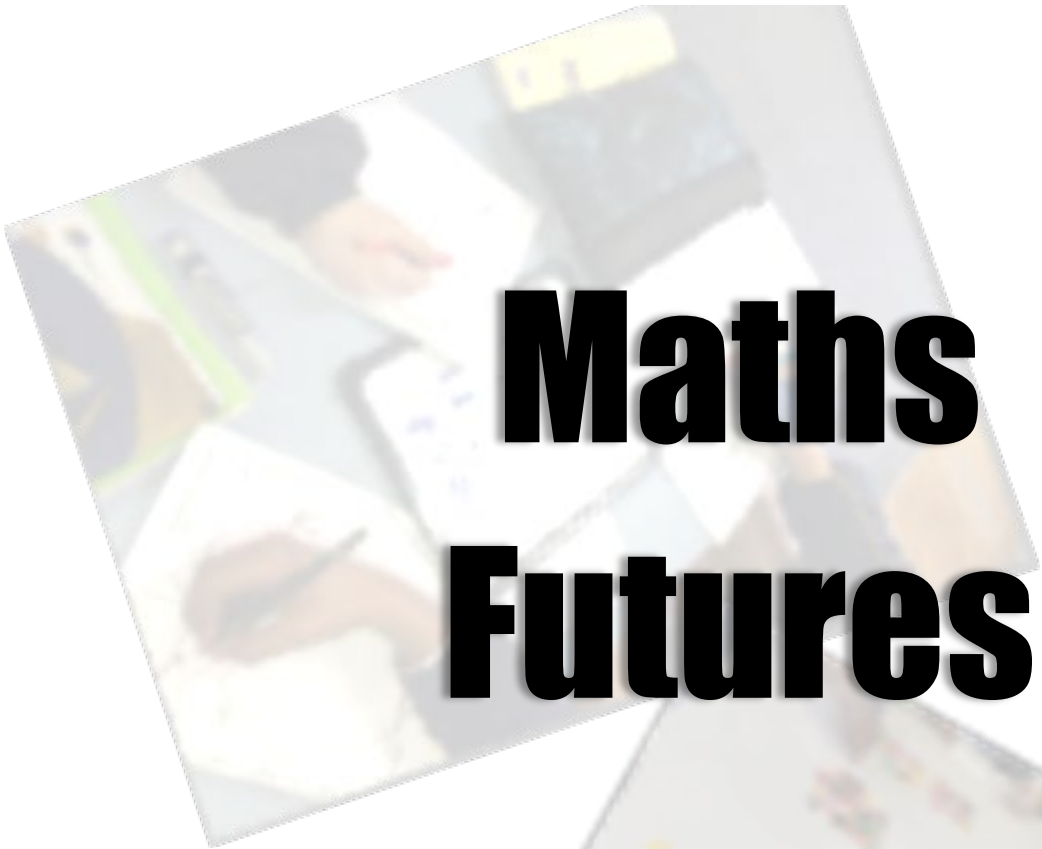
Sunshine College
Creating futures

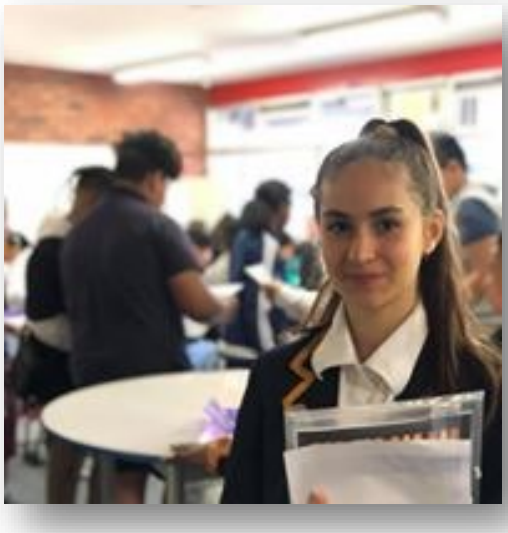


Maths Futures

Sunshine College Maths Program

Sunshine College

Maths Futures



Aspects of the Program

The high quality Maths Futures program at Sunshine College blends four key curricula strategies (Reciprocal Teaching, Differentiated lessons, Scaffolding Numeracy in the Middle Years and Speedy Maths) and two philosophies (Growth Mindset and Data Driven) which together drive our culture of educational excellence. Our program ensures all students strive towards success.

These high-impact strategies were developed through collaborative action research and derived from evidence based best practices.

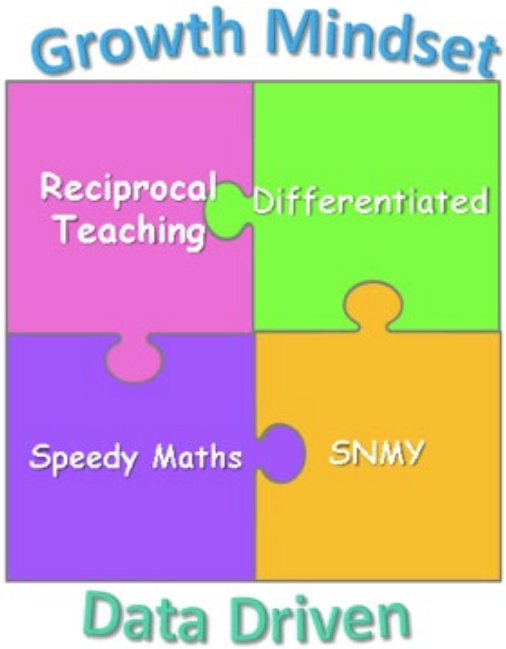
Our Aim

Sunshine College established its award winning mathematics program in 2009, with the aim to include all students in a positive learning experience in mathematics which allowed them to learn the mathematics which was "just right" for them.

This was achieved by a team of dedicated, experienced teachers collaborating to create the huge bank of differentiated resources required to meet this aspirational aim.

In the years since the program was established, the teaching team have continued to develop, review and refine these resources to the point where every lesson for every student in years 7, 8, 9 and 10 now comprises of high quality learning tasks which provide the appropriate level of challenge for every learner.

The innovative resources require an innovative approach in their delivery and teachers work in teams to deliver every lesson and maximise opportunities for authentic learning in every class.



Visit the school's website: www.sunshine.vic.edu.au

Reilly, Y., Parsons, J. & Bortolot, E., (2010). An effective numeracy program for the middle years'. New curriculum; new opportunities. MAV Conference Proceedings 47th, pp71-78

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Differentiated Classes 1

As a faculty, the mathematics department establishes the concepts students will develop each year. Each unit is planned to build conceptual understanding and develop students as independent learners. Each lesson within a unit is fully differentiated; lessons which enable students to work on the same core idea at a lev-el which is “just right” for them. Each lesson is planned with a minimum of 3 levels and students select the task which is “just right” for them. Importantly the tasks are labelled and not the students, therefore there are no low, medium or high groupings. This methodology capitalises on the benefits of a ‘growth mindset’ (Dweck, 2006) which values student improvement.

Warm ups at the beginning of each lesson encourage engagement and a written self-reflection is included at the conclusion to consolidate learning. Assessment is purposeful and ongoing; students self-assess using a capacity matrix at the beginning and end of each unit; and they are periodically (every 3 months) assessed using an impartial, adaptive tool (On Demand, VCAA).

Reciprocal Teaching 2

Students work in small groups to decode worded problems through the development of quality maths conversations. Reciprocal teaching in mathematics is based on the literacy strategy described by Palinscar and Brown (1984), however the 5 stages in mathematics are: Predict, Clarify, Find the Big Question, Solve and Reflect (Reilly et al, 2009). Students are challenged with worded problems at 5 levels of difficulty. Students select a problem which is at the right level for their group to work on. Working in groups enables students to work with mathematicians at a similar ‘thinking speed’ to them.

Reilly, Y., Parsons, J (2011), Delivering dif-ferentiation in the fully inclusive middle years’ classroom. Maths is multi-dimensional. MAV Conference Proceedings 48th, pp 25-32

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Scaffolding Numeracy in the Middle Years 3

Scaffolding Numeracy in the Middle Years is a program developed at RMIT University by Professor Di Siemons and her team to address the big ideas in the development of mathematical understanding. It moves students from additive thinking to the more efficient multiplicative strategies and beyond to proportional reasoning. The program allows staff to diagnosis student deficits. Students are then placed into 1 of 9 levels (we added the ninth level in 2013).

Lessons are designed to drive students through the continuum of mathematical understanding.

Reilly, Y., Parsons, J. & Bortolot, E., (2009). Reciprocal teaching in mathematics. Mathe-matics of prime importance. MAV Conference Proceedings 46th, pp182-189

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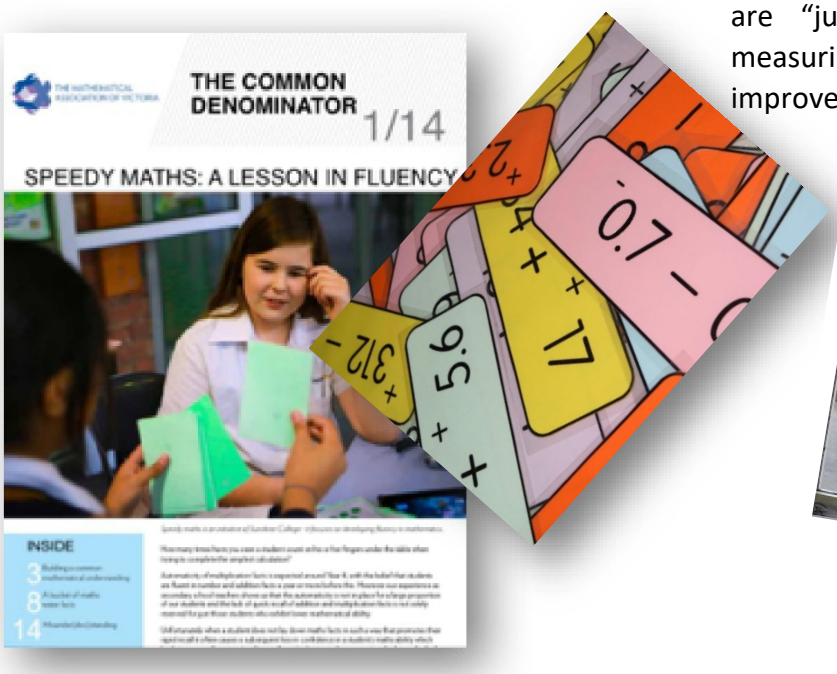
Speedy Maths 4

In order to establish automaticity and fluency, students engage in speedy maths activities. Students develop the ability to re-call factual knowledge and skills easily.

Each fortnight students complete three activities from a series designed to build number fluency, from number facts to division of negative numbers. Students select the activities which are "just right" for them whilst measuring and record self-improvement.



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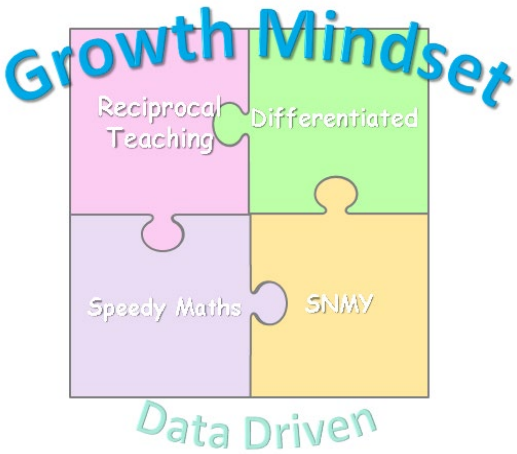


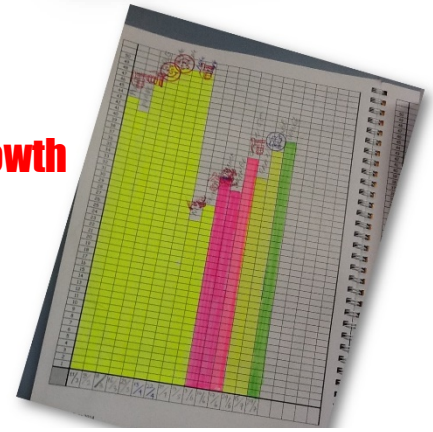
Nurturing a Growth Mindset 5

Fixed

At Sunshine College every teacher strives to create an environment where students believe they can improve. This is achieved by ensuring we value progress and personal development irrespective of where the starting level might be.

This is an environment where students are supported to identify and select the activity which is "just right" for their learning requirements, so it is necessary to help students to understand what learning feels like for them.

For this to work, the teaching team must ensure that tasks are prepared to satisfy these multiple needs. Students are not expected to help "less knowledgeable" others unless that help is completely reciprocated. This means that students are encouraged to work with other students who think at the same speed as they think themselves.



Growth

Reilly, Y., Parsons, J (2014), Effective Differentiation; where a growth mindset meets the ZPD. Maths Rocks. MAV Conference Proceedings 51st, pp128-135

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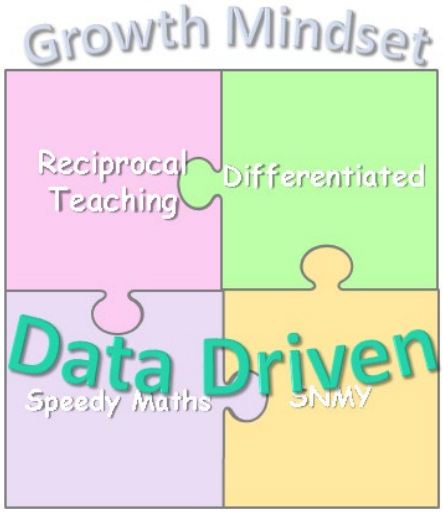
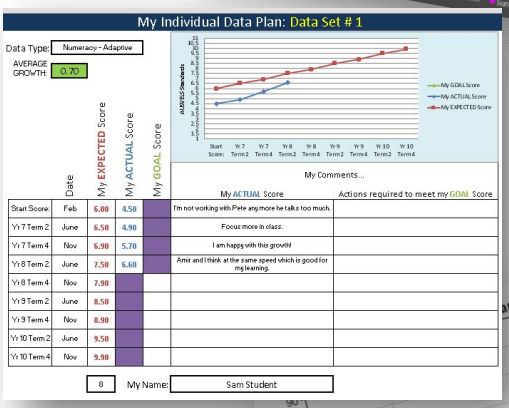
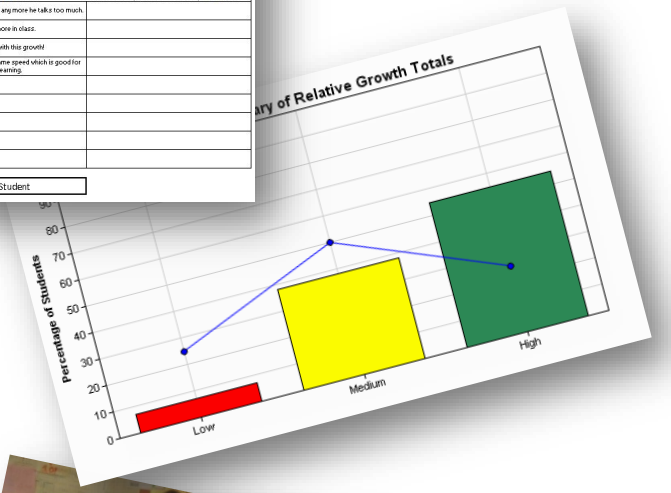
Maths







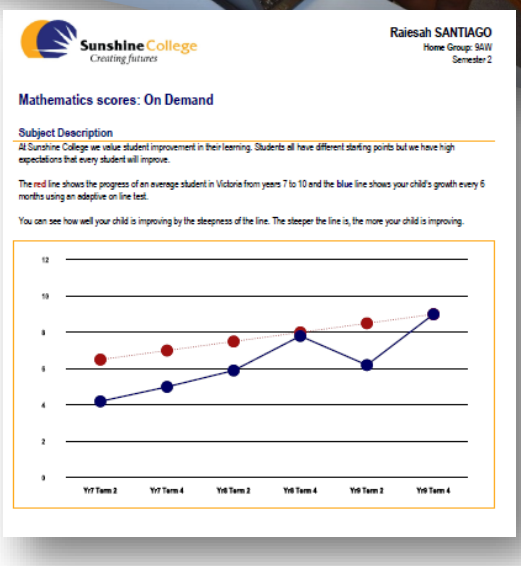
Accountability 6

It is of the highest importance that we collect data on every aspect of our program to evaluate effectiveness and hold ourselves to account.

Our Longitudinal data from 2011 until the present day has consistently demonstrated that out students improve at a faster rate than the average student in Victoria.

It is usual for more than 80% of our students to achieve high or medium relative growth from year 7 to 9 as measured by NAPLAN.

We report to parents on growth of their child between the years of 7-10 and every student uses digital spreadsheets to track their own personal growth in mathematics as determined by On Demand testing.



Sunshine College

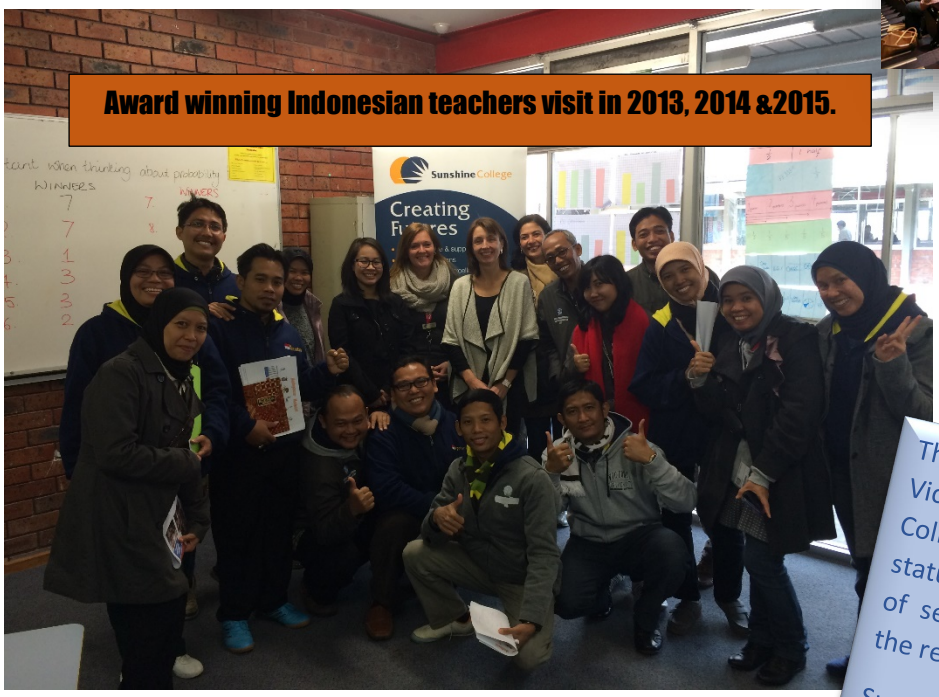
Maths Futures

Supporting Other Teachers

We are honoured at Sunshine College to be asked by our peers in education from around the globe to share and support their own teaching of mathematics.

Hundreds of educators from all over Australia have visited the school to learn about our program and we support many to develop their own program of mathematics by providing professional development.

MAV conference Keynote



Award winning Indonesian teachers visit in 2013, 2014 &2015.

The Mathematics Association of Victoria awarded Sunshine College 'Maths Active School' status. The first of only a handful of secondary schools to receive the recognition.

Sunshine College maths teachers also delivered Keynote addresses at the conferences in 2014 and 2016 as well as presenting at every conference in 2009.

Effective differentiation | Jodie Parsons and Yvonne Reilly, Sunshine College |

TEDx Talks

1 year ago • 7,652 views

Effective Differentiation: Where a growth mindset meets the ZPD. Originally a Scottish research scientist, Yvonne started work as a ...

https://www.youtube.com/watch?v=-HjRMzlGMo8

Concept versus procedure | Jodie Parsons & Yvonne Reilly | TEDxRosalindParkED

TEDx Talks

8 months ago • 1,035 views

This presentation discusses the difference between conceptual understanding and procedural learning. Originally a Scottish ...

https://www.youtube.com/watch?v=xUKE4v7xius

Sunshine College

Maths Futures

VICTORIAN EDUCATION EXCELLENCE AWARD WINNERS ANNOUNCEMENT

A college in Melbourne's west has taken out the top gong at the 2015 Victorian Education Excellence Awards for its innovation and engaging maths program.

Minister for Education, James Merlino, presented Sunshine College's maths team with the Lindsay Thompson Award for Excellence in Education.

Outstanding principals, teachers, business managers and school support staff from government schools were recognised for their innovation, leadership and contribution to making Victoria the Education State.

The Sunshine College maths team was selected from the nine categories announced during an awards ceremony at Melbourne's Regent Plaza Ballroom on 30th October – World Teachers' Day in Australia.

The team, which also took out the Outstanding Advancement Award delivered dramatic improvements in students'' engagement and results in their data driven team teaching model tailored to each students' ability.

Local and global interest has seen the college share its expertise at national forums and international education conferences.

4 Three schools that are showing the way

Many schools in Australia are striving to use evidence to target teaching. We spoke to leaders and teachers in over 15 schools who were trying to improve. We profile three (see box 4) Bright Vale, Big Sky College and St Aspire (not their real names).

At Big Sky College, maths lessons are designed to meet each student's level. Classes are combined and team taught: up to 56 student may work with 4 teachers in the same room on some occasions. Teachers cope with the broad range of abilities by using different, pre-prepared tasks to extend each student. For example, small groups work on different Scaffolding Numeracy in the Middle Years tasks once a week.

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Maths Futures

WEDNESDAY, SEPTEMBER 4, 2013 NEWS

Results add up for maths with a differenc

Benjamin Preiss
Education reporter

Textbook-free: Teacher Yvonne Reilly in class. Photo: Justin McManus

BRIMBANK & NORTHWEST STAR WEEKLY NOVEMBER 10, 2015

Teachers Mary Kyris, Sharon Allan, Yvonne Reilly, Thao Huynh, Theo Gialamatzis and Jodie Parsons with students. (Kristian Scott)

Sun shines on number crunchers

Sunshine College is the toast of the mathematics world, taking home two big accolades from the Victorian Education Excellence Awards on October 30. The college's internationally renowned maths program – the brainchild of Yvonne Reilly and Jodie Parsons – was acknowledged with the Lindsay Thompson award for excellence in education and the outstanding school advancement award. "We were genuinely thrilled," Ms Reilly said. Some of the prize money is earmarked to set up a state-of-the-art learning centre. "This will allow us to video link our classes and support schools all over Australia to deliver maths classes better," Ms Reilly said. Students at the college celebrated the win with chocolate frogs.

Ian Thomas Ackerman

TOP OF THE CLASS

Numbers add up for bold approach

Yvonne Reilly has developed a new approach to teaching maths.

barriers toppled

...rs are gaining ...nsforming the ... Parsons and ...lar that this ... Scotland to present ...ernational conference on 'barriers and enablers to learning maths'.

They have also been invited to share their experiences at a TEDx education event in Bendigo this month.

Ms Parsons, the school's head of curriculum, said the pair first investigated best practice in maths before coming ...

results [in maths] and wanted to make a real difference," Ms Parsons said.

"We worked hard but felt our hard work wasn't being as effective as it could have been, so Yvonne and I combined our classrooms and set about supporting one another.

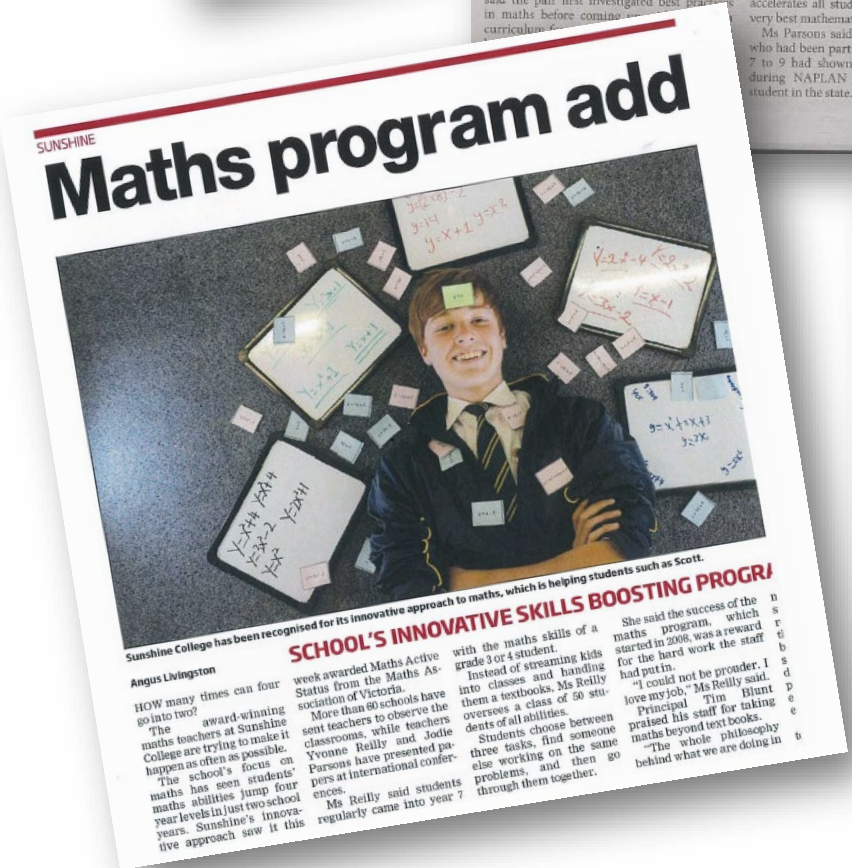
"One of the most radical things we did was to ditch the textbook. Instead, each and every one of our differentiated lessons is designed by a team of highly qualified maths specialist teachers.

"This ensures that maths at Sunshine College accelerates all students, truly challenging the very best mathematicians."

Ms Parsons said that, on average, students who had been part of the program from years 7 to 9 had shown faster improvement rates during NAPLAN testing than the average student in the state.

Charlene Macaulay

Yvonne Reilly and Jodie Parsons are changing the way maths is taught. (Kristian Scott)



SUNSHINE

Maths program add

Sunshine College has been recognised for its innovative approach to maths, which is helping students such as Scott.

SCHOOL'S INNOVATIVE SKILLS BOOSTING PROGR

Angus Livingston

HOW many times can four go into two?

The award-winning maths teachers at Sunshine College are trying to make it happen as often as possible.

The school's focus on maths has seen students' maths abilities jump four year levels in just two school years. Sunshine's innovative approach saw it this week awarded Maths Active Status from the Maths Association of Victoria.

More than 80 schools have sent teachers to observe the classrooms, while teachers Yvonne Reilly and Jodie Parsons have presented papers at international conferences.

Ms Reilly said students regularly came into year 7 with the maths skills of a grade 3 or 4 student.

Instead of streaming kids into classes and handing them a textbooks, Ms Reilly oversees a class of 50 students of all abilities.

Students choose between three tasks, find someone else working on the same problems, and then go through them together.

She said the success of the maths program, which started in 2008, was a reward for the hard work the staff had put in.

"I could not be prouder. I love my job," Ms Reilly said.

Principal Tim Blunt praised his staff for taking maths beyond text books.

"The whole philosophy behind what we are doing in

EDUCATION 'We knew we had a problem ... it was an epidemic'

Sunshine a model in school turnaround

BY KONRAD MARSHALL EDUCATION REPORTER

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