2026–27 Pre-Budget Submission

A national strategy to arrest Australia's acute maths teacher shortage and build the highly skilled workforce Australia needs

Australia faces a critical skills pipeline issue that threatens our future workforce and economic competitiveness: two in five secondary maths teachers are 'out-of-field' teachers. This is resulting in 75% of high school students being taught by a teacher who lacks maths qualifications, in both maths content and maths pedagogy. This lack of formal training compromises their ability to support, build confidence and inspire the next generation of maths thinkers. This directly undermines our future workforce's mathematical literacy.

This further compounds broad issues with maths education, including declining participation rates in higher level Yr 12 maths, and gender gaps in maths participation and confidence.

Our failure to adequately prepare students in maths threatens economic capacity in high-value industries such as AI, data science, machine learning, mining, telecommunications, defence, cyber security, finance, and logistics. These areas are essential for a technology-driven economy – and Australia's future productivity and economic resilience.

The lack of fully qualified maths teachers across the country is a workforce crisis that demands immediate national action – with engagement from all states and territories, led by the Commonwealth.

Australia's leading mathematical associations have come together to form a consortium to address this pressing issue. The consortium includes the Actuaries Institute, Australian Mathematical Sciences Institute (AMSI), the Australian Mathematical Society (AustMS), the Mathematics Education Research Group of Australasia (MERGA), Science and Technology Australia (STA), and the Statistical Society of Australia (SSA). This pre-budget submission has been developed by STA and AMSI in collaboration with the wider Consortium.

Research[1] from the consortium reveals that increased support for upgrading the qualifications of out-of-field (OOF) mathematics teachers is essential to improve education outcomes for Australia's students. This is reinforced by the Government's own work, with the Australian Institute for Teaching and School Learning (AITSL), stating that analysing out-of-field teaching rates is critical for future teacher workforce planning.

Recommendations

The Commonwealth Government – potentially as a matter of top priority for the newly established Australian Teaching and Learning Commission in partnership with the Department of Education – should develop a national strategy to address the critical issue of out-of-field maths teaching. The strategy should contain three major practical elements:

1. **Data infrastructure for workforce planning:**

The Commonwealth should work with universities and state registration authorities to develop comprehensive data describing our teacher workforce:

- Expand and harmonise state and national data collection processes to record teacher specialisations as part of registration processes.
- Develop a data collection process to link teacher qualifications to the subjects they are teaching.

This will build on and enhance the existing data collected through the voluntary annual Australian Teacher Workforce Data (ATWD) enabling targeted resource allocation and the ability to measure the effectiveness of any interventions to support the teacher workforce. Critically, moving some of this data into registration systems will help reduce the administrative burden on teachers and create a comprehensive dataset that will improve understandings and insights and into the teacher workforce.

[1] https://amsi.org.au/wp-content/uploads/2024/03/ooft-position-paper-2024.pdf

While the ATWD survey has seen improved response rates, the 2023 data represent only 9.1% of teachers. This low response rate and small sample size negatively affects policy planning and effective responses.

2. Teacher upskilling program

The Commonwealth Government should establish a nationally coordinated program to upskill out-of-field maths teachers to have specialisation training, at a graduate certificate and diploma level. This program would:

- target the existing teacher workforce, upskilling those already in the classroom rather than waiting for new graduates, ideally using the new teacher data to prioritise locations/schools with higher rates of out-of-field teaching
- be delivered through a university consortium ensuring consistent quality and national reach, potentially as stacked accredited micro-credentials aligned with AITSL standards to enable flexible delivery and national recognition of study
- be supported by the Commonwealth Government to remove cost barriers to teacher participation
- be supported by schools and State/Territory Governments to enable teachers to take time to participate in the program
- award participants with a nationally recognised qualification, i.e. a graduate certificate and diploma
- be overseen and reviewed by an expert reference panel.

3. Implementation framework

The Commonwealth should establish a National Steering Group to coordinate:

- stakeholder engagement across education and industry sectors
- development of the nationally consistent postgraduate qualification framework and teaching skills portfolio integration with existing skills and workforce development and innovation initiatives.

Upskilling program outline

Target cohort size would be ~100 fulltime equivalent teachers per annum, noting there would be a mix of teachers choosing to undertake the program on full-time and part-time basis. We assume at any one time about 200 teachers would be undertaking the program. Over the 10 years it is expected that 530 additional maths teachers will be trained.

The 10-year cost of the upskilling program would be in the order of $16.5 million, which includes:

- the student contribution for course fees for teachers (pilot and full program) based on 2025 student contributions for Education courses
- the cost of relief teaching to allow for teacher release from classrooms to complete the program (pilot and full program)
- remuneration for the expert reference group
- evaluation costs for pilot and full program

The Commonwealth could seek co-contribution from states and territories to this program.

Universities delivering the upskilling program would be expected to design the course so that it maximises new technologies to minimise travel and time impacts on teachers, especially those who are in regional locations. It is assumed that all teachers would be eligible for Commonwealth Supported Places (CSP), noting any impact on CSP has not been factored into the above cost.

It is proposed that a pilot cohort of ~30 teachers would take the course as a full-time load to test each component, noting that subsequent cohorts of teachers may choose less than full-time load. Structing the program as stacked micro-credentials would support this flexibility.

Timeframe and estimated costs

<table>
<tr><th></th><th>Year 1</th><th>Year 2</th><th>Year 3</th><th>Year 4</th><th>Year 5</th><th>Year 6</th><th>Year 7</th><th>Year 8</th><th>Year 9</th><th>Year 10</th><th colspan="2">Expected cost</th></tr>
<tr><td>National Steering Group</td><td>Establish and agree improved data framework

Oversee Expert Reference Group</td><td>Oversee jurisdictions' implementation of data systems and qualification design

Oversee Expert Reference Group</td><td>Oversight of pilot</td><td>Ongoing oversight

Pilot evaluation</td><td>Ongoing oversight</td><td>Ongoing oversight</td><td>Ongoing oversight</td><td>Ongoing oversight</td><td>Ongoing oversight</td><td>Final evaluation

Assessment of further need/ next steps</td><td colspan="2">To be absorbed by government departments*, excluding independent evaluation costs</td></tr>
<tr><td>Data framework</td><td>Agree improved data framework</td><td>Commence improved data collection</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td colspan="2">To be absorbed by government departments*</td></tr>
<tr><td rowspan="7">Upskilling program</td><td colspan="2" rowspan="7">Expert Reference Group to design and deliver a communication campaign to teachers</td><td rowspan="7">Accredit course

Pilot cohort (30 EFTSL intensive)</td><td colspan="2">First cohort (100 EFTSL)</td><td></td><td rowspan="7"></td><td rowspan="7"></td><td rowspan="7"></td><td rowspan="7"></td><td>Expert design group</td><td>$600,000/year (years 1, 2)</td></tr>
<tr><td rowspan="6"></td><td colspan="2">Second cohort</td><td rowspan="6"></td><td>Pilot course costs</td><td>$138,000</td></tr>
<tr><td rowspan="5"></td><td colspan="2">Third cohort</td><td>Pilot teacher release costs</td><td>$3,230,000</td></tr>
<tr><td rowspan="4"></td><td colspan="2">Fourth cohort</td><td>Pilot evaluation</td><td>$40,000</td></tr>
<tr><td rowspan="3"></td><td>Fifth cohort</td><td>Program course fees per annum</td><td>$460,000/ 100 EFTSL (year 4 onwards)</td></tr>
<tr><td rowspan="2"></td><td>Teacher release costs per annum</td><td>$1,615,000/ 100 EFTSL (year 4 onwards)</td></tr>
<tr><td>Program evaluation</td><td>$100,000</td></tr>
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*It would be expected that governments would absorb these costs. Participation and implementation on of the new data collection could be set as a requirement for states/territories access to the Commonwealth subsidisation for teacher's upskilling qualifications.

The economic case for action

The mathematical sciences (maths, statistics, data science) contribute hundreds of billions of dollars annually to Australia's economy, across the finance, AI, data science, mining, telecommunications, and logistics sectors. Our failure to adequately prepare students in mathematics directly undermines economic capacity in these high-value industries – and Australia is already increasingly lagging behind other sophisticated economies in technological innovation and investment in R&D (OECD Science, Technology and Innovation Scoreboard). Without strong mathematical foundations, students cannot pursue careers in emerging technologies, data science, and AI – the engines of innovation and economic prosperity. National coordination and investment in mathematics education quality will yield dividends across all sectors of Australia's economy.

Australia's maths skills pipeline faces critical challenges, including:

- Declining student participation: Year 12 advanced and intermediate mathematics enrolment has fallen from over 30% a decade ago to just 25% in 2023.
- Shrinking maths teacher workforce: 75% of Year 7–10 students are taught maths by an out-of-field teacher at some point during their secondary schooling. Graduate recruitment alone cannot solve this problem – rapid upskilling of the existing out-of-field teacher workforce must take priority.

The equity–economic nexus

The out-of-field mathematics teaching crisis disproportionately affects disadvantaged students. Given that data indicates students taught maths by out-of-field teachers generally demonstrate poorer maths outcomes, this creates a multi-impact economic burden:

- Talent waste: Low-SES students (31% taught by out-of-field teachers vs 15% in high-SES schools) represent untapped human capital.
- Educational disadvantage: higher rates of out-of-field teachers in low-SES schools exacerbate education disparities – students taught by fully qualified maths teachers perform more strongly in maths than those taught by out-of-field teachers.
- Limited intergenerational economic mobility: poor mathematics outcomes limit career pathways and earning potential.

A national approach is needed

While every state and territory collects data as part of the teacher registration process, these processes are not consistent across jurisdictions and do not allow for a complete picture or analysis of the national maths teacher workforce.

Similarly, there are several programs offered by universities to upskill out-of-field teachers, but these are inconsistent and piecemeal, often not delivering a skill level that would be equivalent to a teacher with a maths specialisation. A nationally consistent program is needed.

There are also barriers to teachers participating in such initiatives, including financial barriers or challenges in taking time out of the classroom to participate. Commonwealth Government funding support will be necessary to enable teachers to take part in an upskilling program. Similarly, State Governments and schools will need to support teachers to take time out of the classroom through additional relief or other mechanisms.

Contacts for further information

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