

Online Assessment & Feedback:

How to square the circle

Prof. Ian Strachan, Dr Tara Brendle & Dr Andrew Wilson
School of Mathematics & Statistics

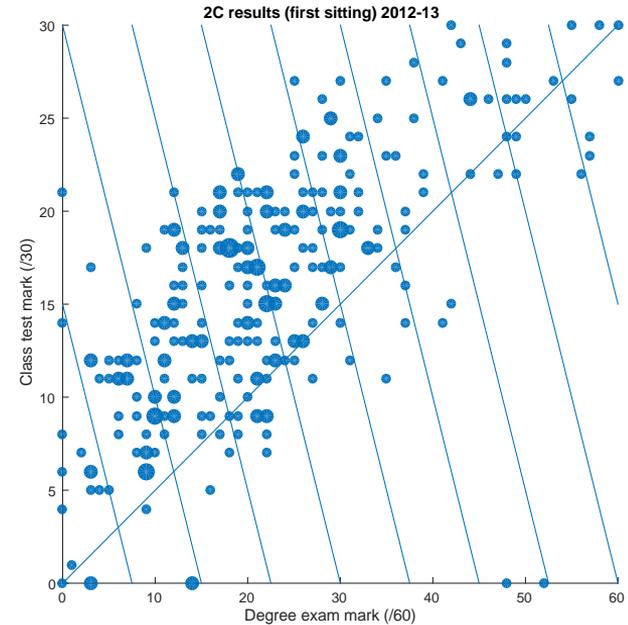
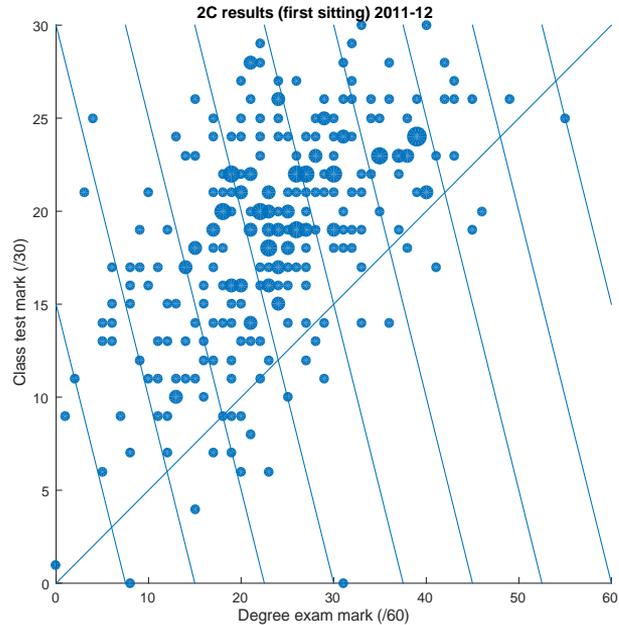
The Problem

- Level 2 Mathematics:
 - over 400 students
 - 8 modules
 - each week 80 tutorial groups meeting
- Level 1 Mathematics:
 - over 700 students
 - 4 modules
 - each week 50 tutorial groups meeting

The Problem

- Not enough feedback to students
 - Only a single piece of work (the Class Test) was marked and returned in Level 2 modules
- Feedback given had no demonstrable positive effect:
 - Class tests returned near end of semester
 - Poor attendance during class test weeks
 - Class test disrupted learning; students disengaged with course

The Problem: No positive effect from class test



The Solution: Increasing feedback, not workload

- Over 2,000 individually assessed pieces of work per week
- Integration of technology and assessment:
 - e-assessment software: WebAssign
 - Scanning technology: written assignments
- Efficiencies: team work
 - School office
 - IT
 - Academic staff

The Solution: Efficient teamwork

	Course Head	Lecturers	Tutors	Markers (2B and 2F)	Office	IT	Students
Monday	Check whether any announcements are needed for the week. (2B) Post solutions for sheet $n - 1$ and new exercise sheet n at 12pm.		Attend tutorials, (2ABFP).	Submit marked feedback exercises (2B or 2F) by 4pm.	After marking is returned, notify IT that scripts are ready for scanning. Pass information on total number of submissions and marking allocation to IT.	Upload 2A, 2B WebAssign results to Sharepoint.	Attend tutorials. WebAssign 2A (deadline 3am).
Tuesday	Upon notification by IT, make visible the access to feedback on Moodle, forum announcement for students.	Deliver lectures (2A and 2F).	Office	Office	Photocopy relevant feedback exercise sheet for distribution to 2B or 2F lecturers.	Scanning. Upload .pdf feedback to Moodle, upload completed grading worksheet to Moodle, upload marks to Sharepoint. Notify completion, send raw data (with marker initials) to course head.	Attend lectures.
Wednesday	Post feedback exercise at 12pm (one week before deadline). Reveal solutions to the submitted feedback exercise at 3pm (sharp).	Deliver lectures (2B and 2P). Distribute feedback exercise forms (2B), spares to submission cabinet.			Collect feedback exercises (3pm deadline). Allocate marking, notify markers for collection.		Attend lectures. Submit feedback exercise (2B or 2F).

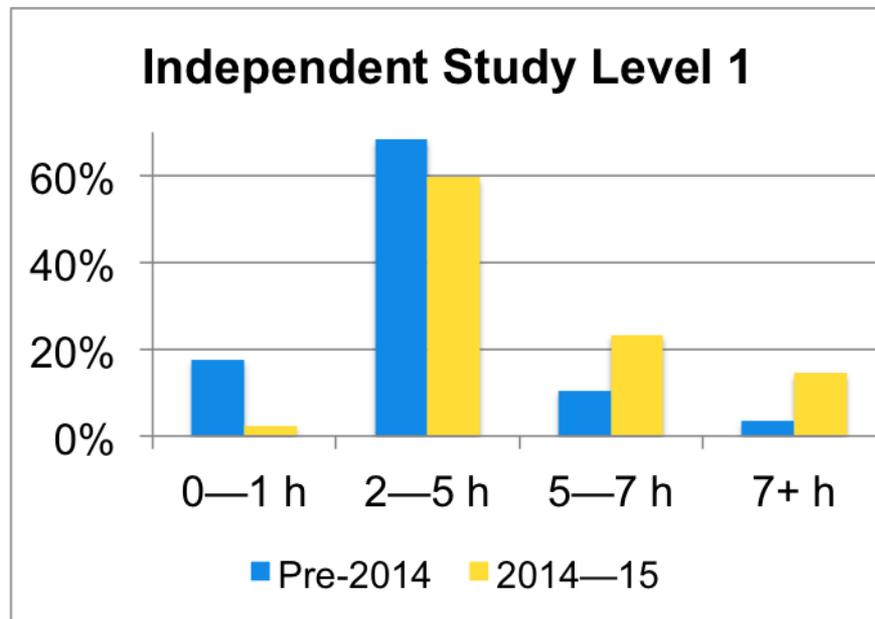
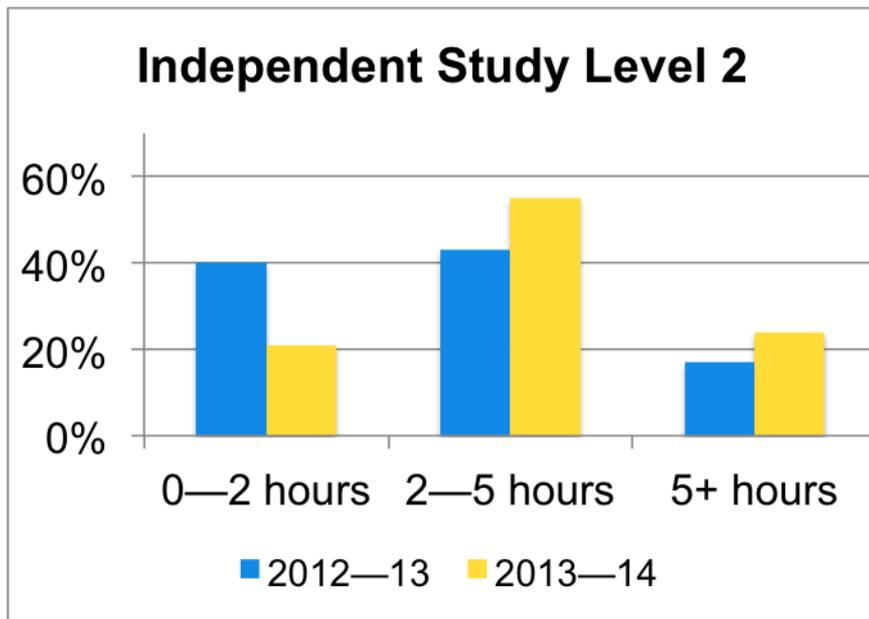
The Solution: Live SharePoint database

<input type="checkbox"/>	studentID	name	fb1	fb2	fb3	fb4	wa1	wa2	wa3	wa4	wa5	wa6	wa7	wa8	wa9	wa10	degree mark (out of 60)	Comments
Count= 431																		
<input type="checkbox"/>	[REDACTED]	[REDACTED]	19	20	12			100	96.5	98.831	75.625	80	85.9895	59.5	79.64	60.125		37
<input type="checkbox"/>	[REDACTED]	[REDACTED]	17	11	15		81.5	76.5	86.5	61.4135	84.75			90	66.18	43.62		34
	[REDACTED]	*** Unenrolled	20					76.9										
	[REDACTED]	[REDACTED]			6	7	71.25	56	56.5		26.888	50			33			30
	[REDACTED]	[REDACTED]	18	19	20	20	89.5	70.5	79	94.1655	93	100	91.143	79.5	96.5	97.2105		50
	[REDACTED]	[REDACTED]	17	15	17	14	81.831	90	100	93.0035	30	94.75		93	95.919	68.001		44
	[REDACTED]	[REDACTED]	13			8	63.8615	78.3345	46	58.161	38.032	64.375	65.419	69.5	69.04	36.1625		Medical
	[REDACTED]	[REDACTED]	12	11			78.0845		69	73.169			21.8245	63		34.775		21
	[REDACTED]	[REDACTED]	16		12		68.25	89.5	86.5	60.669	50	100	75.41					31
	[REDACTED]	[REDACTED]	20	11	15		77.75	94.75	96.5	81.8345	93	96.5	47.312	72.5	56.2335	39.7		42 Medical
	[REDACTED]	[REDACTED]	15		13	16	78	63.4	56	78.2445	38.506	89.125	67.621	72.5	69.82	54.863		46 Medical
	[REDACTED]	[REDACTED]	18	12	17	6	83	80.75	73	79.7475	71.494	86.5	86.68	63	67.216			28
	[REDACTED]	[REDACTED]	11	19	17	13	93	84.1345	76	78.7455	86	83	87.051	86.5	94.826	46.193		42
	[REDACTED]	[REDACTED]	9	10	15			86	49.5	81.581		96.5	80.18	79	89.279	17.95		39

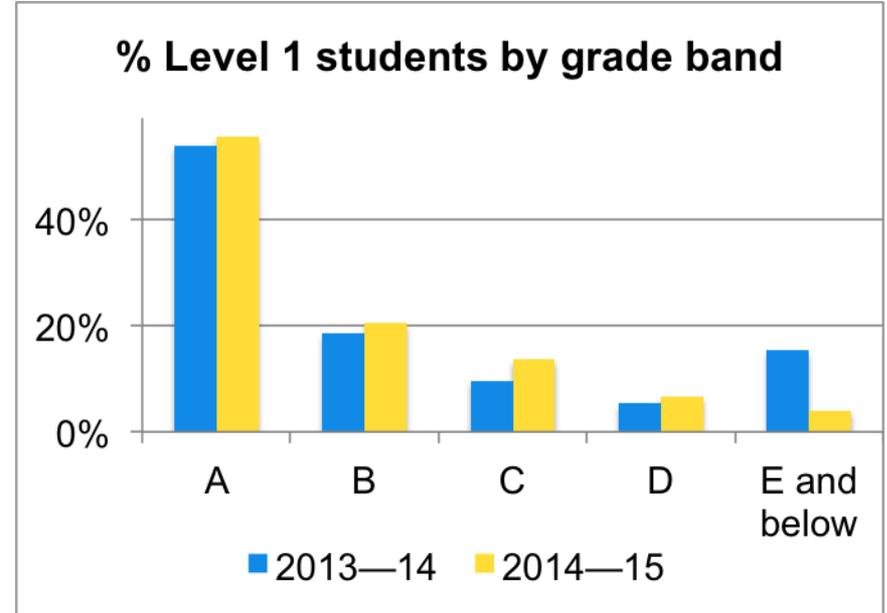
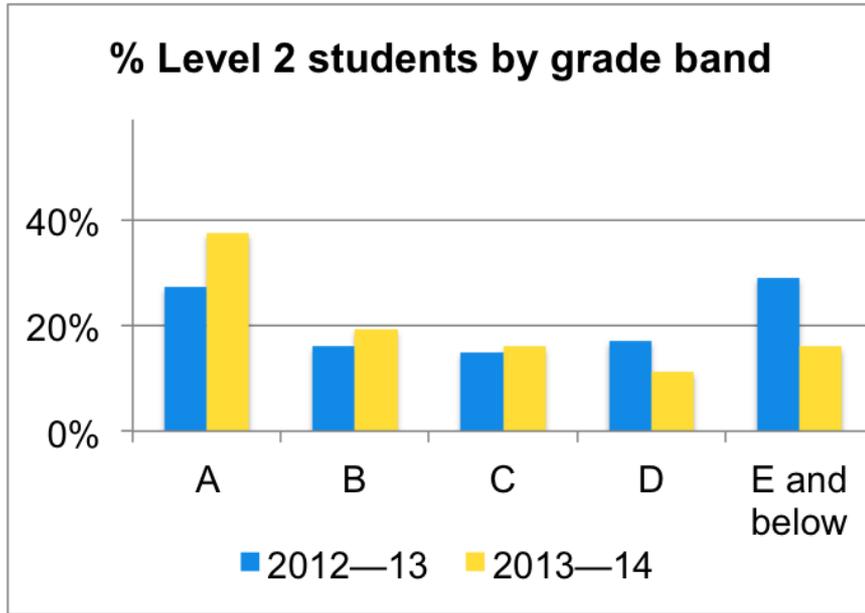
The Results: What our students say

it makes me go through the notes
consolidated my learning how EASY maths gets for us
constant assignments meant everything was learned
good to have regular homework to test knowledge assessments throughout were good
was brilliant, made me work and look into things more
makes me sit down and ensure I understand the week's work
why can't we have WebAssign on every subject that we do at university?
motivates you to actually go home and do work for the course
its very easy to get on anywhere and quick
super important and super beneficial for learning
regular homework feedback was good

The Results: Time-on-task



The Results: Student grades



What Next?

- Further student support for e-assessment
- Use of scanning technology in exams
 - Currently used on our ‘small’ Level 1 course (12 multiple-choice questions) — rolling this out to other courses is under consideration.
- Informs “just-in-time” teaching philosophy
 - *‘provide[s] a good way to understand the parts of the course that need more care when delivered to students, and to better shape tutorials.’* Level 1 Lecturer & Tutor
- Identifying non-engaged students and intervening
- Student retention

Reflections: What have we learned?

- We produce large volumes of data — interrogate it!
- We can square the circle — increasing feedback without increasing workload — but this requires:
 - Efficient teamwork
 - Integration of technology
 - Enthusiasm