A Multifaceted Project Design to Understand and Build the Strengths of Out-of-field Secondary Mathematics Teachers

Judy Anderson
The University of Sydney
judy.anderson@sydney.edu.au

Janette Bobis
The University of Sydney
janette.bobis@sydney.edu.au

Kathryn Holmes
Western Sydney University
K.Holmes@westernsydney.edu.au

Helen M. G. Watt
The University of Sydney
helen.watt@sydney.edu.au

Paul W. Richardson
Monash University
paul.richardson@monash.edu

Teaching out-of-field (OOF) contributes to student underperformance in mathematics (Clotfelter et al., 2010). Australia's largest study on OOF STEM teaching (Shah et al., 2020) showed mathematics was the most frequently OOF subject taught at Year 10 (at 19%). In addition, only 24% of students are continuously taught by suitably qualified teachers in Years 7–10 (Prince & O'Connor, 2018). This is concerning when Australian students' international mathematics test scores have fallen below the OECD average (Thomson et al., 2019); alarming numbers study no mathematics or choose easier courses for NSW Years 11–12 (Jaremus et al., 2019); and mathematics interest, value, and self-concept decline across Years 7–12 (Watt, 2004). This compounds teacher shortages that threaten Australia's development of a capable, innovative STEM sector. Research reveals OOF teaching can also be detrimental to teachers' professional engagement. OOF mathematics teachers hold lower self-concepts, enjoy mathematics less, and experience higher stress/anxiety than in-field teachers; these relate to their reported instructional quality, burnout, and turnover intent.

This roundtable presentation elaborates our NSW Department of Education funded project conceptualisation and multifaceted design, to dialogue with cognate researchers and interested stakeholders. It is anticipated that discussion amongst roundtable participants will assist development of a deeper understanding of the complexities involved in effectively supporting OOF teachers of mathematics; and inform the design of quality PL to strengthen the expertise of non-specialist mathematics teachers to teach junior secondary mathematics.

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