Description
Led by Professor Tom Lowrie (RIPPLE, Charles Sturt University), in partnership with Professor Robyn Jorgensen from Griffith University in Queensland, this $170,000 Australian Research Council Discovery project commenced in 2009 and will run for three years. The project seeks to address the dramatic performance discrepancies that exist in the mathematical outcomes of Australia’s most disadvantaged students (Indigenous students and those living in remote areas). It is not that these learners are cognitively inferior, but due to their life circumstances, the opportunities to immerse themselves in a numerate culture are limited. The project confronts this issue by developing teaching-learning activities that allow disadvantaged students to be empowered with new forms of mathematical thinking which are embedded in digital technologies.

Objectives
1) To focus on the most disadvantaged Australian students—Indigenous and rural—in order to develop learning experiences that will create new opportunities for accessing mathematical ideas;
2) To explore the nexus between mathematics and digital games environments for their potential to enhance mathematical learning; and
3) To develop new theoretical understandings of the potential of digital games to: (a) address issues of equity and access to school mathematics; and (b) provide new learning opportunities for students whose lifeworlds are mathematically restricted.

Methods
The first phase of the study documents students’ use of games technologies in out-of-school settings, while the second phase considers how games might be implicated in a digital divide. These two phases will describe student interest in game playing and outline learning behaviours taking place as students engage with specific technologies. The third phase of the study will include an experimental design which will measure the impact and affect of game technologies on students’ mathematics (and numeracy) outcomes.

Policy implications and anticipated outcomes
This project offers considerable scope for revisioning mathematics curriculum for our most disadvantaged students, as they come to terms with learning in a digital age. Moreover, it will provide opportunities for Indigenous students, and other disadvantaged cohorts, to have improved access to digital technologies that have the potential to enhance their mathematical understandings. The project will inform policy makers about the economic viability of investing in digital resources that have the potential to enhance mathematics outcomes, and thus contribute to the national endeavour of reducing the gap between these disadvantaged cohorts and other children across Australia.

Findings to date
An initial survey analysing students’ use of games technologies has been piloted and conducted across two states with approximately 500 students. Analysis of the survey data will be completed in early 2010. Stimulated recall sessions have also been undertaken with participants, to consider learning behaviours taking place as students engage with specific technologies.

Contact
Professor Tom Lowrie
Address: RIPPLE, Charles Sturt University
Locked Bag 588, Wagga Wagga NSW 2678
Phone: +61 2 6933 2966
Email: tlowrie@csu.edu.au