed device across many subjects within TCFS. Other considerations included classroom dynamics between students and staff, the physical layout of Trinity teaching spaces (including ease of use on tablet desktops in lecture theatres and tutorial rooms), maintenance needs, and cost. Taking all factors into account, the iPad is clearly the preferred option. While other multi-purpose tablet devices are now entering the market and can also cater to the three learning styles of visual, auditory and kinesthetic, our comparison shows that of the current models the iPad is currently superior.

A NOTE ON CARE AND SERVICING

Staff and students in the pilot project have used the iPads responsibly, and the iPad's reliability and lack of maintenance demands on Trinity IT staff is very encouraging:

- How many reported lost: 0
- How many reported damaged: 0
- How many returned for maintenance: 0

Additionally, during the pilot a major update of the operating system run by iPads, iOS, was released. Due to the easy management of the devices by their users, this upgrade was self-managed and required almost no assistance by Trinity IT resources. The ability for users to back up their data via an iTunes sync also protects their information should loss or damage of equipment occur.

CREATIVITY, INFORMATION TRANSFER, TRINITY'S INTERNATIONAL REPUTATION, AND THE MARKET PLACE

The iPad pilot has generated a great deal of information and material within Trinity College. Key examples of this include a dedicated wiki, a dedicated blog, a specialised email list for the iPad users, Conference presentations from eight iPad users, numerous formal and informal training sessions and collaborative exercises, articles in Trinity Today and Trinity E-News, and six films demonstrating iPad use which attracted over 1,500 views.

Trinity College iPad Step Forward Launch
http://www.youtube.com/watch?v=SsjX4X-u4jQ

Trinity College Foundation Studies – Step Forward iPad program – EAP class
http://www.youtube.com/watch?v=dxFPluUf2Yg

Trinity College Foundation Studies – iPad program –
Gary Stager staff workshop
http://www.youtube.com/watch?v=Woj1dTFVPTM

Trinity College Foundation Studies – iPad experience – Chillout sessions
http://www.youtube.com/watch?v=Jh_A00gl_6g

Trinity College Foundation Studies – Step Forward iPad Pilot – Environment and Development
http://www.youtube.com/watch?v=TSAzThjd1uU

Trinity College Foundation Studies 'Engaging Students in the 21st Century'
http://www.youtube.com/watch?v=f4QCwGL9Xeg

The dedicated iPad pilot internal email list has enabled staff collaboration, troubleshooting and sharing of information among current TCFS iPad users, with about 300 posts. And the internal wiki has roughly 100 pages which will be an excellent foundational resource for future Trinity users of iPads in education.

The iPad pilot has also led to a significant sharing of Trinity's expertise with external academics, schools, universities and other people interested in education innovation.

- Gempa Muryono, a Monash University student writing a minor thesis for his masters degree in Media & Communication
- Ashley Ramsey, a University of Western Australia computer science post-graduate writing a paper regarding the trialing of the iPad for computer science students
- Professor Robert Hill, Executive Dean Faculty of Sciences, University of Adelaide
- Alex Brockbank, Robert Barnes and Peter Barlow, staff from Pulteney Grammar School Adelaide who are implementing an iPad trial in 2011
- Edric Yap and colleagues, February Main TCFS students, who created marketing/advertising material around the iPad for their M&C assignment
- Richard Jones, the eLearning Coordinator at the Southport School in Brisbane, who sent us the responses from staff/students about their iPad trial
- David Cummings, Innovation Architect at Victoria University, who has been running a 1:1 iPad program in late 2010.

The pilot created a mailing list to share information between schools running pilots: anzschools@1to1ipad.org

This initiative has 30 members from around the world, mainly within Australia.

Trinity also created an iPad blog at http://ipadpilot.wordpress.com

This Trinity blog has attracted more than 2000 visits, with a high of up to 141 views per day.

The Trinity Institute will also be offering a one day fee-paying course based on our iPad pilot experience to other schools or interested educators in May 2011.

Trinity College has attracted a good deal of national and international recognition for the innovative iPad project. A leading example of this is the cover story about Trinity College in the Summer 2010 edition of Wheels for the Mind, a widely-distributed magazine for academics and IT professionals (See Attachment One).

AUC: *Wheels for the Mind* - Summer 2010

http://auc.edu.au/Wheels+For+The+Mind

Other articles about Trinity and iPads include:

Delimiter

http://delimiter.com.au/2010/11/04/trinity-setting-the-ipad-pace-in-education/

CIO

http://www.cio.com.au/article/358389/melbourne_uni_begins_50_student_ipad_pilot

Forbes

http://blogs.forbes.com/parmyolson/2010/11/04/myth-busting-ipads-in-schools

Former and current TCFS students in intakes other than August Entry have also praised the College for introducing iPads or expressed regret that they have not been using iPads. This communication has been done in person, but has also been received through new media such as Trinity's Twitter and Facebook pages.

Significantly, the Trinity iPad trial has also been noted in the education marketplace, with agents and parents of prospective students praising the initiative to our Marketing & Admissions team and in one recent case (from Singapore) asking if they should purchase an iPad for their child to commence TCFS in 2011.

PLANNING, TRAINING AND SUPPORT TO ACHIEVE OUR GOALS

The following quote from a staff member sums up the challenges but also the potential of a broader iPad program within TCFS:

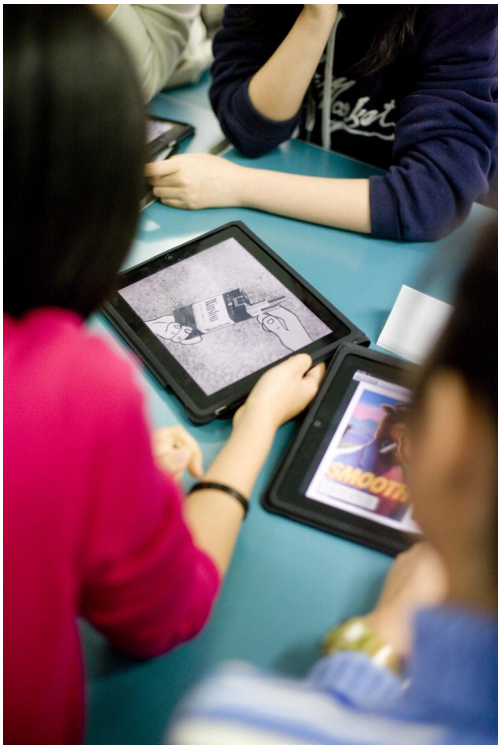
I think there will be substantial resistance from some staff to using them. This will be very difficult to overcome and will require careful and timely training. This [training] should be both one on one and group based and should be hands on - not just demonstrations of what is possible. I like many others learn best by doing, not by being told or shown. Training should begin ASAP.

Evidence shows that students use technology when the teacher does, so it is vital that teachers model their use.

CONCLUSION

Clearly iPad use at Trinity has already strengthened the College's reputation as a world class institution, met the educational goals of the pilot project, broadened and strengthened the College's ties to other educators, and contributed to positive market differentiation.

With such a high level of interest and engagement from educators, students, and prospective clients, and with the overwhelming recommendation from TCFS staff and students who have trialed iPads at Trinity since August 2010, the plan to 'Step Forward' with iPads in 2011 and 2012 seems both logical and desirable.



APPENDIX ONE

Research on 1:1 Programs, E-Learning and Tablet Computers in Higher Education

Holcomb, Lori B., 'Results & Lessons Learned from 1:1 Laptop Initiatives: A Collective Review,' *TechTrends*, Volume 53, Issue 6 (November/December 2009), pp. 49-55.

Laurillard, D., 'E-Learning in Higher Education', in P. Ashwin (ed.) *Changing Higher Education: The Development of Learning and Teaching*. London: Routledge, (2006)

McLoughlin, C. and Lee, M.J.W., 'The Three P's of Pedagogy for the Networked Society: Personalization, Participation and Productivity.' *International Journal of Teaching and Learning in Higher Education*, Volume 20, Number 1, (2008), pp. 10-27.

Salmon, G., 'Learning Innovation for the Twenty-First Century'. In U.-D. Ehlers and D. Schneckenberg (eds.) *Changing Cultures in Higher Education*. Springer-Verlag, Berlin Heidelberg. (2010) p 27-41.

Stager, Gary S., 'Laptops and Learning' (1988)

Stager, Gary S., 'Dream Bigger' (2000)

Both Stager articles are available electronically at:

www.det.wa.edu.au/education/cmis/eval/curriculum/ict/notebooks/

For the Monash University ATiEC presentations from December 2010, including Wendy McKenzie & Katharina Franke, 'Active, Constructive, Interactive: How are Tablet PCs Transforming the Learning Experience in Higher Education?' see:

www.monash.edu/eeducation/atiec/presentations.html

APPENDIX TWO

Examples of (largely) positive comments

Question from the Second Staff Survey: A slogan regularly used as part of the trial was to go 'Further, faster, with more fun'. To what extent do you agree that this was the case?

Answer 1:

I agree that the sentiments behind this slogan were aptly served by the iPads. The devices increased the flow of information to students in classes and the speed at which they could access this information from a range of different sources and formats was also increased and more easily facilitated than was possible before the iPads.

I was able to find textual and visual material quickly and set it into a guided classroom activity that handed over control of the exercise to the students to discuss and analyze. A good example of this was my exercise on identifying and analyzing the messages and arguments in cigarette and anti-smoking advertising. So as a facilitator of small group work activities, the iPads certainly enhanced the students' experiences. Additionally, the iPads provided excellent support for one class activity in which we watched a film on the problem of over-population and its environmental effects. Using YouTube, students were able to re-watch sections of the documentary to build a better understanding of specific points made in relation to the program's overall argument. This was especially helpful for building the English skills of international students.

Answer 2:

A good slogan: able to access online data in an instant, create fantastic Keynote presentations quickly, engages students more effectively than classes without them, allows for students to work more collaboratively than without them, teacher becomes more of a facilitator of learning than a "lecturer" which is the way education is heading. Teachers and students learn from each other.

Answer 3:

At times we needed another 'F' -- for frustration both inside and outside the classroom. Some of these frustrations i.e. technology not working, incompatibilities e.g. flash player and general problems with early adoption have already been improved and I'm sure many techies are working hard to iron out other hassles. So faster wasn't always applicable.

Further though summed up my experience better - I found the iPad helped us experience the world of learning from a greater range of vantage points and gave us more opportunities to meet individual learning needs.

Answer 4:

When discussing a topic people often come up with examples that they have seen or experienced. With the iPad and YouTube those examples can be shared with the room quickly. Further, faster and with more fun.

Answer 5:

I think faster is applicable. The iPad enables speedy production of Keynote, and Pages. Documents can be imported through Dropbox and opened in applications like Good Reader to show students text-based materials, instructions for tutorials, assignment guidelines - things that would take time to write on the whiteboard. These can be easily shared with students.

Further is also relevant. A tutorial can cover further territory with issues such as explaining images to students in words - a visual image can supplement the discussion, and further ground covered in the class for more students.

It's definitely more fun to teach with the iPad.

Answer 6:

Further - We've had significant improvements in our classroom environments where we previously did not have an Internet connected device available for ready access to information. The teachers have noted in a survey done recently that they were particularly happy with the ability for students to gain access to information not only much faster than previously, but also much more up to date.

Faster - Aside from being able to access information faster as per the above example, we've found that students are coming out of their shells and communicating and collaborating with each other far sooner than is normally the case. Using apps like Keynote has enabled teachers to have the students work together in small groups to create short presentations which they then share with the rest of the class.

More Fun - The amount of excitement by the students receiving the iPads was very high, both by observation on the day they were handed out, but also according to a student survey we conducted. One teacher who's recently taken over a class and just been given an iPad last week in order to do so commented that about half the students in her class were asking her whether they might be able to keep them or even buy them at the end of the pilot. Another teacher has noticed that during breaks students are often playing games as well. Overall, they're definitely becoming ingrained in the day to day of the students' way of life.

Question from the Second Staff Survey: In the past few weeks, is there a subject specific innovation or new application that you have been able to utilise with the iPad?

Answer 1:

I have been able to use the iPads to provide quick access to editorial articles for critical thinking analysis in HOI. That students could access these articles via the iPad and read through them with the aid of dictionary applications and Google to supplement their understanding and facilitate their analysis provided a flexible and powerful classroom activity.

I have also been able to take up and emphasize the need for students to look for connections between ideas within a broader idea or an argument by using the Art Authority application to supplement a video on La Primavera by Bottechelli and The Last Supper by da Vinci.

The iPad has thus extended greater control over textual and visual material in activities designed to guide students through understanding and examining ideas.

Answer 2:

Audio note - pronunciation practice to improve intonation, fluency and speaking confidence. Provided students with a script using arts review language and an audio file with a native speaker modeling pronunciation. (This activity followed on from visits to Cinema Nova and The Ian Potter Gallery and class reading and writing activities focusing on reviews.) Students, in pairs made several recordings and critiqued each other and themselves. For homework students had to record the second part of the script individually and email it to me. I then recorded my feedback and emailed it back as an audio file. This activity worked extremely well as a small assessment piece.

Answer 3:

In the final weeks of 2010 I combined a Keynote presentation and the App Audionote to deliver and evaluate a class activity with Literature students. The Keynote assisted me to help students visualize a text, and make connections between new images and ideas presented in the text. I produced the Keynote text and images all on my iPad, in under an hour.

Audio note was used to record students' responses to their essay writing task. They positively responded to the Keynote presentation, and identified it as key to their improved understanding. This audio feedback assisted me to make high quality feedback on students written work. They enjoyed listening to their own voices, and one said he would record his voice to improve his English pronunciation.

Answer 4:

The chemjuice application allows the user to draw chemical structures. It's main purpose is to develop students ability to draw and recognise the structures of organic molecules. It uses what may be described as a skeletal notation for these compounds. There is also a library of 100 compounds that can be used as templates and structures that have been created can be saved to this library as well as being emailed to the user as a mol file (I have put in a request to IT for an application to allow to open a mol file).

This app is probably of much greater value for the main program as the subject of organic chemistry is not taught in the august entry course. However it also allows the drawing of inorganic compounds as the user can select from any element from the periodic table. If it allowed the user to include electron pairs it would be an excellent application for teaching the subject of chemical bonding for both the august and main programs. In its current form it is still useful to indicate the molecular geometry of a compound.

Student 1:

It's easier to access the materials and at any time we can just get online to search for the information we need.

Student 2:

Easy to get more information , and take notes.

Student 3:

You don't have to raise your hand every time you want to answer the given question.

Student 4:

Browse education stuff faster and easier.

APPENDIX THREE

Examples of (largely) negative comments.

Question from Second Staff Survey: If you have any concerns using iPads as a teaching tool, what are they?

Answer 1:

The potential for distraction is clearly an issue. It also proved difficult to establish exam conditions within the classroom as students have internet access. Both problems are surmountable, though the solutions may vary from one teacher to another.

Answer 2:

I would like to be able to show Java applications using the iPad and the workarounds for that may be either the use of Citrix or Desktop Connect. Cloud browse is in use in the US but is not available here.

Students may easily get distracted by Facebook or other apps but this problem is not unique to iPad.

Student 1:

It is convenient but it is still too immature as a learning tool.

Student 2:

The screen is a bit dirty, so I think we need something to clean it. Moreover, the accessibility to the Internet is now quite restricted because I have no Wi-Fi at home, so every time I want to do a research and look up the information in the Internet, I usually have to go to school and stay there until I finish it, so it' a bit tired.

Student 3:

Some people play games or surf the internet during the lesson.

Student 4:

Some apps are useful, but I prefer to use real books rather than pdf.

ATTACHMENT ONE

Wheels for the Mind, Summer 2010

TRINITY COLLEGE
THE UNIVERSITY OF MELBOURNE

Royal Parade Parkville Victoria 3052 Australia | T: +61 3 9348 7100 | F: +61 3 9348 7610 | E: enquiries@trinity.unimelb.edu.au

www.trinity.unimelb.edu.au

ABN: 39 485 211 746 | CRICOS: 00709G