

## Teaching Squares, and Pen-Enabled Technology in an Engineering Community of Practice

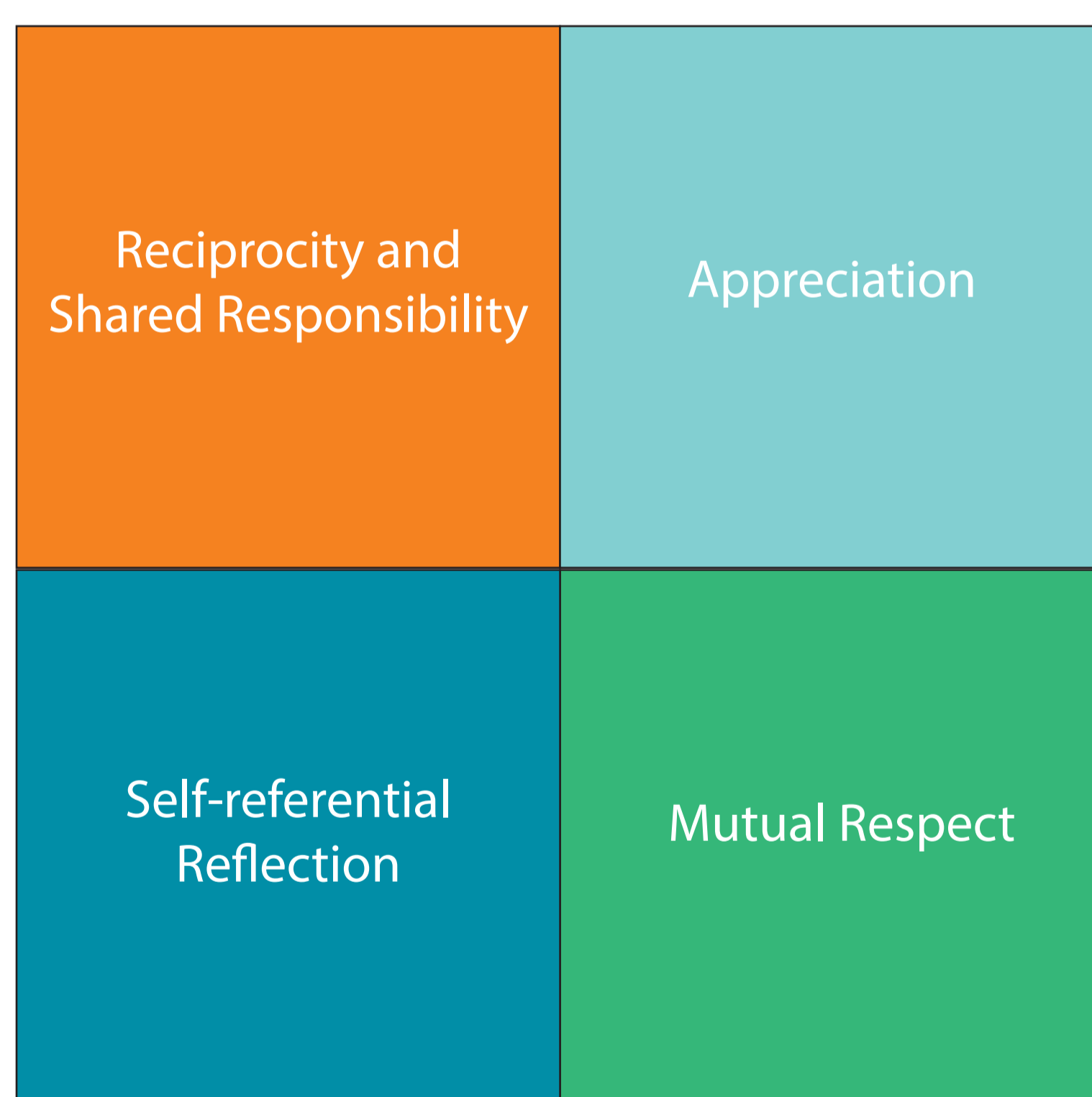
This project describes two related projects within the School of Engineering. One project aimed to share good teaching practices through the "safe and mutually supportive environment" of a Teaching Squares programme. The other project trialled the use of digital pen enabled Tablet PC technologies in development of innovative teaching practices.



The Teaching Squares allowed new staff to share experiences with each other and with experienced, proven teachers. The Tablet PC project allowed the dynamic processes of mathematical problem solving, including sketched diagrams, to be used in digital teaching environments, and issues shared in a CoP.

### TEACHING SQUARES PROJECT

The School of Engineering has a wide range of teaching staff, from very experienced, successful teachers, through to new staff with little teaching experience. New teachers may base their approach on their own learning experiences and the characteristic signature pedagogy of the discipline. The project team brought both proven and innovative practices to the project. Members included Vice Chancellor's Award Winners and AUSM Teaching Award Winners. This project aimed to build teaching expertise across the School by developing and sharing best practice. A Teaching Squares programme (see <http://tinyurl.com/TeachingSquares>) was initiated to provide a vehicle for sharing the teaching expertise within the School of Engineering in "a safe and mutually supportive environment."



While the feedback process involved sharing confidentially within the context of the teaching square, a summary of points noted included those commonly identified as part of good teaching practice, including: clear presentation (speech, visuals); clear exposition of requirements; review of assignments/ common problems; knowledge of subject reflected in use of real life examples and physical models; engagement/interaction with students; use of humour. The value of the teaching squares is that these positive attributes are observed in a real life, relatable context. Staff involved were generally very positive about the experience, would participate again, and would recommend it to others. This programme is continuing as a regular practice within the school.

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**Tablet PC Project:** Tek Tjing Lie, David I Wilson, John Prince, Sarat Singamneni, Craig Baguley, Jeff Kilby  
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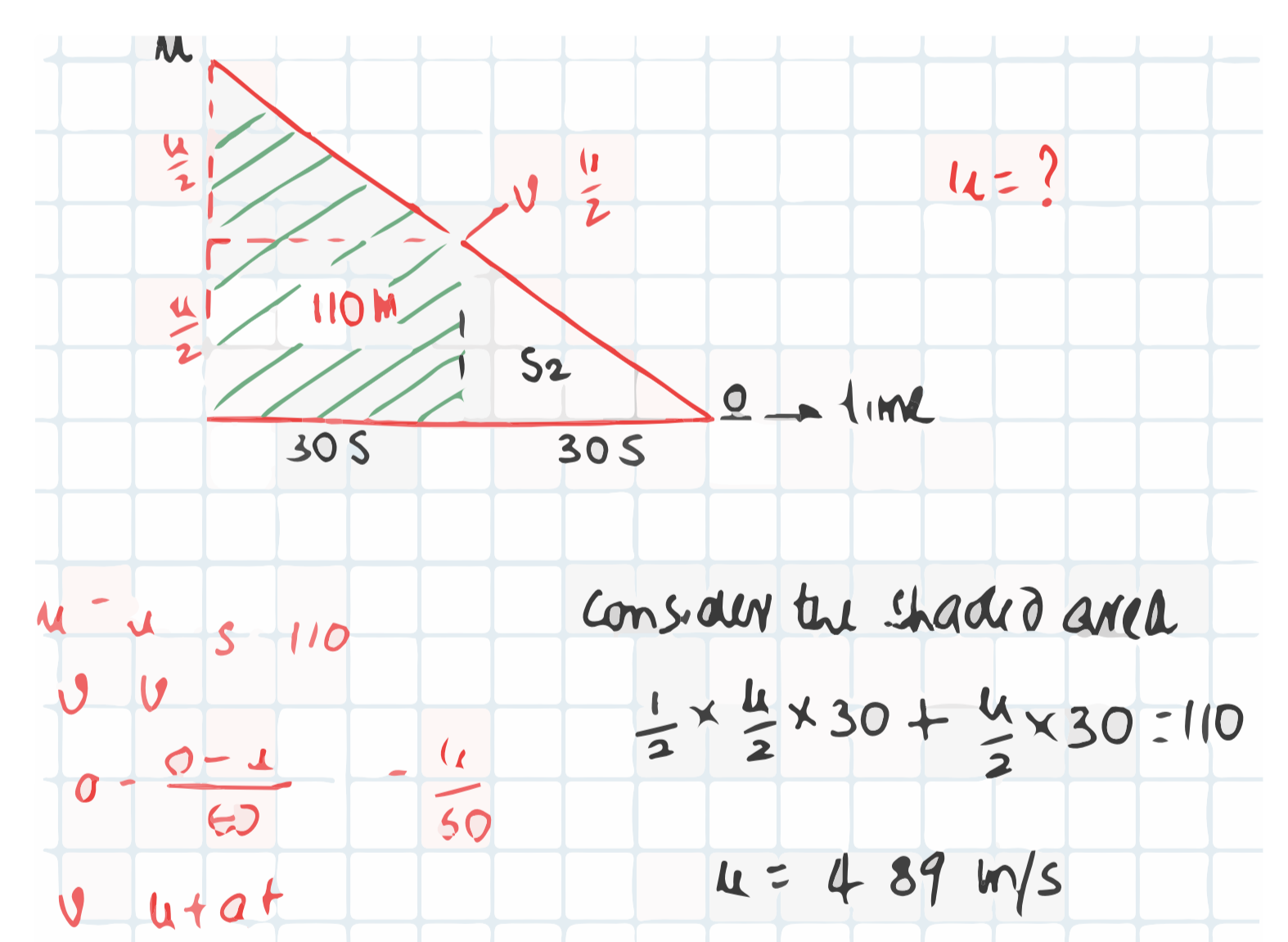
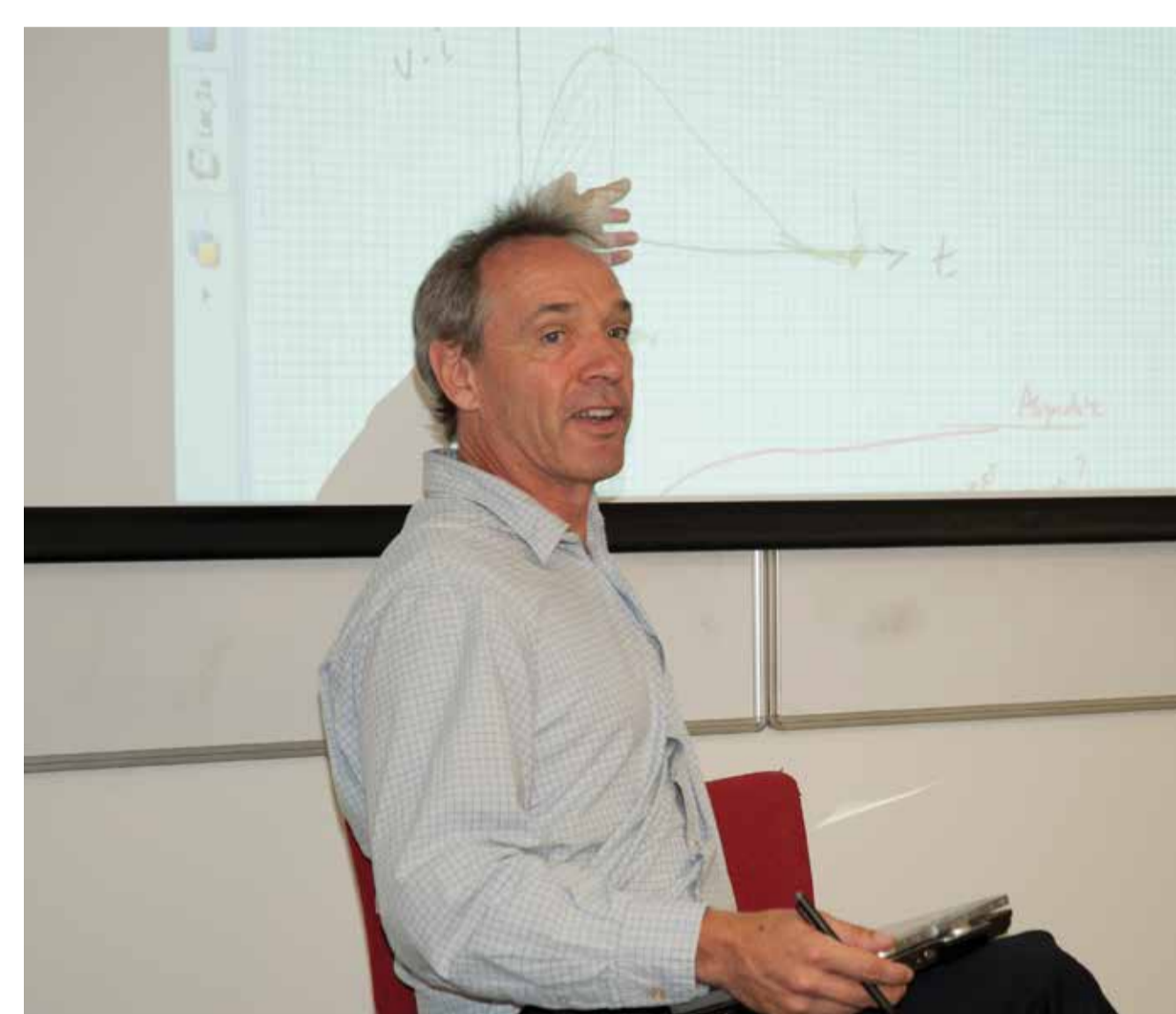
### TABLET PC PROJECT



In engineering education, the content includes mathematical symbolic and diagrammatic forms, traditionally taught using handwritten and talk-based approaches which have not been easily accommodated by keyboard-centric digital technologies. A key skill for the student engineer is to be able to construct good clear engineering drawings that both describe the design process and allow the designer to explore alternative avenues of approach. Traditionally this was done on a drawing table, or at the very least on an engineering sketch pad. The signature pedagogy of engineering has been based around use of blackboards/whiteboards for the exposition of processes. Powerpoint is also used, particularly in larger lecture theatre settings, but these static slides are limited in their capability to demonstrate the reasoning processes underlying development of solutions. In this project lecturing

staff trialed the use of digital pen-enabled technologies in the form of five Tablet PCs and a Digitiser Monitor.

In a pilot survey, and in informal feedback, students significantly rated the pen-enabled presentation method as better than other approaches, and requested their ongoing use. The use of the technology in a paperless marking process was also trialed. The success of the project has drawn other staff into use of the approach and mechanisms for extending the project in the future are being investigated. A paper on this project was presented at the Global Congress on Manufacturing, hosted at AUT in 2012 and was also published in the Asian International Journal of Science and Technology in Production and Manufacturing Engineering.



### PUBLICATIONS

- Maclaren, P., Singamemni, S. & Wilson, D. I. 2013, "Technologies for engineering education", Australian Journal of Multi-Disciplinary Engineering, Vol. 9, No. 2.
- Wilson, D.I. & Maclaren, P. (2013) Proceedings. 10th IFAC Symposium on Advances in Control Education (ACE 2013) (accepted)



For further information about this project, scan the QR code or contact Tek Tjing Lie - [tlie@aut.ac.nz](mailto:tlie@aut.ac.nz); David Wilson - [diwilson@aut.ac.nz](mailto:diwilson@aut.ac.nz)