

The Australian Association of Mathematics

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The state of maths education in Australia

Esther Chia is a maths teacher at Henry Park Primary School in Singapore. She has just finished four days of teaching exchange and observation at Grange Primary School and Allenby Gardens Primary School in Adelaide as part of an international program run by the Australian Association of Mathematics Teachers. Esther says 'The Australian students are very engaged and collaborative learners. They show keen interest to learn. They participate actively during lessons by asking questions to clarify their doubts and sharing their knowledge with their peers. The teachers adapt their lessons to suit the needs of the students and encourage collaborative work through the group work assigned. The teachers are very encouraging and have very good rapport with their students'.

Waheeda is from Singapore's South View Primary School. She concurs with Esther's assessment of Australian maths teaching and compares this with what seems to be a more structured approach in Singapore. 'Singapore maths teachers take reference from the Singapore Mathematics Curriculum at each year level. The focus is on mastery and problem solving. Singapore students are disciplined in solving maths problems and deriving the correct final answers. In order to ensure students remain focused and engaged, Singapore teachers place emphasis on ensuring that students are familiar with classroom routines'.

Lee Phui Jiun is also part of the visiting group. Jiun works at Raffles Institution, one of the top schools in Singapore. She spent four days in Glenunga International School and Adelaide High School. In her view the teachers and students work together in a positive environment. 'In Singapore we have high expectations with our students in terms of procedural fluency in maths. We require them to show their methods and we place strong emphasis in rigour and practise to ensure all the students have grasped the concepts. In Australia teachers proactively experiment with technology and are advocates of collaborative and authentic learning. Students gain a broader but not necessarily deeper grasp of the curriculum'.

This week the results from the 2018 Pisa testing came out. Australia continues its seemingly calamitous decline in maths achievement in schools. In the table that ranks countries by their average score in maths, Australia has dropped from 19th position in 2012 to 25th in 2015 to 29th in 2018. In 2015, 19 countries performed significantly better than Australia. In 2018, 23 countries / economies performed significantly



better. For the first time, Australia's school students are performing at the OECD average. This is grim news for maths in Australia.

Why is it that the positive stories about maths teaching in Australia we are hearing from our Singaporean teachers are not backed up by data?

Admittedly, the schools that hosted the Singaporean maths teachers were recommended through the South Australian Department for Education's Thinking Maths program. This means these particular schools and their teachers take their maths teaching seriously. This may not be indicative of practices across Australia.

There is also a cultural context. The Singaporean teachers tell us that most children there go to intensive tuition centres after school. Besides teachers, parents have high educational expectations of their children in an exam-driven education system. They deeply understand the success of Singapore as an economy is due to the industriousness of its people. Nobody, least of all parents, can afford to become complacent. This is a message that seems to get passed on from one generation to the next.

From an education perspective, teaching is a profession that is well regarded and well organised in Singapore. Teachers, in maths and other subjects, all use the same curriculum, methods and standards. There are subject leaders and master teachers who support teaching across clusters of schools. Expert teachers can advance in their careers to these senior positions without leaving their subject. All teachers are guaranteed 100 hours of professional development each year. It is widely recognised in Singapore that teaching is much more than just spending time in classrooms.

It may be said that such a centrally-organised and consistent approach to maths education is difficult to replicate in Australia. However, we could also look at the successes in maths standards in the UK. In 2015, the UK was ranked below Australia for achievement in maths. Now it performs significantly better. The UK government has invested in a network of maths hubs that bring together groups of schools within a locality to share professional training for the teachers. These devolved centres are coordinated by the National Centre of Excellence in Teaching of Mathematics to ensure the quality and resourcing of the maths hubs across the country. The attention to consistency, sharing practices and the recognition of the importance of continuous professional development of maths teachers in the UK is not unlike Singapore. It has paid dividends.



Australia must do much better for all of its school students when it comes to maths. We have some great teachers who are very dedicated and innovative in their teaching. They are willing to share their expertise and experience with colleagues. To give all Australian students opportunities in the global workplace of the future, we have to recognise the challenge in Australia of achieving high standards, rigour and consistency in our maths education across the country. To do this, we have to coordinate at a national level, for example through an institute that provides benchmarks and support in maths teaching practice, and share the pockets of great work going on in the state and territories. Most importantly, we need to invest in Australian maths teachers to lead, share and become role models in the continuous advancement of their craft.

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