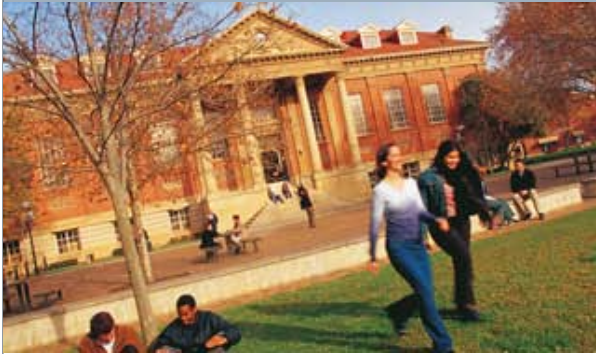


Faculty of Sciences



# The Adelaide Experiment: Would you like an iPad with that?



**Simon Pyke**, Karin Barovich & Bob Hill

Faculty of Sciences

The University of Adelaide

- In 2011 the Faculty gave ~850 iPads to commencing Science students
- In 2012 & 2013, we repeated this (~800 iPads in each year)
- We also invested in >200 iPads for teaching staff
- Total cost about \$1.67 million to date

## Why did we do this?



Scientists are responsible for many things that make life great  
in the 21<sup>st</sup> Century,

BUT

the challenge to bring everyone up to a reasonable standard  
of living and to maintain that well into the future has barely  
been addressed.



# We face genuinely global challenges in the future





Education systems of the world must deliver people able to provide better solutions to these problems...

**Increased scientific literacy is critical**





## So what did we do?

- We began redesigning our curriculum from first principles
- The starting point was to work out our research strengths and to focus on these in our teaching
- We changed our emphasis from student attraction to retention – this highlighted many problems



## Enhanced Learning in First-year Science Project

- Discussion & debate within the Faculty gave rise to the “Ten Big Questions”
- These are socially relevant questions of big fundamental science that our staff specialise in.
  - How did the Universe begin?
  - How does the Earth work?
  - What is life?
  - How did life evolve on Earth?
  - How do we unravel the causes of disease?
  - Why does climate change?
  - How can we feed the world sustainably?
  - How can we reduce our reliance on fossil fuels?
  - How will we conserve species diversity?
  - Where will the nanoscience revolution take us?

The re-design of our curriculum was assisted significantly when a small window of opportunity allowed us to move to a new and fully interactive hardware option:

## the Apple iPad

These were *given to students with no strings attached* and no expectations about how they were used.





## Why did we commit to the iPad?

- **PORTABILITY** - students will carry it with them
- **CONNECTIVITY** - great for internet access  
(we bought 3G enabled iPads)
- **CREATIVITY** - lots of relevant apps for education
- **ACCESSIBILITY** - allows for e-books to be purchased
- **DESIRABILITY** - staff were easy to persuade to be involved  
(it was the shiny new device at the time...)





## What were the major challenges?

- Staff uptake of the project
- Management of the hardware, including reliability
- Finding alternatives to hard copy text books
- Student mindset
- Some anti-Apple sentiment
- The ponderous University system
- IT support
- Equity issues – not every student in every Level 1 class would have an iPad





## What were the alternatives?

- Choose a different hardware solution
- Students pay for the iPad
- The strategy as outlined, but without a hardware solution





## What have we achieved?

- A clearer understanding of the relevance of the curriculum
- Teaching as a partnership
- Removal of dependence on hard copy text books
- Students with instant and universal access to email, the internet and all on-line sources of information





## What didn't we achieve?

- A move away from face-to-face teaching for the majority of our students, because that isn't our intention





## How well has it worked?

- First year enrolments have increased significantly
- Retention has improved
- Student reaction has varied from neutral to very strongly positive, with little negative feedback

## BUT...

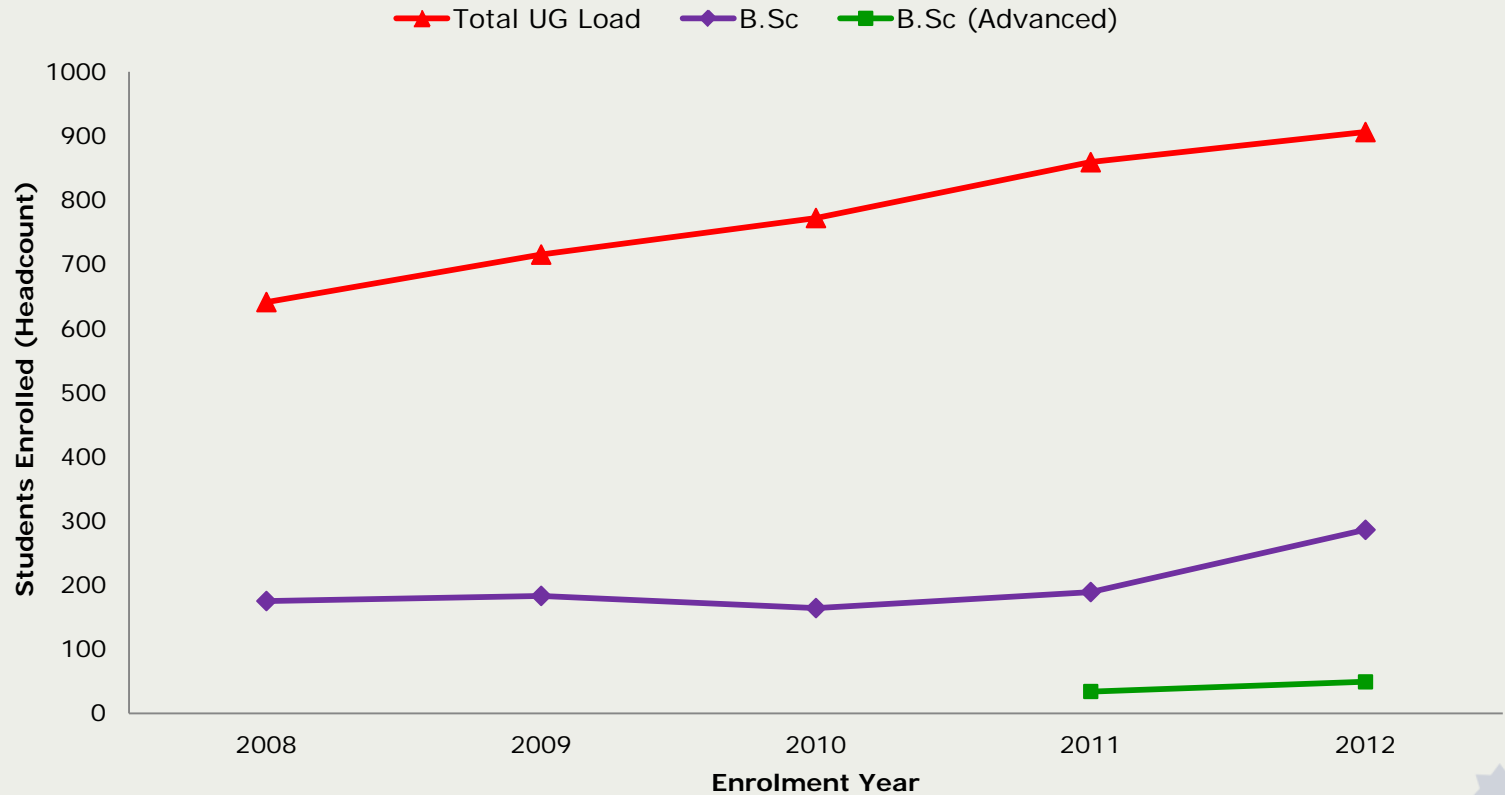
- This is the start of a long process of continual improvement and there is still a long way to go...





# The evidence (1): Enrolments

Commencing Student Enrolment Trends  
(2008-2012)



# The evidence (1): Enrolments

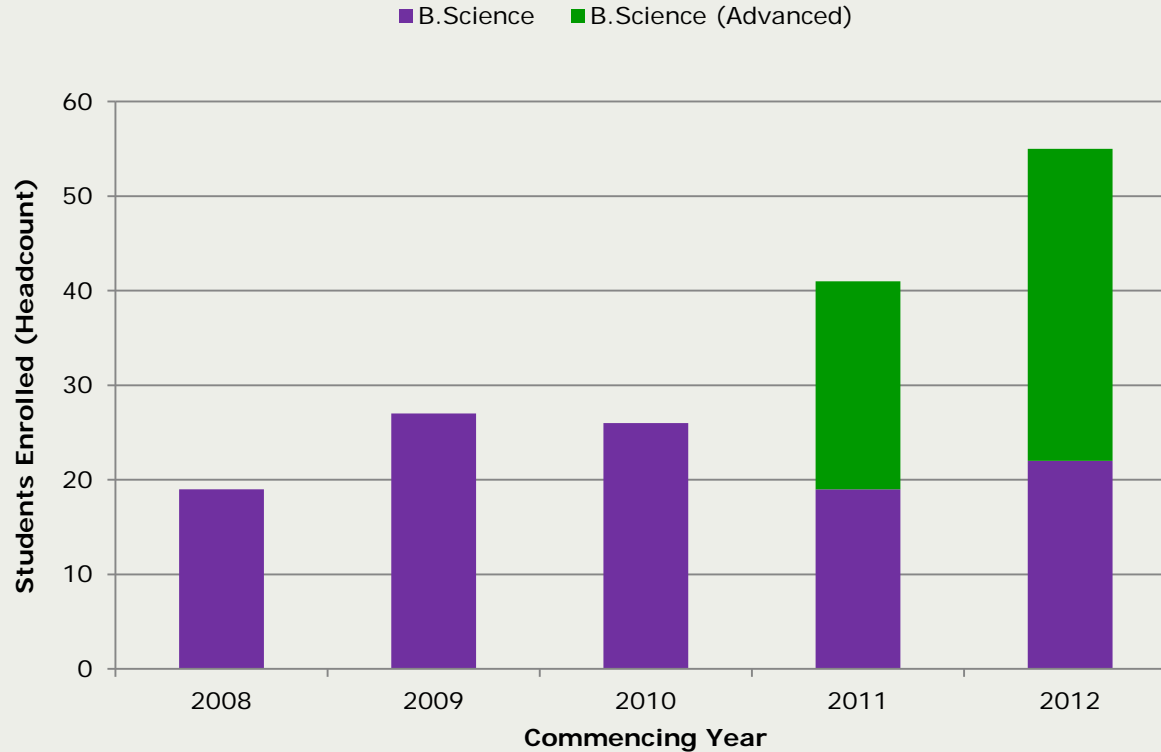
Commencing Student Enrolment Trends  
(2008-2012)





# The evidence (1): Enrolments

Students Commencing with raw ATAR  $\geq 95$



## The evidence (2): Retention

	Retention of commencing cohort within...		
	...their original program	...the Faculty of Sciences	...the University of Adelaide
2010 to 2011	72.5%	78.7%	84.2%
2011 to 2012	72.8%	81.0%	88.0%





## The evidence (3): 'In class' data

### SCIENCE 1100 'Principles & Practice of Science I'

The following graphs represent data collected in class.

2011; n=125 valid responses; 86% response rate

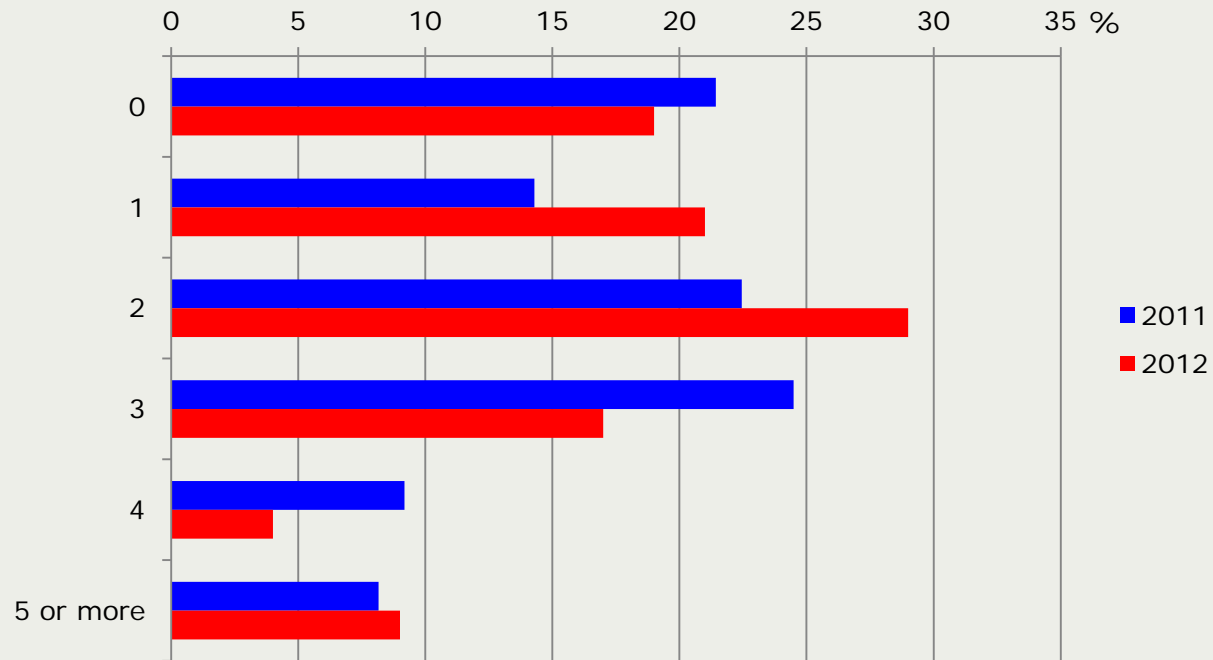
2012; n=182 valid responses; 73% response rate

In each case results are expressed as a percentage of valid responses received.





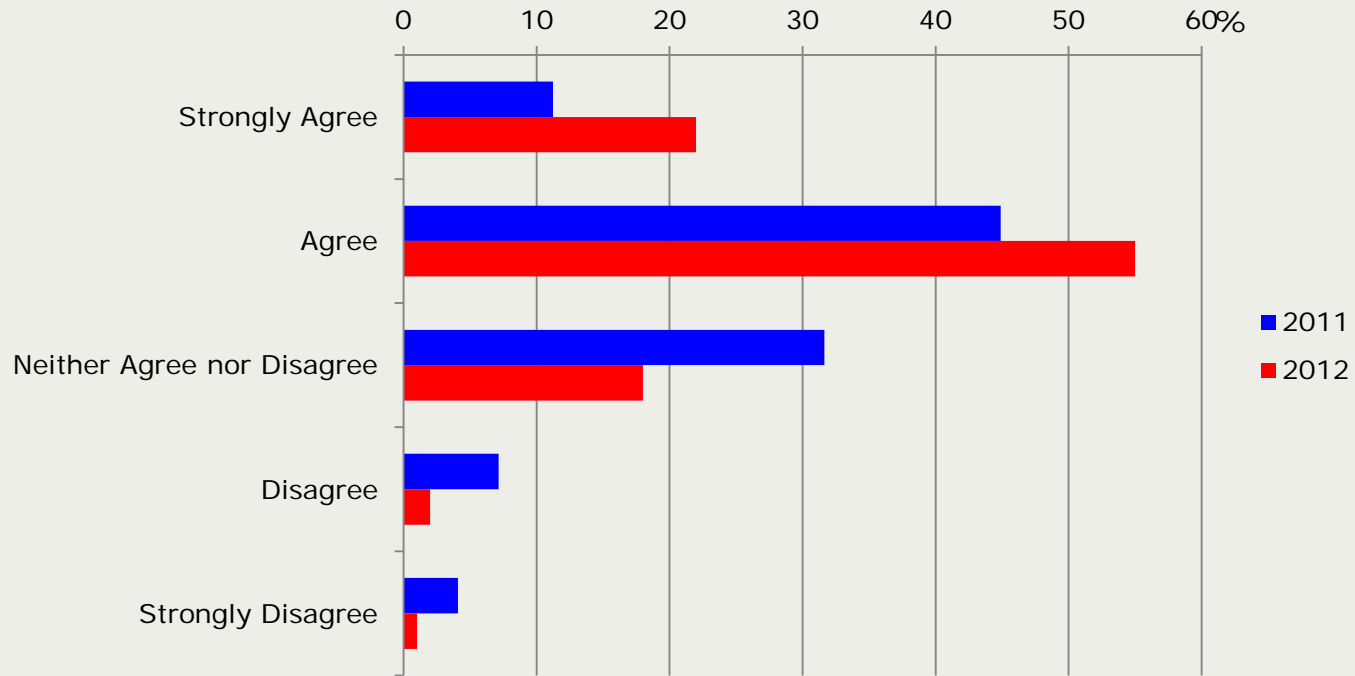
### How many e-texts have you downloaded to your iPad?





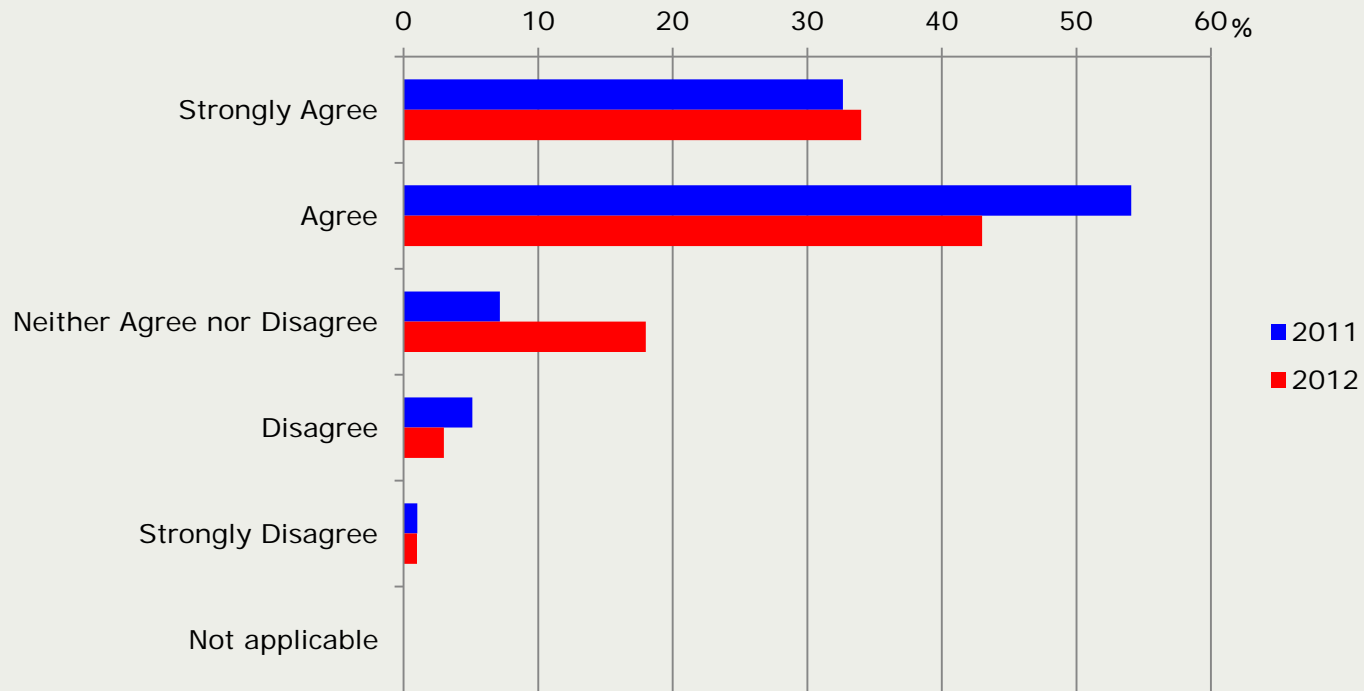


### The iPad has helped me to be more engaged with learning.



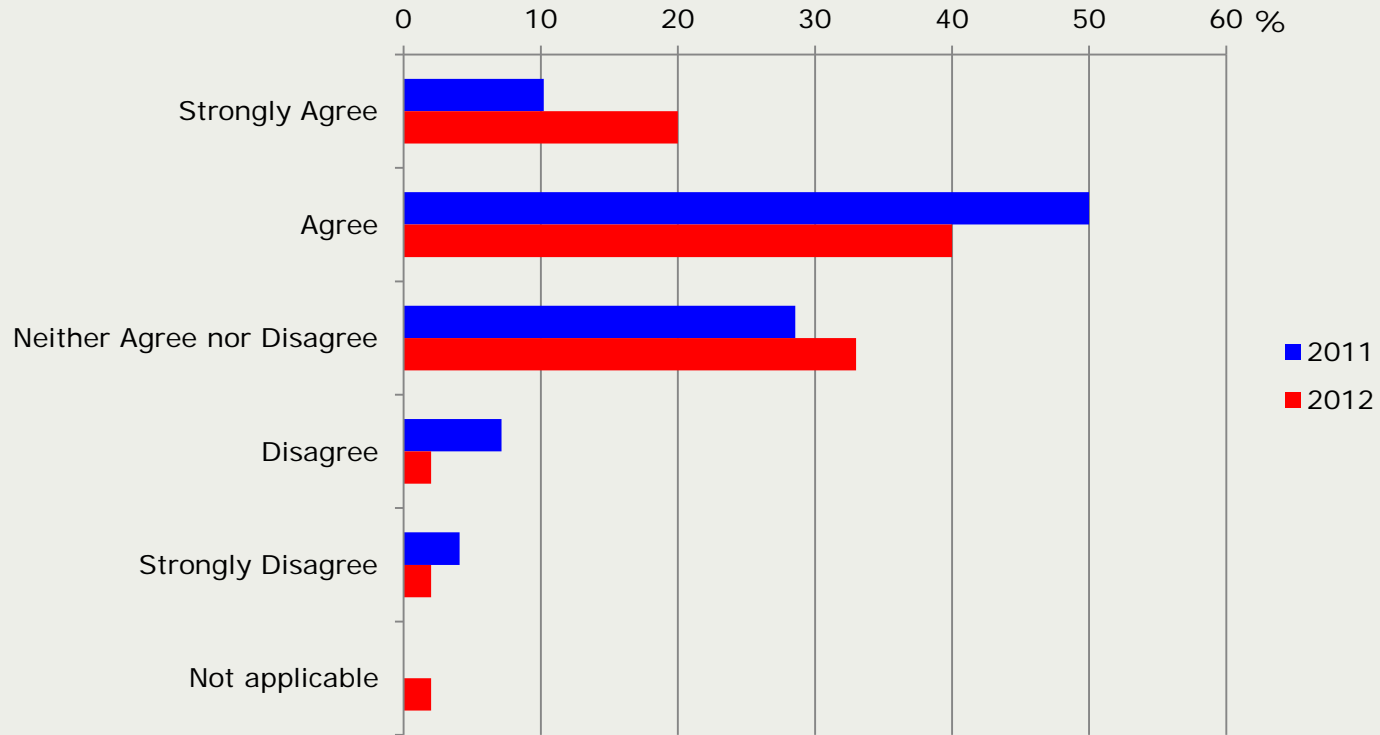


### I participate in interactive/collaborative classroom tasks with my iPad.



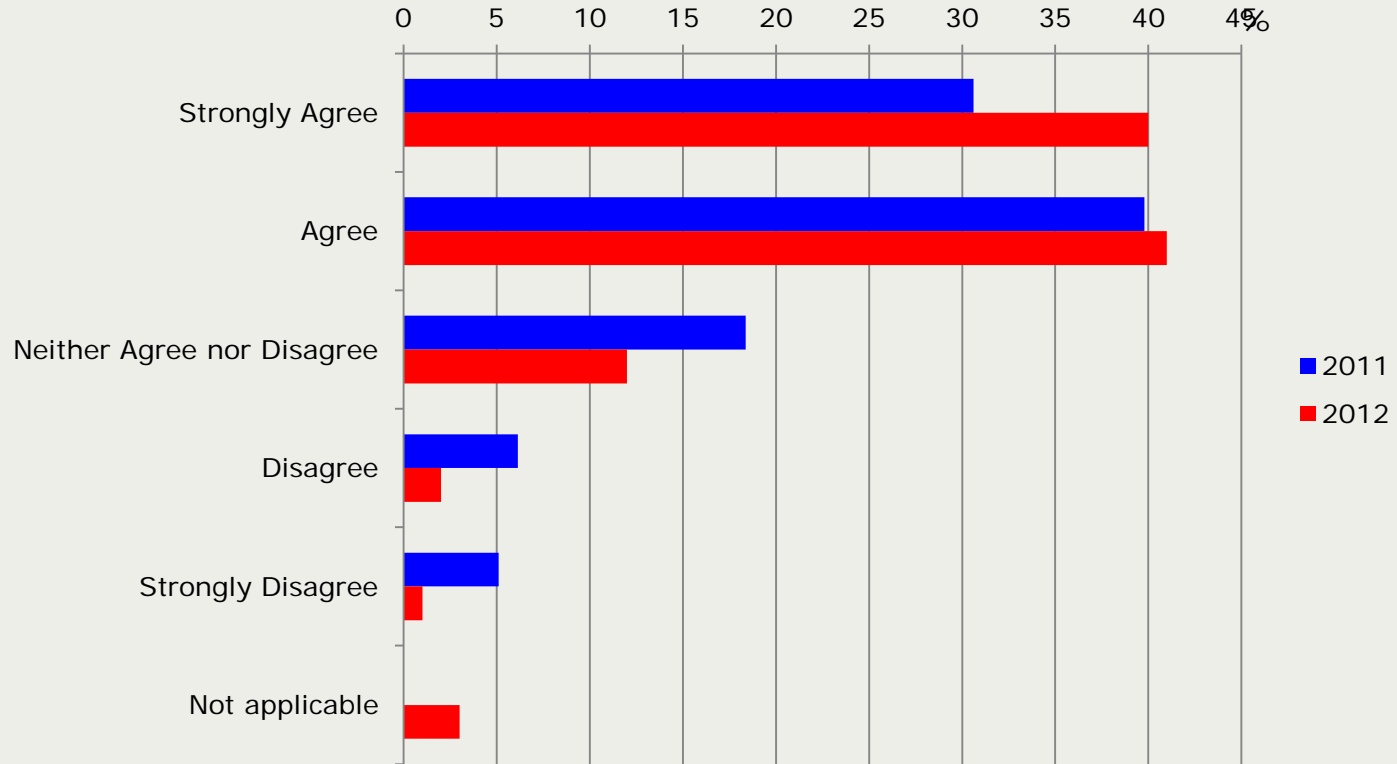


### Having an iPad has motivated me to learn.



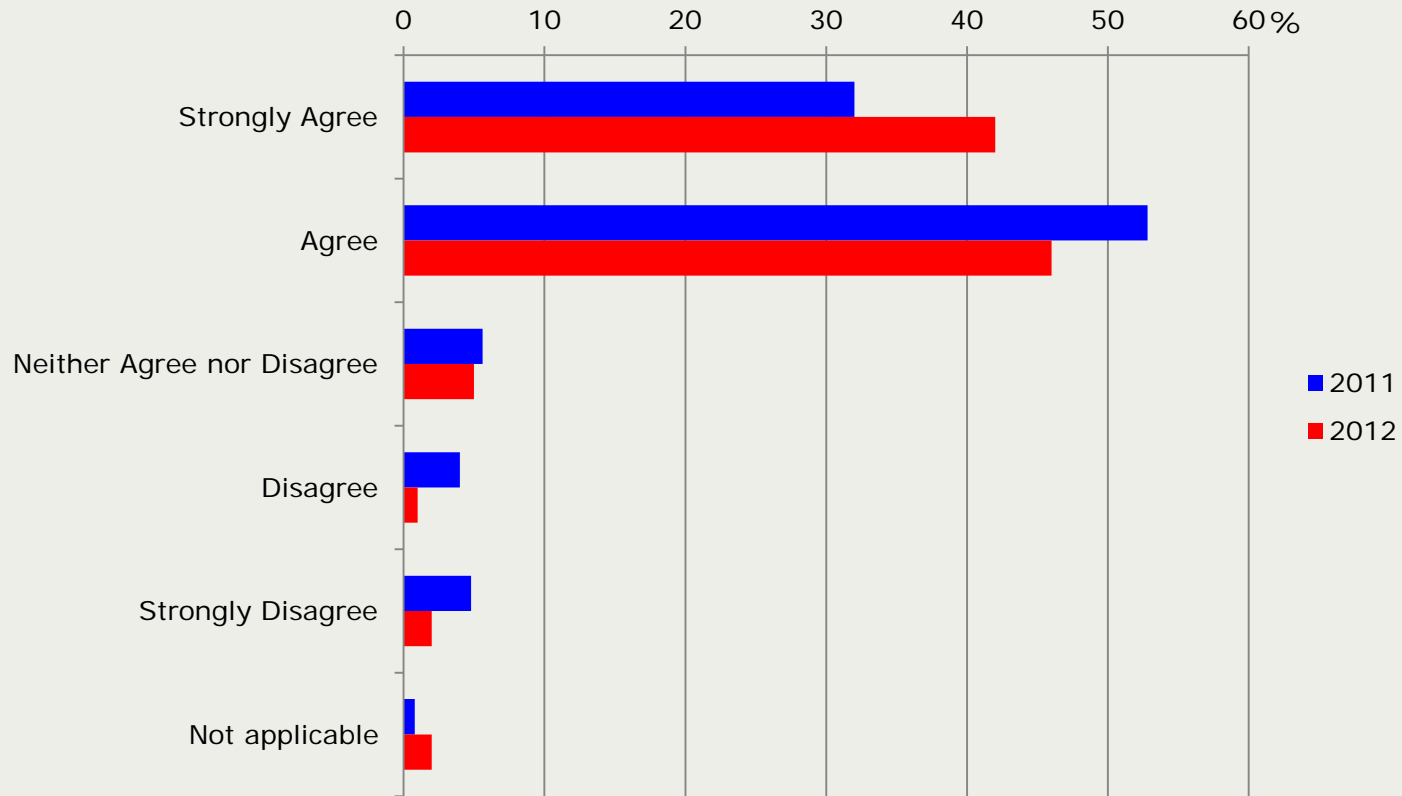


### The mobility of the iPad has improved my study habits.



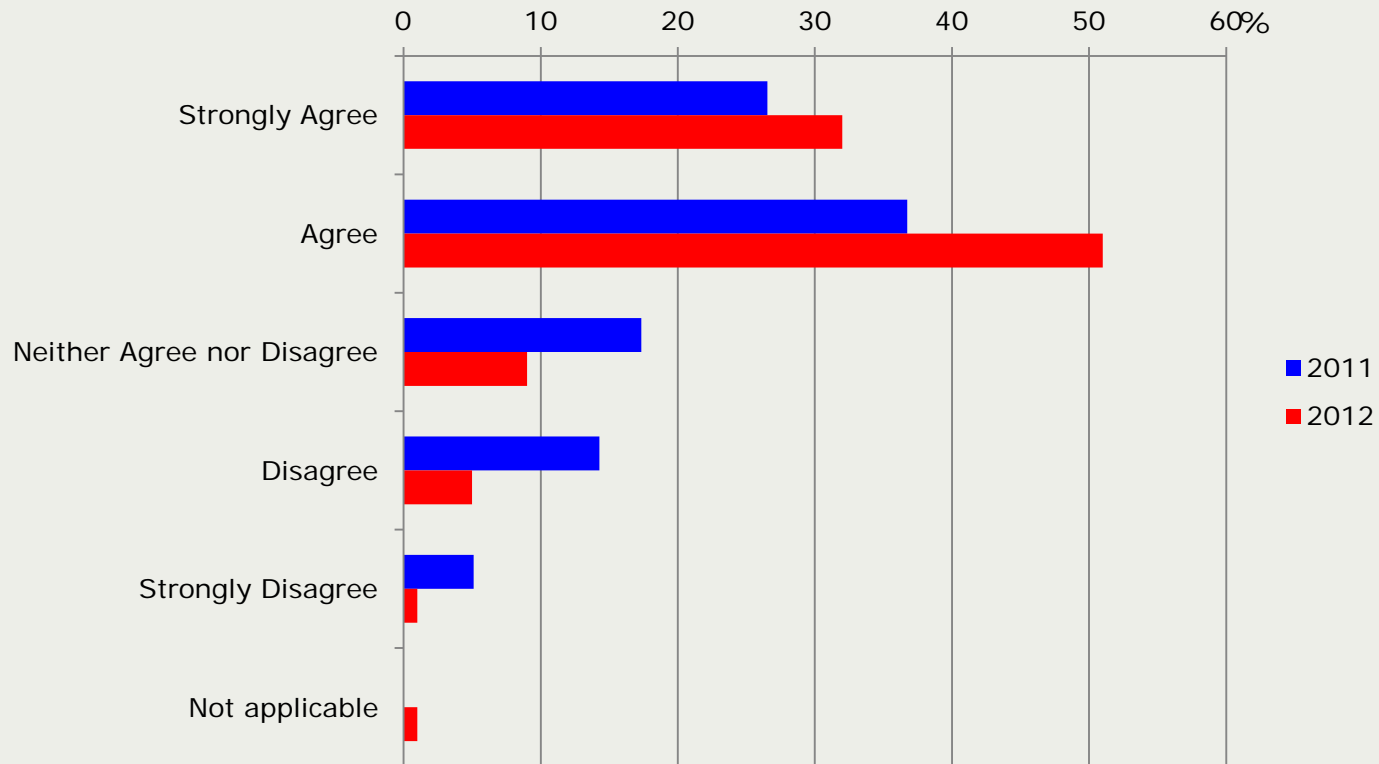


### I use the iPad for study outside of class.





### I think of the iPad as an essential part of my learning 'tool kit'.





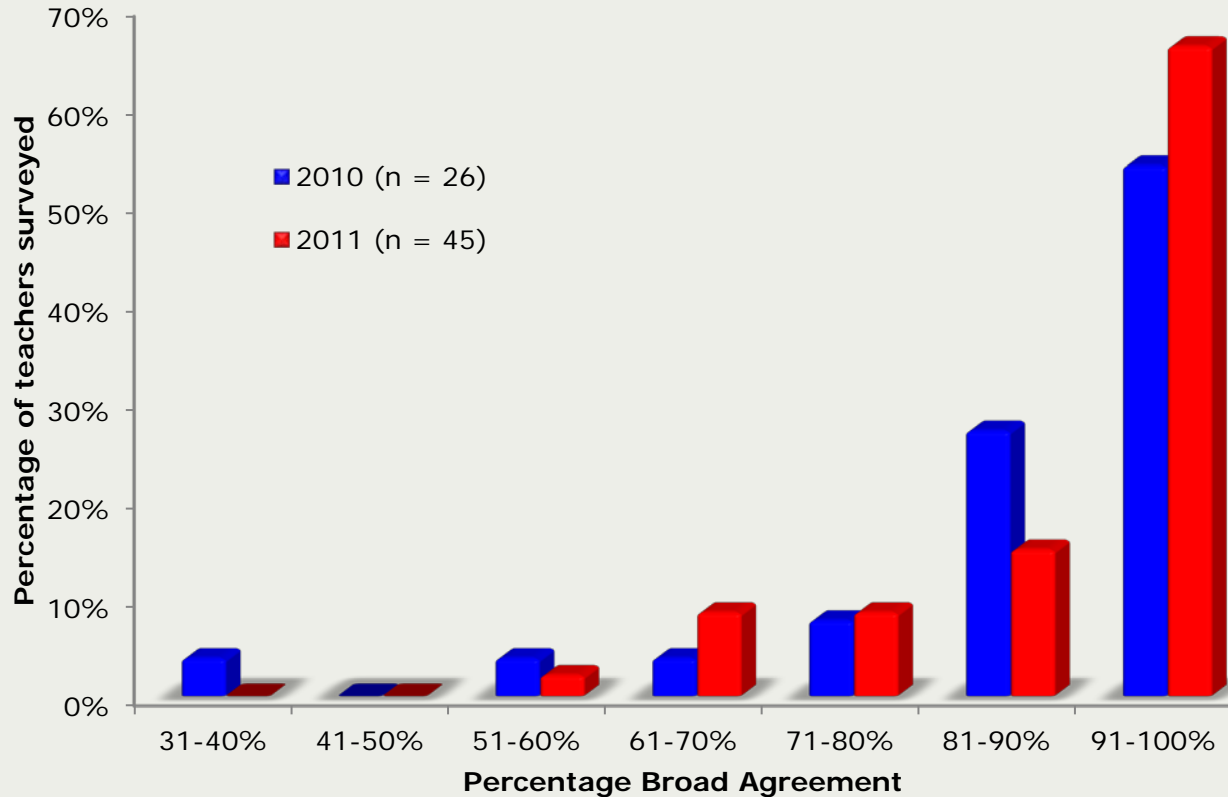


## The evidence (4): Teacher & Course Experience

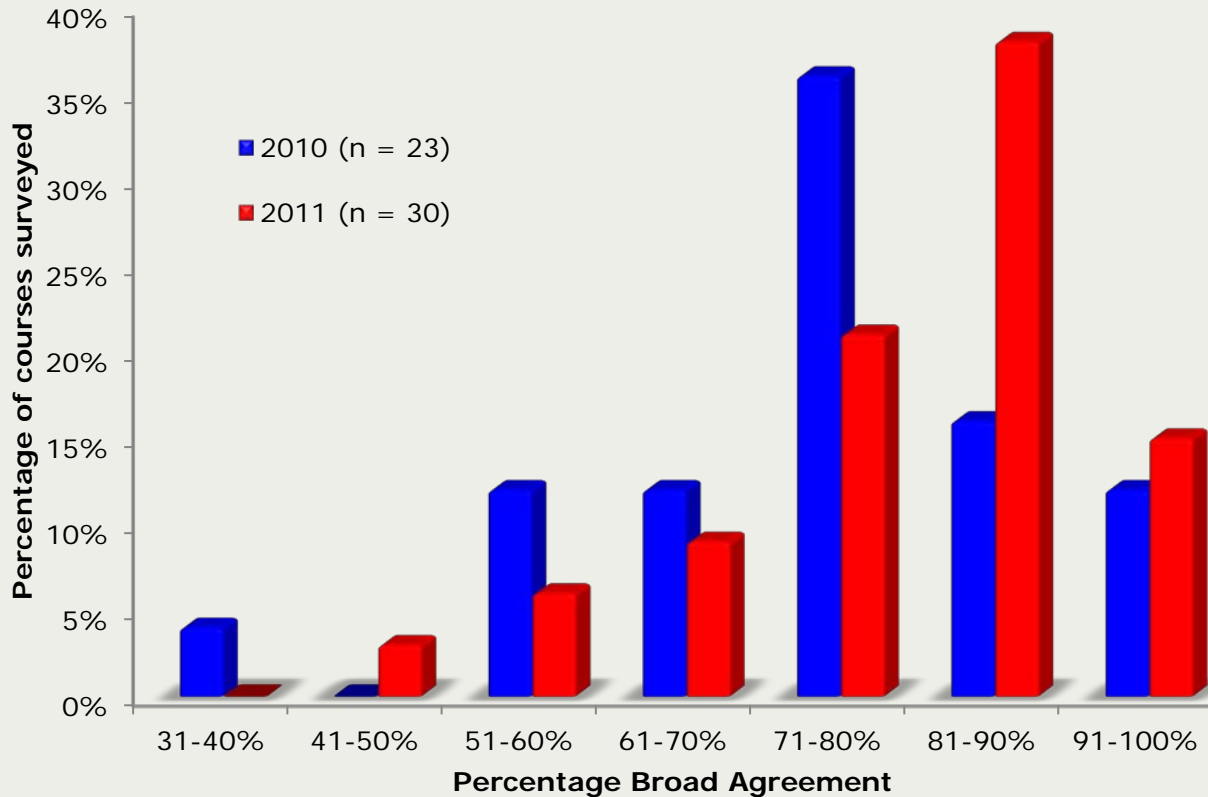
Teacher & Course Experience data comparing 2010 results (pre-iPad) with 2011 results (post-iPad).



Q: How would you rate the effectiveness of this person as a university teacher?

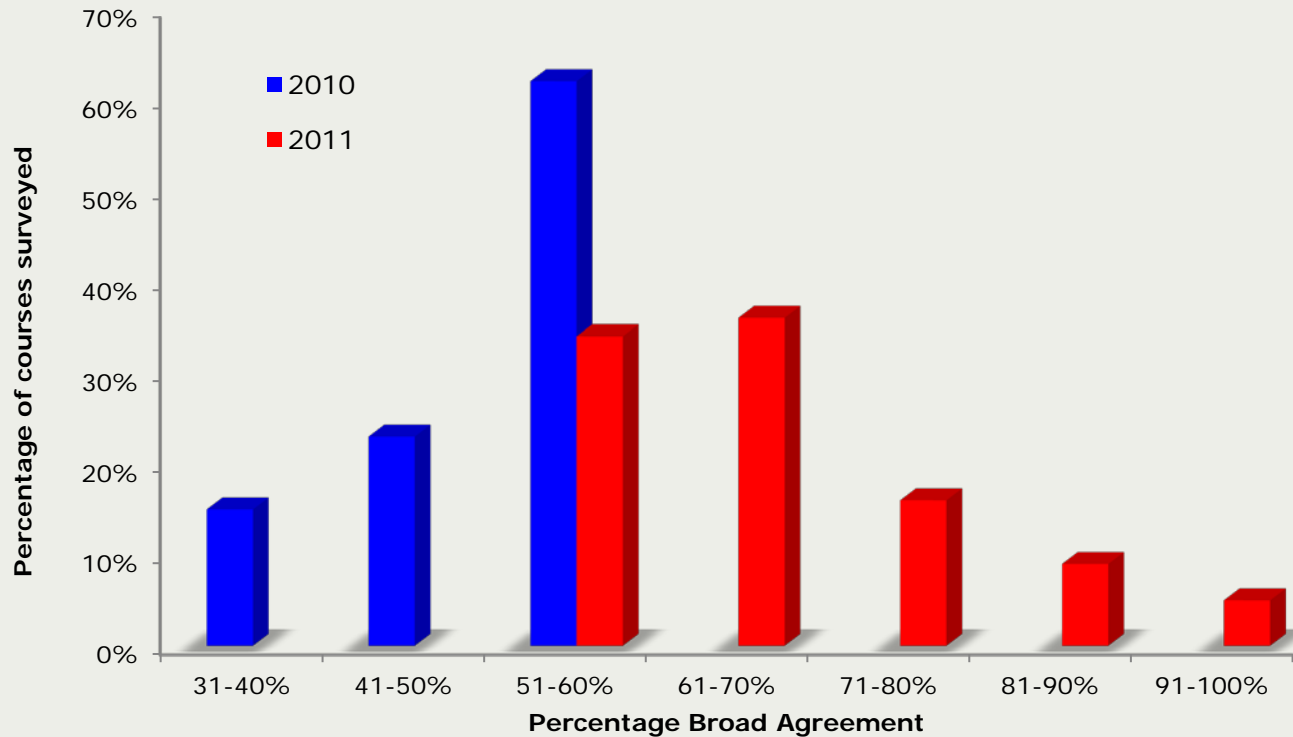


Q: Overall, I am satisfied with the quality of this course





Q: I received adequate feedback on my work





## Lessons learned?

- The device is just a device...

“It’s the Pedagogy, Stupid”

[ [elearnmag.acm.org/featured.cfm?aid=1999656](http://elearnmag.acm.org/featured.cfm?aid=1999656) ]

- “Measure twice, cut once...”

There have been major improvements in both our approach to teaching and the content we deliver.





*“For the first time we are preparing learners for a future we cannot clearly describe.”*

David Warlick  
The Landmark Project





The University of Adelaide Science Magazine

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- Available on the web (through browser) and iPad/Android (powered by Oomph).
- The first issue, which was launched in May this year, has had more than 6,000 downloads. The 3<sup>rd</sup> issue is just out.

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