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Falling maths standards risk the economy, science academy warns



Maths achievement is slipping in Australian schools. Supplied



by **Tim Dodd**

Australia's top science body has warned that falling maths standards in schools and universities risk hurting the economy and called on all universities to impose minimum maths requirements on students entering engineering, science and commerce courses.

In a report published on Thursday, the Australian Academy of Science said Australia was falling behind comparable OECD countries in maths achievement.

"Only 0.4 per cent of Australian university students are entering into tertiary education to pursue degrees in mathematics or statistics, less than half the OECD average of 1 per cent," the academy said in its report *The Mathematical Sciences in Australia: A vision for 2025*.

In the United Kingdom, Germany and Sweden the figure is 2 per cent and, in New Zealand, 3 per cent.

The report also cited international studies that show over a third of Australian Year 8 students can't apply basic mathematical knowledge in straightforward situations,

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compared with only a tenth of Year 8 students in high-performing countries.

It said Australia had a major shortage of qualified maths teachers compared with most OECD countries. In Australia 28 per cent of maths teachers of Year 11 and 12 students have not studied maths at third Year level in university, and 5 per cent of them have no tertiary training at all in maths.

The Academy of Science says one of its key recommendations is to urgently increase professional development for high school teachers who were teaching maths "out-of-field".

PREREQUISITES NEEDED

Another is that all universities should impose a maths prerequisites for students enrolling in engineering, science and commerce degrees, requiring them to study intermediate maths, at a minimum, in Year 12.

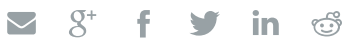
Once common, this prerequisite has been abandoned by many universities seeking to boost enrolments. A recent study found that only 41 per cent of Australian universities require maths at an intermediate level in Year 12 to enrol in engineering, while only 14 per cent require it for science and 13 per cent for commerce.

Earlier this year the University of Sydney announced it would reintroduce Year 12 intermediate maths as a requirement for engineering, science and commerce degrees from 2019.

The head of the university's School of Mathematics and Statistics, Jacqui Ramagge, said one of the reasons for the change was that students studying biology and chemistry had been found to be 2 to 3 times more likely to fail if they had studied only the basic-level general maths in Year 12, rather than intermediate maths or above.

Director of the Australian Institute of Mathematical Sciences Geoff Prince said Australia's maths performance was "internationally embarrassing".

"The economy is craving data science capacity and 75 per cent of future jobs in our economy will be STEM [science, technology, engineering and maths] based," Professor Prince said.



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