

## Supporting Out-of-Field Secondary Mathematics Teaching in NSW: A Multifaceted Project Design

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Understanding the extent of out-of-field (OOF) secondary mathematics teaching in department schools in NSW is key to addressing teacher shortages and designing professional learning (PL) support to ensure students have opportunities to develop deep learning in mathematics (Shah et al., 2020). Leveraging existing datasets as well as collecting new survey and interview data from 118 current in-field and 96 OOF mathematics teachers, 100 head teachers and other school leaders in 48 schools has provided initial data to inform PL design. PISA data from 2275 teachers revealed 20% of teachers who were teaching grade 10 mathematics in NSW in 2015 were teaching OOF—they were more likely to be women, younger, on fixed-term contracts, working part-time, and have less than three years' experience (Watt et al., 2023). Preliminary new survey data analyses reveal that OOF teaching appears slightly more pronounced in smaller schools, in lower socioeconomic areas, in schools with fewer resources, and lower parental participation. Interview data from fifteen case-study schools has provided in-depth information about schools' approaches to supporting OOF mathematics teaching including new models of curriculum design, new approaches to recruiting and sustaining their mathematics teacher workforce, particularly in rural and regional areas, where staffing shortages are most acute. Designing PL that meets OOF mathematics teachers needs is challenging given the diversity of the cohort and the variety of contexts within which they work (Vale et al., 2021). While we are aware OOF mathematics teaching can occur in all secondary grades and at all levels of mathematics learning, we are focusing our PL provisions on teaching of grades 7 and 8 classes where most OOF mathematics teaching currently occurs.

This roundtable provides opportunities to explore findings from this Department of Education funded project. Other education jurisdictions and tertiary providers have offered programs to address OOF mathematics teaching (Barker et al., 2022). We anticipate the discussion will enable participants to share their experiences and insights to enrich our project.

### References

- Barker, M., Goos, M., & Coupland, M. (2024). *Relieving out-of-field teaching in Australian secondary mathematics: Analysis of out-of-field secondary mathematics teacher upskilling initiatives in Australia*. Australian Mathematical Sciences Institute.
- Shah, C., Richardson, P., Watt, H. (2020). Teaching 'out of field' in STEM subjects in Australia: Evidence from PISA 2015. *GLO Discussion Paper, No. 511* [rev.], Global Labor Organization, Essen. <http://hdl.handle.net/10419/217484>
- Vale, C., Campbell, C., & White, P. (2021). Beliefs and practices of secondary teachers crossing subject boundaries to teach mathematics out-of-field. *Mathematics Education Research Journal*, 33, 589–612.
- Watt, H. M. G. et al. (2023, November 26–30). Teaching mathematics out-of-field: Who, where, why, to whom, and does it matter [Conference paper]? *The annual conference of the Australian Association for Research in Education*, Melbourne.

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