

Mathematicians and Mathematics Educators: A Community of Practice to Explore PCK with Videos.

A/Prof. Greg Oates
School of Education, University of Tasmania, Australia
greg.oates@utas.edu.au

This presentation will consider my ongoing involvement with what began as a 3-year research project at the University of Auckland in 2009 (Barton et al., 2014; Oates & Evans, 2020). The project sought to develop and trial a mode of professional development amongst lecturing staff in our department of mathematics, in a carefully structured collaboration between research mathematicians and mathematics educators. The study was theoretically grounded in Schoenfeld's (2010) ROG model for teacher action (resources, orientations, and goals). A group met regularly to discuss and analyse video excerpts of their lecturing (usually short 3-10 minutes, selected by the lecturer), along with written pre- and post-lecture statements of the lecturer's 'ROGs' for that lesson. In addition to the anticipated evidence of improved teaching performance on which the project was predicated, more interestingly we identified key aspects of our practice and of undergraduate mathematics that received repeated attention in the chosen excerpts. Discussions frequently focused on mathematical and epistemological aspects of the lessons, and provided informative insights into lecturer behaviour in mathematics, and the theoretical lens through which this might be viewed. The trial has been successful enough to be expanded into further groups that now constitute a professional development culture at Auckland, and has recently been adopted by several other universities internationally (for example in Australia at Monash University, Swinburne University, and the University of Melbourne). The presentation will consider the elements of the project that are considered essential to its ongoing success, highlight the project's significance and implications for ongoing professional development in undergraduate mathematics, and consider its potential for further informing our theoretical perspectives in mathematics education with respect to both mathematical epistemology and teacher knowledge and practice.

Barton, B., Oates, G., Paterson, P., & Thomas, M. O. J. (2015). A marriage of continuance: professional development for mathematics lecturers. *Mathematics Education Research Journal*, 27(2), 147-164.

Oates, G. & Evans, T. (2017). Research mathematicians and mathematics educators: collaborating for professional development. In K. Patterson (Ed.), *Focus on Mathematics Education Research* (pp. 1-30). New York: NOVA Science Publishers.

Schoenfeld, A. H. (2010). *How we think. A theory of goal-oriented decision making and its educational applications*. Routledge: New York.

Bio:



A/Prof. Greg Oates is a lecturer in Mathematics Education at the University of Tasmania, Launceston, where he teaches pre-service teachers in primary and secondary mathematics, and researches and designs professional development for school and tertiary mathematics instructors. Greg is a cheerleader for mathematics teaching and learning, and has taught mathematics at all levels from the middle years through to senior secondary school, as well undergraduate calculus, linear algebra, and post-graduate mathematics education. His research interests include the integration of technology into mathematics curricula, the use of technology for active student-centred learning and assessment to promote peer-interaction in mathematics, and the use of videos to support professional learning for teachers, and engagement for student learning.