

Champions of Maths Program Achieves Outstanding Classroom Results

A unique program to upskills maths teachers in select WA schools is bucking a trend of falling maths proficiency across the State.

WA primary school teachers who participated in the inaugural Alcoa Champions of Maths Program (ACoM) last year achieved, on average, 0.6 years of learning beyond what is expected in a year¹.

One class gained an additional 1.6 years of learning and several year six students also showed an interest and ability to work at a university-level of thinking.

These outcomes are in direct contrast to downward trends described in consecutive global Program for International Student Assessment (PISA) reports that show Australian students have significantly declined in maths proficiency since 2003².

The Alcoa Champions of Maths Program is delivered by Scitech in partnership with Alcoa Australia to primary schools in the South West, Peel and Kwinana regions. It aims to develop the classroom methods of primary teachers over a year of intensive coaching consisting of expert training, observation, reflection and assisted planning.

By focusing on teachers' methods, children's skills are also improved. This is important to tackle from an early age to set students on a path to meet the demands of the modern employment market where 75% of the fastest growing jobs are expected to require science, technology, engineering and maths (STEM) skills³.

Kalien Selby, Scitech Chief Executive Officer said, "The remarkable results from the first year of the Alcoa Champions of Maths program shows the immediate impact this unique program can have by breaking new ground in how maths is taught to primary school students.

"It builds ability and confidence in teachers to facilitate deep learning of mathematical concepts and takes students beyond a standard 'yes or no' scenario into problem solving and reasoning, even with pure mathematical concepts with no real-world context.

"We are excited to continue to work with Alcoa and to welcome our new 2020 cohort of teachers to shift the dial on developing real passion and excitement for teaching and learning maths."

Jodie Read, Alcoa Australia Corporate Affairs Director said the resources company was proud to be playing a part in helping our children be equipped to have meaningful employment prospects.

The Program builds on the concept of a *Connectionist teacher orientation*⁴ which shows a high level of student achievement. These teachers believe that numeracy is best learnt by being exposed to the connections between different mathematical ideas and is best taught through dialogue between teacher and student to extend the students' understanding.

Over the course of 2019, the teachers participating in the Alcoa Champions of Maths program showed an average 28% shift towards *connectionist orientation*, moving from a score of 8.5 to 12.4 on a scale capped at 14.

More information

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An example of a connectionist technique introduced in the program was the use of “extension moves” during class discussion. A teacher encourages an extension to the student’s thinking by asking questions such as “*How did you come to that answer?*” or “*How was that the same or different to the last question?*” These types of questions encourage dialogue that focusses more deeply on the concepts and connections in maths.

The average number of “extension moves” used by the teachers increased from four in semester one to fourteen in semester three.

Eight teachers were recruited into the program in 2019 based on a demonstrable commitment to improving their maths teaching and desire to become a maths leader among their school community. As well as improvement to their teaching style and understanding, they were coached to deliver professional development to their colleagues to create a ripple effect that could benefit more than 8,000 students over three years.

In 2020, the new cohort of teachers have been recruited from Oakwood Primary School in Meadow Springs, Ocean Road Primary School in Dawesville, St Joseph’s Primary School in Pinjarra and Bungaree Primary School in Rockingham.

Editor’s Notes

The Alcoa Champions of Maths program is a component of the highly successful Alcoa Maths Enrichment Program (AMEP) that has been benefiting primary students in the South West, Peel and Kwinana regions of Western Australia and Portland Victoria since 2012.

The Alcoa Maths Enrichment Program is guided by the latest research on effective maths teaching techniques with input from leading experts from various universities and institutions around Australia.

AMEP is delivered through two face-to-face professional learning components - Alcoa Real World Maths and Alcoa Champions of Maths – and the Alcoa Portland Maths Network, a community of teachers who share ideas and teaching methods based on AMEP practices.

The methods used in the Alcoa Maths Enrichment Program encourage learning and application of the 21st century skillset of engagement, independence, creativity, collaboration and critical thinking, which are necessary for the application of STEM in the workforce, as well as in life.

¹ Based on the [4th edition PAT-Maths tests](#) (2013)

² [Reporting Australia’s Results](#) Australian Council for Educational Research, 2015 and [PISA 2018](#)

³ [A Smart Move](#) PricewaterhouseCoopers, 2015

⁴ [Effective Teachers of Numeracy](#) by Askew et al, 1997