THE MATHEMATICAL ASSOCIATION OF VICTORIA

THE COMMON DENOMINATOR 4/25

MATHEMATICS: SO MUCH MORE

INSIDE

Rachael Whitney-Smith, Curriculum specialist for mathematics, ACARA

MATHEMATICS IS MORE THAN LEARNING TIMES TABLES, DOING 'SUMS' AND GETTING THE RIGHT ANSWERS

We all have childhood memories of learning mathematics – some fond, others filled with fear and failure. For some, it sparked curiosity and confidence. For others, the very thought of having to do maths still sends a shiver down their spine.

Perhaps it is the way we have associated mathematics with performance or the way we use mathematics as a benchmark for perceived academic ability. If we continue to measure success in mathematics based on how many answers students get right on a test of how quickly they can recall facts, then we will never address the real elephant in the room.

Continued on page 6

THE COMMON DENOMINATOR
The MAV's magazine published for its members.

Magazine 297, October 2025

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FROM THE PRESIDENT

Kerryn Sandford

This term, I'm reflecting on the everyday work that binds our community: teachers planning lessons, leaders building collaborative cultures, and students discovering purposeful, relevant and engaging mathematics. As we celebrate those efforts, we also pause to acknowledge a colleague who shaped the journey of many MAV members and Victorian teachers: Dr Ian Lowe passed away recently after a long illness. Ian was a valued staff member at MAV, a proud life member and over his career supported countless teachers, empowered thousands of students and was a passionate advocate for engaging mathematics resources. His legacy lives on in both in Victoria and in Malawi where he volunteered for many years training teachers in mathematics education. Vale Ian.

At MAV, we pride ourselves on supporting our members and Victorian teachers to plan and implement rich teaching and learning that meets the needs of their students and contexts. Our approach is research-aligned and evidence-informed, delivered by highly skilled practitioners with deep classroom and leadership experience. In schools, we partner through the MAV professional growth model to identify, co-plan, enact, review. Implementing teacher development to build capacity where improvement is practical, contextual and sustainable.

We also champion programs that recognise effective practice, such as Maths Active Schools, where evidence-based approaches grow from local strengths. Consistently, MAV's work is connecting theory, practice and context. We learn alongside researchers and practitioners to make emerging evidence accessible and actionable, so you can translate it into the classroom and lift student engagement and outcomes.

Our biggest opportunity to learn together is almost here: MAV's Annual Conference (see more info below). Expect contemporary research, practical sessions, and time to connect with colleagues who know your context.

The conference program is designed to help you take away strategies you can use immediately, while also shaping longer-term plans for curriculum, assessment and student and teacher wellbeing.

Thank you for everything you do for Victorian learners. I'm looking forward to seeing you at the conference, celebrating your expertise, your commitment, and our shared belief that great mathematics education changes lives.

MAV25: BOOK NOW

MAV's 62nd Annual Conference, will be held at La Trobe University, Bundoora on Thursday 4 and Friday 5 December 2025.

MAV25, *Thriving in Mathematics* will bring together educators, leaders, researchers, and key stakeholders to explore innovative strategies that support teachers and students throughout their mathematics learning journey. The conference will address current challenges in mathematics education, showcase best practices, and foster discussions on the future of mathematics learning. It's an unique opportunity to gain fresh insights, connect with peers, and be inspired to thrive in the classroom and beyond.

WHY ATTEND MAV25?

- Inspire your practice: Take away practical ideas to improve teaching and student engagement.
- Connect with experts: Hear from leading voices in mathematics education.
- Stay current: Learn about the latest research, tools, and curriculum trends
- Network and collaborate: Share experiences with peers.
- Shape the future: Be part of vibrant, forward-thinking education community.

Register at www.mav.vic.edu.au.

UPCOMING MAV EVENTS

For more information and to reserve your place at any of the events below, visit www.mav.vic.edu.au.

EVENT	DATE	YEARS	PRESENTERS
Intentional talk to support mathematical thinking	8/10/25 (Virtual)	EC	Professor Caroline Cohrssen
Using key word sign to support early mathematical concept development	15/10/25 (Virtual)	EC	Dr Kate Quane, Dr Lorraine Gaunt and Belinda Trewartha
Teaching fractions: Making sense of the whole story	20/10/25 (Virtual)	F–6	Eamon Light
The role of imagination in early mathematics education	28/10/25 (Virtual)	EC	Hong Chen and Dr Leigh Disney
The use and benefits of cognitive offloading tools in mathematics	6/11/25 (Virtual)	F–10	Sarah Podwinski
Mathematical explorations to become numerate	10/11/25 (Virtual)	EC	Professor Nicola Yelland
Explicit teaching with manipulatives: exploring purposeful games in the mathematics classroom	10/11/25 (Virtual)	1–6	Genovieve Grouios
Mathematics network opportunity (primary)	28/11/25 (Virtual)	F–6	Renee Ladner
MAV annual conference: Thriving in mathematics	4/12/25 5/12/25	All	Various

BUILD ME UP FOR VCE TEACHERS

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VCE EXAMS: EXPERT TIPS

Danijela Draskovic, Education manager, MAV

We asked experienced VCE mathematics teachers for their best exam tips, and the top 10 answers are here!

Each year, exam assessors see the same avoidable mistakes, and they wish they could step into classrooms to help teachers tackle them before exam day. Here's 10 clear actions to lift your students' exam performance:

1. BE PRECISE WITH ANSWERS AND ROUNDING

Ensure students give exact answers unless the question says otherwise. Only round when instructed and always show clear working and a final answer. Lost marks here are extremely common and very preventable.

2. TEACH STUDENTS TO USE READING TIME WELL

Reading time is not downtime. Show students how to use it to note key words, plan responses, and check they understand every part before they write a word. A careful read saves careless mistakes.

3. SHOW FULL WORKING AND JUSTIFICATION

Partial method marks depend on visible reasoning. Train students to lay out their working clearly, especially for 'show that' questions. When in doubt, write it out.

4. USE CALCULATORS AND TECHNOLOGY EFFECTIVELY

Students should master the full power of their CAS devices, not just the basics. Used well, it's a tool for testing, checking, and saving time under pressure. But it goes beyond just pressing buttons like 'solve'.

5. TAKE CARE WITH GRAPHS, NOTATION, AND LANGUAGE

Graphs should be neat, labelled, and mathematically correct. Notation matters. So does clear language. Marks can slip away when sloppy presentation hides good thinking. No fluffy graphs!

6. USE PAST EXAMS WISELY

Practice with past VCAA papers, or MAV trial exams, under timed conditions.

It's the best way to understand question styles, marking schemes, and common pitfalls.

7. MANAGE TIME DURING THE EXAM

Teach students to monitor the clock, move on if they're stuck, and come back later. Time lost on one question often costs more marks than it's worth.

8. PAY ATTENTION TO SIGNIFICANT FIGURES AND DECIMAL PLACES

Precision matters. Small slips in significant figures or decimals add up to big lost marks across a paper.

9. FOCUS ON MULTIPLE-CHOICE STRATEGIES

Multiple-choice questions reward estimation, checking, and elimination. Teach students to trust rough checks, and not dwell too long when unsure.

10. LEARN FROM MARKING AND FEEDBACK

Where possible, work through marked papers with students. Understanding how marks are awarded (and lost) builds exam insight and sharpens technique. Show your students the VCAA examiners' reports and marking schemes – they're golden insights on common student mistakes.

For more practical advice like this, and much more maths, join us at the VCE Conference in Term 1 2026. It's your best opportunity to gather strategies, share insights, and head into the year feeling confident and prepared.

Where: RMIT University (CBD campus), Bendigo, or Moe

When: February and March 2026. Book now to secure your spot.

Find out more at www.mav.vic.edu.au/Conferences/VCE

MATHEMATICS: SO MUCH MORE

Rachael Whitney-Smith, Curriculum specialist for mathematics, ACARA

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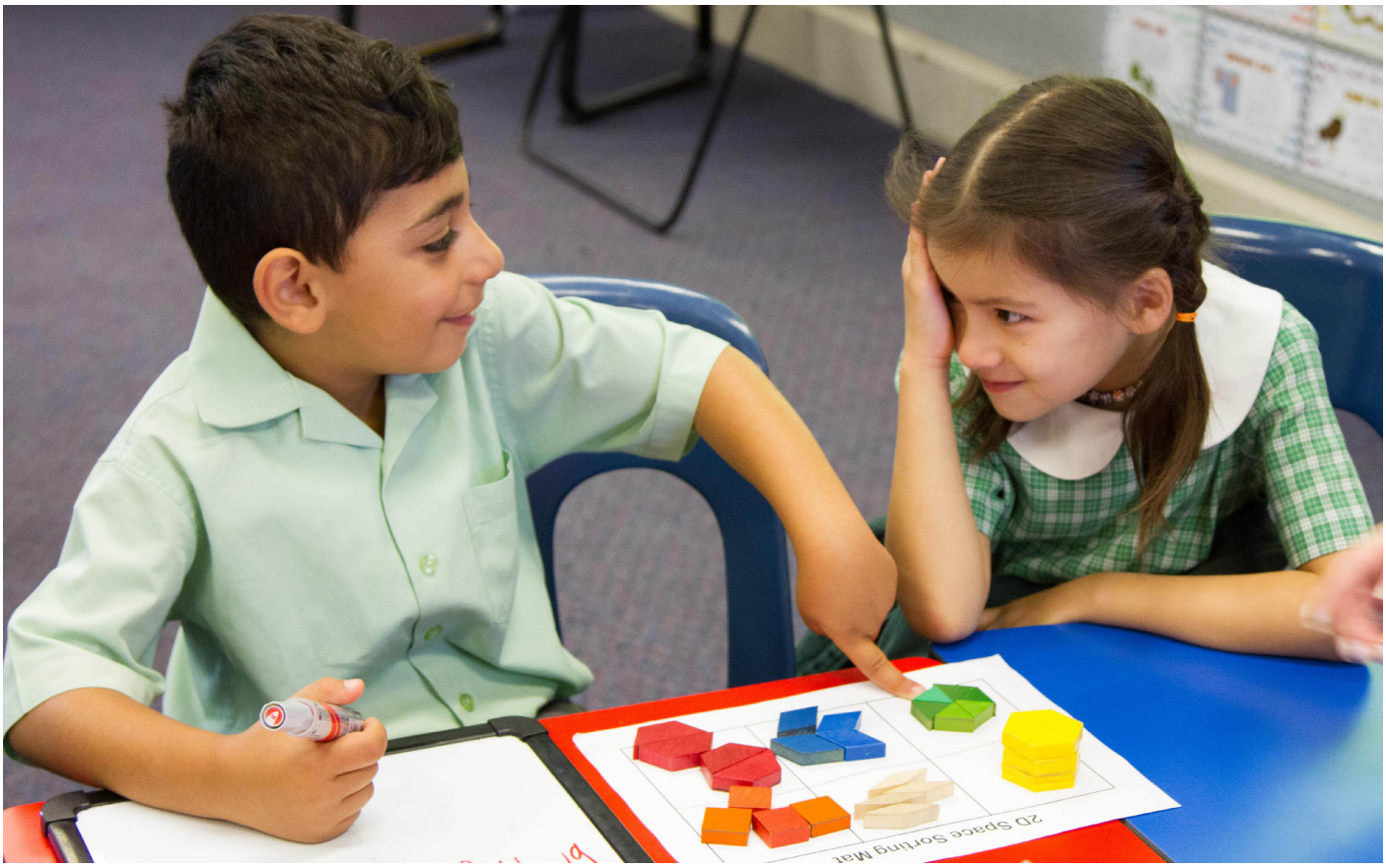

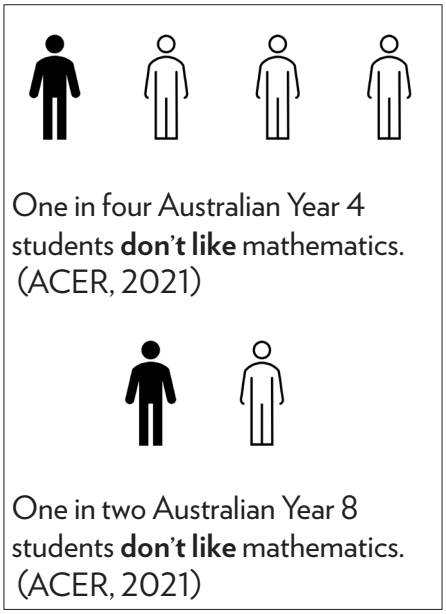

Figure 1. Source: Thomson et al. (2021).

Many Australian students do not like maths, are not confident in learning maths and do not value maths. Mathematics is the only learning area that has an associated psychological disorder. Data from the University of South Australia suggests about a third of Australian secondary school students are affected by mathematics anxiety or 'mathemaphobia' (Gabriel et al., 2020).

In 2018, the Australian Council for Education Research established a Mathematics Anxiety and Engagement Strategy (MAES) that called out mathematics anxiety and low valuing of mathematics as barriers to students' mathematics engagement and persistence (ACER, 2024).

WHY IS THIS A PROBLEM?

We live in a data-driven, technology-enhanced world that is constantly changing. This is due in part to automated and mobile technologies, and emerging technologies like AI. To think both logically and critically about situations, to make informed decisions, and to solve both familiar and complex problems, you need a strong understanding of mathematics.

Consumer and financial literacy, critical AI literacy, and data literacy all contain the word literacy in their title, but it is numeracy (also referred to as mathematical literacy across the globe) that underpins these.

Yet we continue to see students disengaging from learning mathematics, even as early as the foundational years of primary school. We see students choosing not to study mathematical pathways, essential for future work in STEM fields, in senior secondary (see the Australian Mathematical Sciences Institute maths participation declining in Australian schools).

Those of us who are passionate about mathematics see beauty in the pattern and logic of mathematics. We can see the power of mathematical thinking, reasoning and problem-solving for making informed decisions, predicting and anticipating change. We need our students to understand how maths can explain aspects of the world we live in.

Mathematics gives us the skills to make informed decisions and arrive at solutions to problems not yet imagined.

We also need teachers of mathematics to feel confident in providing rich and engaging learning experiences for students. Balanced approaches that foster mathematical proficiency in all students.

WHAT DOES THIS MEAN?

We need students to know that the mathematics they are learning in class can be used in many meaningful ways beyond the classroom. We need students to know that learning maths gives them a superpower.

If they want to be an electrician, a nurse, an engineer, an astronaut, even an influencer or gamer, learning the big ideas in mathematics and becoming a mathematical thinker makes them a great problem-solver able to reason and think critically about their world.

Problem-solving and reasoning skills are highly desirable to any future pathway. Building students' confidence, curiosity and persistence in mathematics helps them to become capable problem-solvers and lifelong learners.

The Australian Curriculum: Mathematics aims to ensure that students:

- become confident, proficient and effective users and communicators of mathematics who can investigate, represent and interpret situations in their personal and work lives, think critically and make choices as active, engaged numerate citizens.
- foster a positive disposition towards mathematics, recognising it as an accessible and useful discipline to study.

(ACARA, 2022)

We need students to develop a solid understanding not only of mathematical concepts, skills and procedures, but also of mathematical processes. Students need the understanding and skills to choose and use mathematics meaningfully. Knowing what and how but also when and why. Finding a balance is key, as is building students' curiosity and their appreciation of mathematics as both a pure and applied discipline.

HOW DO WE DO THIS?

New content in the Australian Curriculum: Mathematics is aimed at just that. The mathematical processes provide students with the skills and processes to recognise, choose and use mathematics to investigate, simulate, experiment and model in mathematical and real-world situations.

The mathematics curriculum connects the essential mathematics students are learning in class to the world around them. You don't just teach ball skills and drills to kids when they are learning sports; you let them play the game. Why? So, they will want to practise and come back and play some more.

Through engaging students in activities where they can apply the mathematics they know to problems where the situations might be familiar, but the problems are new, draws on their proficiency skills in an interconnected way. As they grow and build their proficiency in mathematics, they can become creative with mathematics and tackle problems situated in unfamiliar contexts. Construct new knowledge through investigation and experimentation. Providing time for students to work collaboratively and communicate what they have found or solved to others is important. Presenting students with challenging scenarios appropriate to where they are in their learning journey so that all students learn to move flexibly between the real world and the maths world.

These opportunities also support students' general capabilities and help them to develop other 21st-century skills and competencies.

Most importantly, the mathematics curriculum aims to foster positive dispositions towards mathematics.
To reverse the social narrative of being 'bad at maths' and the misconception that there are maths people and non-maths people. It builds students' confidence that they can become maths superheroes, capable of dealing with whatever problems they are faced with in the future.

We need students to see mathematics as:

- Purposeful
- Relevant
- Useful
- Engaging
- Challenging
- Rewarding
- Empowering.

Learn more about the Australian Curriculum: Mathematics at https://brnw.ch/21wONwN.

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2026 VCE CONFERENCES

Head into 2026 VCE mathematics feeling prepared, unpack the 2025 exams, gather teaching strategies and insights. If you are a VCE mathematics teacher - you won't find a better event.

General, Methods, Specialist, Foundation, VM Numeracy and CAS.

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- Complimentary year long access to our learning management system with all resources, slides and recorded sessions from the event.

'The day covered everything I needed to know - it gave me exam insights that I couldn't get anywhere else.'
- 2025 participant

LOCATIONS AROUND VICTORIA

The conferences will be held in Term 1 2026. Join us at the location closest to you:

- Melbourne (RMIT University, city campus), 13 February 2026.
- Bendigo, 13 March 2026.
- Moe, 27 March 2026.

REGISTER NOW: WWW.MAV.VIC.EDU.AU

THE MATHEMATICAL ASSOCIATION OF VICTORIA

IMPROVING TEACHING AND LEARNING

Dominique Russell, Teacher Magazine

In the May edition of Teacher Magazine, MAV's Education Manager, Renee Ladner was interviewed and shared the process leadership teams can follow for engaging with a professional association and examples of school partnerships. An edited version of the article is reproduced here.

Hi Renee, can you tell *Teacher* readers about your role and the kind of work you do in schools?

There are projects that MAV works on in partnerships, such as the Department of Education, Victorian Academy of Teaching and Leadership (VATL) and even the ABC. But most importantly, my main role is to support school leaders and teachers in their roles to ensure best practice for mathematics education.

Currently MAV is partnering with around 30 schools from all sectors around Victoria delivering professional learning; planning with leadership and teachers; coaching of leaders and teachers in the classroom and building their professional capacity for what is currently pertinent to them.

More broadly, how does MAV work with schools?

School leaders tend to engage MAV to help plan a bespoke professional learning experience for their school. Some schools may receive external grants or funding to support this. MAV members receive a discount. If your school is a member of MAV, then automatically every teacher in the school will be too. Alternatively, some teachers choose to be individual members.

When schools engage with MAV, they are matched with a consultant who complements their unique needs. Schools' requirements and budgets do vary so we are able to design a program that is based on contemporary research, the context of the school and the timeline required. Depending on where the school is in their professional learning plan, it may involve after-school or whole day professional learning, or an ongoing regular cycle of consulting.

We follow the professional growth model (see Figure 1 on page 11) when working with schools regardless of the length of professional development.

Once consultants have completed professional learning delivery at a school, the MAV Education team continue to follow up with school leaders to discuss their progress or where there may be gaps that need to be part of another cycle in the future. We are always available to talk through contemporary pedagogical practices, content advice, coaching and feedback cycles as well. We always encourage schools to continue to be a part of our online learning topics that are delivered each term via webinars.

You've been involved in lots of great professional development programs. Can you share examples?

We have! Our recent and ongoing partnership with Derrimut Primary School (DPS) in Melbourne's western suburbs has been a really fulfilling journey. Sarah Pinder is the Mathematics Leader at DPS and has been pivotal in shaping the outcomes for teachers and students, both academically and from a wellbeing perspective.

They initially engaged us when the school expanded and took on many new teachers (mainly graduates), a new leadership team and a culturally and economically diverse community. The leadership team's goals were to:

- Create consistent and predictable routines for teachers and students to ensure a positive climate for learning for all.
- Build staff mathematical content knowledge (MCK) and pedagogical content knowledge (PCK) to plan and deliver effective learning experiences aligned to an instructional model that was created and refined by the teachers and leaders.

Together, we devised a professional learning plan. We began by modelling what the teaching of rich tasks can look like within the DPS instructional model. The focus was for teachers to watch our consultant model the lesson and take note of what they were doing to engage students, explicitly teach content, check for understanding, enable and extend and summarise the learning of the lesson; and then to set goals for themselves to trial in the classroom before the consultant returned either a fortnight or month later.

There was a focus on the teacher listening more, talking less, and asking intentional questions to ensure understanding from students. This gave teachers the confidence in knowing their students and how they learnt; it also equipped them with strategies to continue moving all students along their trajectory of learning.

The MAV consultant would also plan with teachers for upcoming units of work. In this situation the MAV consultant could deliver the research around the topic (for example, additive thinking) and link it into the tasks and problems that could be included in the planning. Having done the tasks and anticipating what their own students might do, it empowered teachers to know exactly what they were looking for and be prepared to differentiate at any time throughout the lesson, giving students agency in how they may present and articulate their thinking.

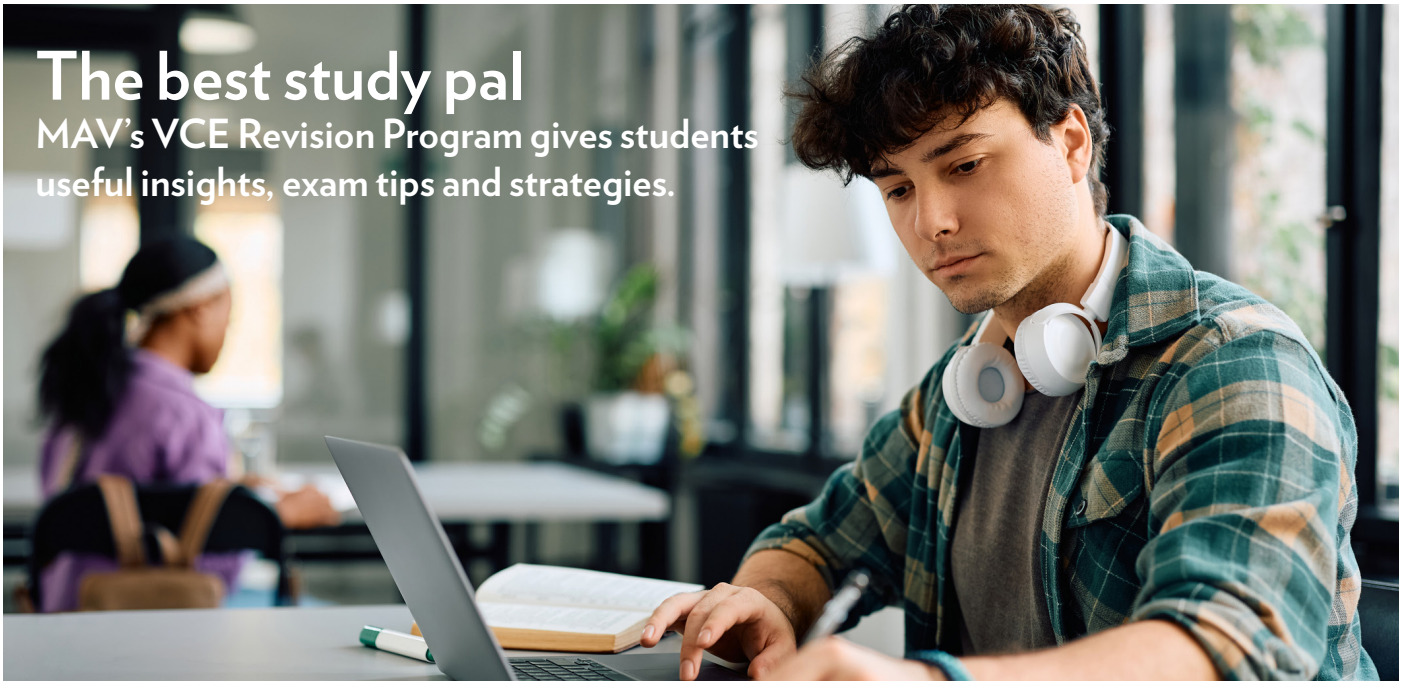
DPS are beginning to see a shift in NAPLAN data in numeracy, where there is a closing gap between not equity funded students and equity funded students. There has been a 10% growth in Year 3 between 2023 and 2024 of equity funded students moving into strong proficiency in mathematics, and the additional support band of 33% of equity funded students dropped to 18% within 12 months.

Another recent experience I personally was a part of was working with Western English Language School (Secondary). The context is quite different than any mainstream school where new arrival students would attend the setting for anywhere between 6 and 12 months. They would arrive with varying school and English experience.

The principal holds very high standards for these students, ensuring they are being taught at their level of need. The staff at the school equally hold the same values and are always wanting to see their students become best prepared to enter mainstream schooling.

Through goal identification, the school acknowledged that they required MCK to be enhanced for teachers, which required first being taught to the mathematics leadership team. Over the course of a year, the team and I met monthly, and we worked through the Big Ideas in number, measurement and probability and statistics

VCE REVISION PROGRAM 2025



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THE MATHEMATICAL ASSOCIATION OF VICTORIA

IMPROVING TEACHING AND LEARNING

Dominique Russell, Teacher Magazine

CONT. FROM PAGE 9.

to identify common misconceptions that students develop and can maintain throughout their mathematical learning journey.

From there, we worked to build a 'toolbox' for a range of mathematical topics, such as additive thinking and measurement. In the toolbox was a variety of pedagogical choices for teachers involving games, problem solving tasks and more. For each topic we broke down the language required for students to access the key concepts required to translate to a textbook or the like when moving into a different educational setting. We also created a bank of resources and assessments that could be applied. Given the teachers were the experts in how to teach English as another language, I relied on them to translate how they felt it would best suit their students.

It was an enormous amount of work and commitment undertaken by the team, but they felt it was valuable and really focused their classroom teaching to be able to assess accurately and move students along their learning path. The team redesigned their entry assessment used to group students based on their MCK. There was a focus as well, where possible, to ensure students had more than a surface knowledge on a topic and to ensure they could apply a Concrete Representational and Abstract (CRA) approach to their learning.

A reflection from the team was: *'Our work with MAV over the past year has trained us, who are not maths-trained teachers, to understand the concepts of mathematics so that we can then make informed decisions about which aspects of all of mathematics are appropriate for us, in a new arrivals setting, to teach to our students. We have learnt this through engaging activities that have both provided us with a deeper understanding of the concepts and given us ideas about how to teach these concepts. Finally, the introduction to the Big Ideas of number has revolutionised our thinking about the teaching and learning and scope and sequence of mathematics education.'*

I personally visited the classrooms to see how the teachers were enacting their knowledge and the response from students was great. I witnessed students excited to use manipulatives and make meaning

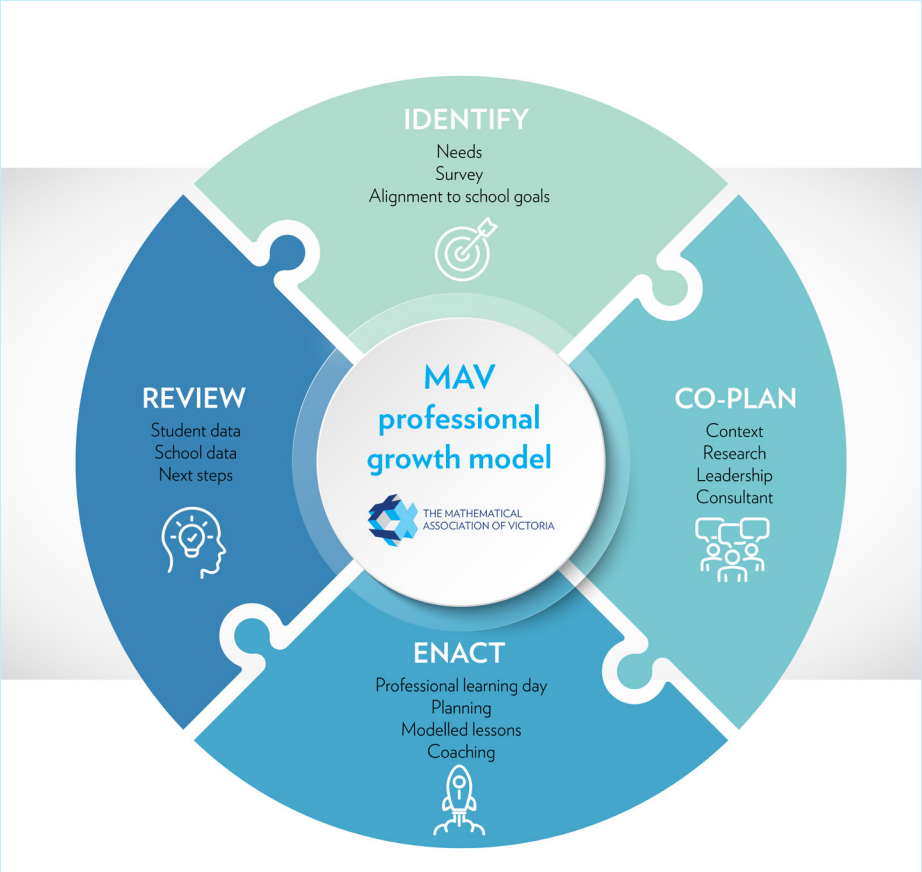

Figure 1. MAV's professional growth model.

of what they were doing by connecting it with language, symbols and pictorial representations. The next stage for Western English Language School is to translate their learnings to the rest of the staff who are also teaching mathematics and to refine their planning approaches.

What is MAV's focus for this school year?

In the last 12 months or so, the Department of Education has released a revised Victorian Teaching and Learning Model (VTLM) 2.0 and Melbourne Archdiocese Catholic Schools (MACS) released and are implementing the Vision for Instruction. There has been an increased emphasis on cognitive science and how the brain best retains and applies new information. This is interesting in mathematics, and necessary to continue to refine planning and teaching practices.

Our role is to support schools in what explicit teaching looks like in their context and how it will best service their students to see the results school wide. We will continue to work with schools supporting them through professional development, based on relevant research for our schools here in Victoria and Australia, coaching in the classroom, and goal setting with them to achieve their teaching and learning goals that match their school improvement plan/ annual action plan or similar documents. First and foremost, we are here to support our great teachers and leaders.

We are also continuing our other great programs such as our student activities, professional learning opportunities and events for teachers and leaders. We are also working with the VATL to present the Leading Mathematics program for school leaders and teachers as well as supporting their Teaching Excellence Program (TEP).

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MAV consultants can design a professional learning experience for your school, contact rladner@mav.vic.edu.au.

OPEN-ENDED TASKS

Jessica Mount, Education consultant, MAV

INCORPORATING OPEN-ENDED TASKS INTO YOUR SECONDARY CLASSROOM

Open-ended tasks are wonderful for getting our students thinking! They can assist students to build on problem solving, reasoning and communication skills.

However, often teachers are resistant to use open-ended tasks within a secondary mathematics classroom. It may be because the tasks are difficult to assess, the tasks are difficult to run due to classroom management problems, or we simply don't have enough time in the curriculum.

All these reasons are valid and therefore we need to find ways to incorporate open-ended tasks without creating a huge burden to teachers and students. It is important to acknowledge why we want to see open-ended tasks in our classrooms to help teachers push through any challenges.

WHY USE OPEN-ENDED TASKS?

- Open-ended tasks elicit reasoning, problem solving and communication.
- If we only assess fluency and understanding skills, we lead students to a limited view of mathematics.
- We show students that mathematics is a subject that requires reasoning and demands communication beyond equations and formulas.

It is also important to consider what is an open-ended question!

A GOOD OPEN-ENDED QUESTION

- Involves significant mathematics.
- Has the potential to elicit a range of responses from incorrect to simplistic to generalised.
- Strikes the delicate balance of providing too much information which makes the problem restrictive and closed and too little information which makes the problem ambiguous.

For example: *Draw a rectangle whose area is twice the area of the rectangle in Figure 1. Explain how you know that the area of your rectangle is twice the area of the initial rectangle.*

This problem meets all three conditions: it involves significant mathematics, will elicit a range of responses and provides the right amount of information.

This problem has a finite number of solutions. We are still able to assess if our students have answered the question correctly, however, we may be more interested in how our students achieved their answer and were able to communicate their thinking. These types of questions can help build students' understanding that providing the answer is only one part of the solution. In mathematics they also need to be able to communicate their thinking and justify their answer.

MAKING THE SHIFT TO OPEN-ENDED TASKS IN YOUR CLASSROOM

Open-ended tasks don't need to be long, complicated assessment pieces. Simply using a question like the rectangle example can elicit good classroom discussion, uncover misconceptions and doesn't take hours to assess. Open-ended questions can be assessed via observation, verbally in class, marking written responses or using a marking criterion. They don't always need to be assessed formally especially if using open-ended questions for a warm-up or a brain-break.

Open-ended tasks usually ask students to explain their thinking. To help students develop this skill it is recommended to:

- Remove the assessment component initially.
- Show students a variety of explanations to open ended tasks and discuss as a class.
- Share responses in class (small whiteboards work well for students to show their answers).
- Make a point of highlighting student work that uses diagrams, tables, pictures, lists, formulas, working out to encourage this.

Spending concentrated time each year on what it means to explain an answer does pay off for helping students succeed with open-ended tasks.

Figure 1.

BENEFITS FOR STUDENTS

- Increased self confidence in their mathematics.
- More willing to share their thinking with others.
- Taking satisfaction with being able to explain what they are doing and why.
- More ownership over their mathematical learning.
- Able to achieve a new level of depth and generalisation in their mathematical thinking.

BENEFITS FOR TEACHING

- Gives a clear idea of any misconceptions in the topic.
- Helps to show what material needs to be revisited.
- Helps us to see the varied ways that your students think.
- Helps us to get comfortable with not having one 'correct' way that the problem can be solved.
- Assists with parent feedback and demonstrating how well their child has grasped a topic.

If we want our students to gain a conceptual understanding of mathematics, we need give them opportunities to show this understanding – open-ended tasks is a great way to give them this opportunity. Take a look at the tasks on page 13 and try and incorporate one open-ended question into your lessons each week to build these skills in your students. I'd love to hear how you go!

You read in an ad: 'Four hundred more people prefer the new and improved Bright Smile toothpaste to another brand.' How might this data be misleading?

At the zoo, Tim and Jo saw the elephants, otters, lions, penguins and kangaroos. They counted 142 legs. How many otters might they have seen?

Karl used the Pythagorean theorem to measure the hypotenuse of a right triangle. He reported that the hypotenuse was between 8 and 9 units.

What might have been the measurements of the legs of the triangle?

I have 9 coins in my wallet. They add up to $4.60. Which coins might I have?

Louise won an around the world plane ticket that allows her to stop and explore one city in each of Japan, Portugal, Canada, and Fiji, before flying back to Melbourne. Her trip can only last for 60 days. Taking flight times into consideration, what's the most amount of time she could spend in Japan?

Is it possible for her to spend equal amounts of time in each country?

Lara multiplied three integers and got an answer of -48. What might the three integers be?

Sketch a triangle with an area of 12.5 square centimetres. Label its base and height.

Consider the data set {5, 9, 12, 17, X} where X can be any positive integer. For what values of X will:

- the mean be less than the median
- the mean equals the median
- the mean be greater than the median

May says 'My rectangle has a greater area than yours.' Simon replies 'My rectangle has a greater perimeter than yours.'

What might the dimensions of each of their rectangles be?

Figure 2. Open-ended tasks to try in your classroom.

You can build powerful mathematical content knowledge for successful open-ended teaching and learning. Enrol in Build Me Up for Levels 7–10A, General Maths and Maths Methods. www.mav.vic.edu.au/Resources/Build-Me-Up

STIMULATING THINKING

Jessica Kurzman, Maths leader, St Patrick's Primary School

A picture sparks 1000 maths concepts! Use this picture as a prompt to stimulate thinking. If you have other ideas for investigations or lessons that could stem from the ideas here, add them to the conversation on our social channels. You can find us on Facebook and Instagram @maths.vic, LinkedIn @ maths-vic and on X, @maths_vic.

EARLY YEARS

- The eggs need to be mixed quickly. Can you think of some things that move fast? What about some things that move slowly?
- Pretend you are making a salad. Choose three foods from the picture to put in your salad. Draw them.
- Choose two foods from the picture. How are they the same? How are they different?
- How many tomatoes are in the picture? Find that same number of small objects around the room, for example: pencils, buttons, books, blocks, counters, or anything else you can safely collect! Arrange each group in a line to make them easy to count.
- What things in the picture are big? What things are little? Draw one of the big things, and one of the little things.
- You have four eggs. You want to share them equally with a friend. How many eggs do you get? How many eggs does your friend get? Use toys, counters or pictures to help you share. Repeat with six, eight and ten eggs.
- In this picture, the spoon is longer than the hand holding it. Find some objects in the room that are longer than your hand.
- Are there more eggs or more tomatoes in this picture? Draw a picture that shows more tomatoes than eggs.
- Do you think this photo was taken in the morning, afternoon, or evening? What makes you think that?
- I made a pattern. Can you copy it and keep it going?

FOUNDATION - YEAR 2

- Estimate the number of cucumber slices in the bowl. Write some numbers that are smaller than your estimate and some numbers that are larger than your estimate. Place them on a number line.
- When I look at the eggs, I see five and three, so I know there are eight. How else could you draw eight things so someone could see there are eight quickly, without having to count every single item?
- Choose five foods from the picture and list (or draw) them in order from the one you're least likely to eat to the one you're most likely to eat.
- Look at the picture and complete this pattern for each number from 1 to 10. For example: 1 knife, 2 _____, 3 _____, 4 _____, and so on. What can you find in the picture to match each number? Add things together if you need to!
- Imagine you have slices of cucumber and slices of tomato. What different patterns could you make with them? Draw as many different patterns as you can using the cucumber and tomato slices. Be creative!
- Choose two foods from the picture. Make up a number story to go with them, like: 'There were four tomatoes and three cucumbers. How many altogether?' Write the matching number sentence. How many different number stories can you create?
- Can you sort the foods in the picture by their colour, shape, or another way you choose? Once you've sorted them, count how many are in each group.
- What words could you use to describe the location of the person mixing the eggs? Think about position words like next to, in front of, behind, or beside.
- If 90 slices of cucumber were eaten by three people, and each person ate a different number of slices, how many slices might each person have eaten? Find as many different possibilities as you can. Show how each combination adds up to 90.

YEARS 3 - 6

- Some of the ingredients in the picture have been cut to show their cross sections. Choose some other foods that aren't in the picture, and draw what their cross sections would look like.
- Choose five different foods from the picture. Survey your classmates to find out how many people like each food. Then, create two different graphs to show the number of people who like each food (e.g. a column graph and a pie chart). What comparisons can you make by looking at your graphs? What does the data tell you about your class's favourite foods? Reflect on which graph represented the data more clearly and explain why.
- If it takes this family 23 minutes to prepare their meal, what time might they start and finish? Show at least five different possible start and finish times, but make sure none of the start times are exactly on the hour.
- The total weight of the three tomatoes is 350 grams. The heaviest tomato weighs at least 75 grams more than the lightest tomato. What could be the weight of each tomato? Show at least five different possible combinations.
- Over 50 students were surveyed about their favourite types of salad. 60% said garden salad, 25% said Caesar salad, and 15% said Greek salad. How many students do you think were surveyed? Based on your estimate, calculate how many students chose each type of salad. Do this for at least three different possible survey sizes.
- Use a ruler to draw a grid reference system over the picture. Then, record the location of each food item in the picture, using your grid references.
- The capsicum has been sliced so that each person gets the same number of slices. How many people might there be? How many slices might each person get? How many slices would that be in total? List as many different combinations as you can.

YEARS 7 AND ABOVE

- The cost of ingredients is: lettuce mix $5.50/kg, tomatoes $3.80/kg, cucumber $2.25/kg, capsicum $12.50/kg, spring onions $2 per bunch (each bunch is approximately 500g and cannot be divided). This salad recipe uses: 500g lettuce, 100g tomatoes, 150g cucumber, 50g capsicum and 100g spring onions. How much does it cost to make one salad using this recipe? What would it cost to make double the recipe? What about 10 times the recipe? Show your working and explain your thinking.
- One egg contains approximately 78 calories. If one calorie equals 4.184 kilojoules, how many kilojoules are in one egg? Create a table showing the number of calories and kilojoules in one to 12 eggs. Design it as a quick reference guide that could be printed on the side of an egg carton.
- Which food do you think has the greatest surface area: cucumber, tomato, or capsicum? Explain your reasoning. Even though the image is not to scale, can you make a reasonable estimate of the surface area of each based on what you know about their real-life sizes and shapes? Show how you made your estimates.
- Use a ruler to draw a set of x- and y-axes over the picture to create the four quadrants of the Cartesian plane. Then, identify and record the location of each food item using ordered pairs (x, y).

MAV education consultants can come to you and create a professional learning plan to build the capacity of teachers at your school. Reach out to our friendly team: primary@mav.vic.edu.au or secondary@mav.vic.edu.au.

THE WORLD IS NOT A RECTANGLE

Renee Ladner, Education consultant, MAV

The World Is Not a Rectangle is a beautifully illustrated picture book that tells the inspiring story of Zaha Hadid, a pioneering Iraqi-born architect who defied cultural expectations, gender barriers, and architectural conventions to leave a lasting mark on the world of design.

Winter's accessible storytelling and vibrant artwork make this book a powerful classroom resource across multiple year levels. It offers entry points for exploring perseverance, creative thinking, identity, and challenging societal norms, while celebrating innovation and diversity in STEM fields.

Hadid's journey is especially valuable in showcasing the power of imagination and determination – qualities that resonate deeply with students. Her story encourages learners to dream boldly, think differently, and recognise the potential of mathematics in shaping the world.

HOW TEACHERS CAN USE THIS BOOK

- Spark rich classroom dialogue using inspirational role models from diverse cultural and gender backgrounds.
- Encourage creative, spatial, and critical thinking through visual design and geometry tasks.
- Make explicit connections between mathematics (geometry, symmetry, functions, scale) and real-world applications in architecture and design.

The World Is Not a Rectangle is more than a biography – it is a rich interdisciplinary teaching tool that invites students to connect mathematics with imagination, real-world applications, and personal inspiration.

From geometry to functions, and from identity to innovation, Zaha Hadid's story belongs in every mathematics classroom – especially those aiming to foster creative, inclusive, and meaningful learning experiences.

MATHEMATICS LESSON IDEAS INSPIRED BY ZAHA HADID

Exploring 2D figures and 3D objects in architecture (primary)

Lesson idea

Use Hadid's buildings as a springboard to explore a variety of two- and three-dimensional shapes.

Activities

- Compare curvy, non-traditional architectural forms to conventional buildings.
- Identify 2D shapes (circles, ovals, rectangles) and 3D objects (cylinders, domes, spheres) in real-world structures.
- Design a building using a mix of shapes and describe its features.

Mathematics focus

- Properties of 2D shapes and 3D objects.
- Visualising and drawing shapes.
- Comparing and describing geometric features.

Victorian Curriculum (Version 2.0) links

Level 3: VC2M3SP02, Level 4: VC2M4SP02, Level 5:VC2M5SP01

Proficiencies developed

Understanding: Recognising and classifying shape properties.

Fluency: Visualising and sketching geometric features.

Reasoning and problem-solving: Designing and justifying shape choices in context.

Symmetry in design (primary)

Lesson idea

Explore how symmetry is used in architecture and nature, with reference to Hadid's designs.

Activities

- Identify examples of symmetry and asymmetry in architecture.
- Complete symmetrical designs from partial images.
- Create symmetrical patterns using tools like mirrors or grid paper.

Mathematics focus

- Lines of symmetry and reflections.
- Precision in geometric design.
- Visualising transformations.

Victorian Curriculum (Version 2.0) links

Level 4: VC2M4SP04, Level 5: VC2M5SP02

Proficiencies developed

- Understanding: Identifying symmetry and transformations.
- Fluency: Creating precise symmetrical designs.
- Reasoning: Explaining how symmetry contributes to visual balance in design.

Scale, proportion, and real-world geometry (secondary)

Lesson idea

Develop scaled representations of architectural designs to apply ratio, measurement, and geometric reasoning.

Activities

- Present approximate dimensions of a real Zaha Hadid building.
- Create a scaled floor plan or model using ratios (e.g., 1:100).
- Calculate area, surface area, and volume of different building components.

Figure 1. Zaha Hadid designed the Heydar Aliyev Centre in Baku, Azerbaijan. It showcases the connection between architecture and mathematics.

Mathematics focus

- Scale and ratio.
- Surface area and volume of composite shapes.
- Applying geometric reasoning to real-world design.

Victorian Curriculum (Version 2.0) links

Level 7/8: VC2M7MG04 / VC2M8MG03, Level 9/10: VC2M9MG01 / VC2M10MG01

Proficiencies developed

- Understanding: Interpreting and applying scale.
- Fluency: Calculating geometric properties accurately.
- Reasoning: Justifying spatial design choices through measurement.

Curves, coordinates, and functions in architecture (secondary)

Lesson idea

Explore how Zaha Hadid's curved designs can be represented using functions and digital graphing tools.

Activities

- Study visual examples of organic architectural curves.
- Use graphing software (e.g. Desmos) to model quadratic or cubic functions.
- Design a simple curved façade and express its features mathematically.

Mathematics focus

- Non-linear functions (quadratic, cubic).
- Interpreting graphs in real-world contexts.
- Using technology for mathematical modelling.

Victorian Curriculum (Version 2.0) links

Level 9: VC2M9FR05,
Level 10: VC2M10FR01

Proficiencies developed

- Understanding: Connecting algebraic forms with curved design.
- Fluency: Using digital tools to graph and interpret equations.
- Reasoning and problem-solving: Modelling architectural forms mathematically and justifying design features.

Visit the MAV bookshop to purchase a copy of this amazing teacher resource – while you are there, consider stocking up so you are ready to hit the ground running for the 2026 school year.

AAMT UPDATE

Professor Catherine Attard , Board chair and Allan Dougan, CEO, AAMT

PEDAGOGY, PARTNERSHIP AND PROGRESS

As your national peak body for mathematics education, AAMT exists to serve, amplify, and connect the voices of educators across Australia. Our close partnership with MAV remains central to this work and we're grateful for the opportunity to share a national perspective on the developments shaping mathematics education in 2025 and beyond.

A CONSTITUTION FOR THE FUTURE

At the end of 2024, following extensive consultation and careful planning, AAMT members voted to adopt a new constitution and transition to a company limited by guarantee. At its core, this change simply ensures that the organisation is equipped to meet contemporary governance standards, an evolution that brings us in line with other national bodies and positions us well for the future.

One key outcome was a shift in how membership is defined, moving from individual and institutional members of affiliate associations, like MAV, to the affiliate associations themselves being the members. While structural in nature, this change does not alter how we work together as a federation or the strong collaborative relationships we value with our affiliates. What works well continues, with a renewed focus on sustainability, strategic alignment and clarity of purpose.

A PEDAGOGY PAPER THAT'S PROMPTING CONVERSATIONS

AAMT's *Pedagogy in Mathematics* position paper has become one of our most far-reaching initiatives in recent years. Designed to support teachers in navigating competing pedagogical narratives, the paper doesn't prescribe a single method or endorse a particular style. Instead, it affirms what many educators already know: that high-quality teaching draws from a well-stocked toolbox, informed by evidence, context, and professional judgement.

Since its launch, the paper has prompted rich discussions in schools, university programs, and education systems across Australia and further afield. It's being used to frame professional learning, guide curriculum conversations, and support the induction of early career teachers. MAV members may have already encountered it through initiatives organised by the association.

At a time when national discourse around teaching often leans toward polarisation, this paper offers a considered alternative: a call for clarity without rigidity, and for empowerment without prescription.

The full paper is available at go.aamt.edu.au/2025Pedagogy

NATIONAL ADVOCACY IN ACTION

In 2025, AAMT has continued to play an active role in influencing national education policy through sustained engagement with government, agencies, and key stakeholders. Our advocacy focuses on ensuring that mathematics education remains a national priority – one that is resourced, supported, and positioned for long-term impact. We are contributing to ongoing conversations about curriculum reform, teacher workforce development, equity in student outcomes, and the future of initial teacher education.

A key part of this work is our ongoing partnership with the Aboriginal and Torres Strait Islander Mathematics Alliance (ATSIMA), through which we have co-hosted a summit of all AAMT affiliates where a National Commitment statement was developed and agreed to by all.

Crucially, our broader advocacy is grounded in the experiences of the profession and informed by what we hear from our members and their members who are teachers, school leaders, and system partners across the country.

By elevating these voices, we are helping to shape national decisions that are more attuned to classroom realities and more responsive to the needs of educators. We are already seeing the impact of this work in how mathematics is being positioned in reform agendas, in the targeted investment reaching high-priority communities, and in the way agencies are engaging more meaningfully with us and our affiliates.

CONNECTION THAT COUNTS

The strength of our work lies in partnership – and MAV continues to be a valued collaborator. Whether through joint professional learning opportunities, podcasts, school visits, or national events, our relationship ensures that Victorian educators are connected not just to each other, but to a broader national movement committed to excellence in mathematics education.

We're looking forward to seeing many of you at the upcoming MAV conference, and we welcome your feedback, ideas, and engagement, you can find our contact details on the website.

CALL FOR MEMBER FEEDBACK: AAMT ROUND TABLE

MAV CEO Jen Bowden and MAV President Kerryn Sandford will be attending the AAMT Round Table in October. This event provides a valuable opportunity to collaborate with AAMT and other state associations on future directions and ways of working together.

We would love to hear from you - especially your thoughts on these two questions:

1. What do you see as MAV's current strengths?
2. What opportunities for the future would you like us to explore?

Your insights will help shape MAV's contribution to these important discussions.

Please share your thoughts by emailing Jen Bowden at jbowden@mav.vic.edu.au.

Thank you for helping us represent the voice of MAV members.

PROMOTING RESEARCH

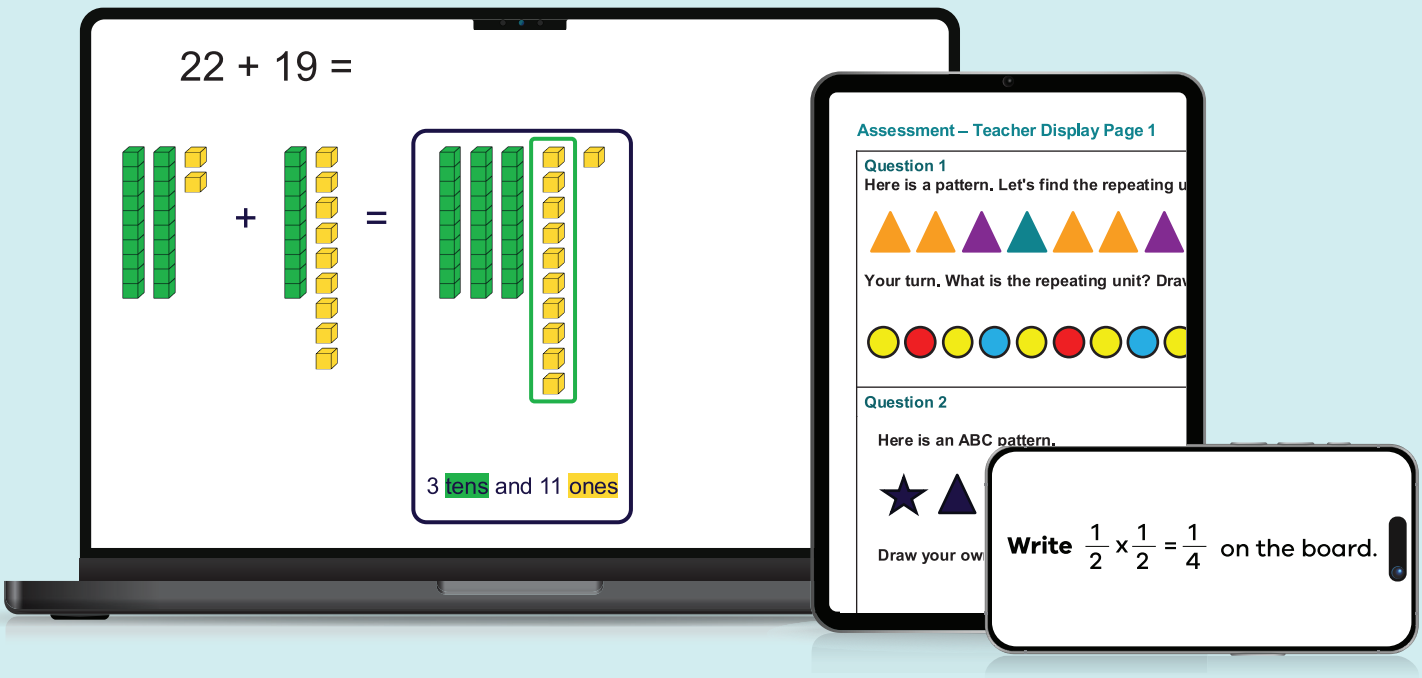
If you are conducting research and would like to advertise it in MAV's journals or magazine, follow the guidelines below. Note that the promotion of research is subject to available publication space and is not guaranteed.

- Keep your writing succinct and brief **(maximum 250-350 words)**. Less is best.
- Provide Human Ethics Research Committee (HERC) approval number (non-negotiable).
- Clearly state the purpose and objectives of the research project.
- Outline the participant criteria (e.g. teachers, students, parents, age range).
- Briefly describe what will be involved for participants (e.g. surveys, interviews, classroom observations).
- Highlight the benefits of participating and indicate the expected time commitment required from participants.
- Provide details on confidentiality and privacy protection for participants.
- Include the researcher's affiliation and contact information.
- Specify any relevant deadlines.
- Provide a QR code (as a separate high res JPEG file) for readers to follow for more information and/or linking to your study.
- Submissions should be plain text in a Word document and emailed to office@mav.vic.edu.au.

At the conclusion of your study, we warmly invite you to consider submitting an article to either of our journals, *Vinculum* (secondary) or *Prime Number* (primary), to share your research findings with the mathematics education community.

THE MATHEMATICAL ASSOCIATION OF VICTORIA

The Education State



Victorian Lesson Plans — Designed by Teachers, for Teachers

Victorian Lesson Plans reduce the workload burden of lesson planning and free-up teachers' time to focus on preparing for the needs of students.

Resources available:

- Core arithmetic learning sequences
- Do Now and Retrieval Resources
- Summative assessment tasks
- Printable worksheets and resources

Why teachers are choosing Victorian Lesson Plans:

- Access over 850 curriculum-aligned lesson plans
- Editable, downloadable and completely free for all Victorian teachers
- Ready for full release by the end of 2025

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LESSON PLANS

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MAV IN BENDIGO AND MOE

Di Liddell, Education manager, MAV

MAV's mission is to empower and support all mathematics educators to improve mathematics education for every student across Victoria. With over 200 regional school members, this commitment includes ensuring equitable access to high-quality professional learning by bringing tailored learning opportunities directly to local communities.

In 2025, we proudly took our regional tour to Shepparton, Ballarat and Barwon. Looking ahead to 2026, we are excited to bring events to Bendigo (13 March) and Moe (27 March). These full-day events will bring together Foundation to Year 10 educators, Vocational Major (VM) numeracy teachers, and VCE practitioners for a rich day of collaborative learning.

Each event will be thoughtfully tailored to the specific needs of regional educators, providing targeted, evidence-informed strategies that support effective teaching and learning. The program will offer rich opportunities for collaborative learning, enabling educators to share experiences, explore solutions to common challenges, and deepen their understanding of key issues in mathematics education. By bringing teachers together across schools, sectors, and year levels, we foster strong professional networks and a shared sense of purpose, because we are stronger together.

Teachers who attended the 2025 events had great things to say:

'It was refreshing to consider the differences between explicit teaching, explicit instruction vs explicit direct instruction. Mathematical modelling was new information for me, I'm excited to take that away to share and implement. Rich low floor, high ceiling activities that I use and share.'

'I really appreciated the balance of theory and practical ideas in the session. It gave me strategies I can use straight away with my students.'

'The session really encouraged me to reflect on my own skills and knowledge. It reminded me to trust myself as a professional.'

'This conference was of an incredibly high standard, please come back to Ballarat, and please put me on a mailing list for future events!'

'The MAV conference was a fantastic opportunity to hear from specialist people in mathematics. As always, having time and space to take on new information, unpack it with colleagues and discuss with teachers from other educational contexts and schools is always something that supports me in my practice. Whether that be the new VTLM, teaching methods/approaches or supportive aids, it was accessible to apply particular elements straight away in my classroom but also add to the overall conversation to consider in the longer term planning for our school.'

For more information and to register, visit www.mav.vic.edu.au/conferences/regional.

CONNECTING THEORY AND PRACTICE

MAV Education team

SUPPORTING EVIDENCE-INFORMED PRACTICE: CONNECTING THEORY, PRACTICE AND CONTEXT

The Mathematics Education Research Group of Australasia (MERGA) offers emerging and established research to support educators in connecting theory to their own school and classroom contexts. MERGA provides a range of resources and events designed to strengthen, connect, and grow your practice across all career stages. Through thought-provoking keynotes, short communications, and research presentations, MERGA brings critical issues to the forefront – highlighting the evolving nature of pedagogy and the vital roles of inclusivity, leadership, and technology in mathematics education.

The 2025 conference, themed *Unlocking Minds in Mathematics Education*, offered a powerful exploration of how research, practice, and policy converge to shape the experiences of students and teachers in mathematics classrooms.

Here are a few highlights for consideration:

Unlocking minds by conceptually focused, student-centred explicit mathematics teaching and quantitative evidence for effectiveness
Professor Susanne Prediger

Professor Prediger highlights the importance of conceptually focused, student-centred explicit mathematics teaching as a powerful way to 'unlock minds'– those of students, teachers, and researchers alike. Her work underscores the need to support equity in mathematics by empowering teachers with ambitious practices and by challenging deficit views of underserved students. Prediger's (2025) call to action urges the mathematics education community to confront systemic barriers and work collectively towards more just and inclusive outcomes.

Unlocking minds: exploring the pendulum of mathematics pedagogy
Professor Catherine Attard

In light of ongoing global debates and policy pressures shaping mathematics education, it is critical for schools and mathematics leaders to move beyond oversimplified binaries such as direct instruction versus inquiry-based learning. A more nuanced, evidence-informed approach is needed – one that embraces the complexity of teaching and acknowledges the value of complementary pedagogical practices. The over reliance on narrow forms of evidence is contributing to anxiety and division among educators, limiting opportunities for meaningful learning. Schools and leaders could consider championing flexible, research-informed approaches that respond to the diverse needs of students and teachers.

Attard's blog engagingmaths.com provides insights and prompts for practice.

Figure 1. MAV Board directors and staff at MERGA's 2025 conference.

Comparing and discussing multiple strategies to promote learning in mathematics classrooms
Professor Bethany Rittle-Johnson

Comparison is a powerful yet cognitively demanding instructional strategy that can significantly enhance students' conceptual understanding and procedural flexibility in mathematics.

Research shows that comparing multiple solution strategies helps learners identify critical features, deepen understanding, and develop strategic thinking – yet this practice remains underused and often unsupported in classrooms. To harness its full potential, teachers could benefit from research-informed curricula, explicit scaffolding strategies, and sustained professional development that builds confidence and expertise in facilitating meaningful comparisons. Moving forward, educators may consider integrating comparison-based instruction, supported by targeted assessment tools and diagnostic practices, to uncover misconceptions and foster more flexible, relational thinking.

INCLUSIVE PRACTICES

Inclusivity remained a strong theme throughout the conference, particularly in relation to gender equity. Huayo Gao's (2025) analysis of TIMSS data revealed how instructional clarity affects students' interest in mathematics in gendered ways – with girls often requiring greater support to build self-efficacy and recognise the

value of mathematics. Janelle Hill (2025) furthered this conversation by exploring how gendered intimidation and teacher confidence can suppress girls' engagement, highlighting the significance of relational dynamics and classroom culture in fostering equitable participation.

MATHEMATICS LEADERSHIP

Leadership in mathematics education also received focused attention, particularly in rural and remote contexts. Dr Matt Sexton (2025) introduced a model of mathematics leadership as a poly-motivated activity, emphasising the interplay between relational, developmental, and managerial goals. His model underscored the importance of leadership being context-responsive and values-driven.

Complementing this, Dr Jill Cheeseman and Dr Kerryn Driscoll (2025) shared reflective accounts from three primary mathematics leaders, revealing the importance of building shared purpose, strong relationships, and professional dialogue.

These stories highlighted the emotional and relational dimensions of leadership and the potential for lasting impact when leaders work alongside teachers in authentic and collaborative ways.

Across all sessions, MERGA47 reinforced the value of bridging research and practice. From rethinking pedagogies and addressing persistent misconceptions to advancing equity and supporting leadership, the conference challenged participants to unlock minds – beginning with their own. It also spotlighted the essential role academic communities play in creating more equitable, engaging, and evidence-informed mathematics education systems.

MAV is proud to collaborate with and learn from leading researchers, several of whom serve on our Board. Their expertise and leadership strengthen our mission to bridge research and classroom practice in ways that are both meaningful and responsive to context. Through our in-school consulting and professional learning programs, MAV is committed to making emerging evidence accessible and actionable by supporting educators and enriching mathematics teaching and learning across Victoria.

GET INVOLVED

We encourage educators to draw on evidence-informed practice to enhance their teaching. One valuable way to engage with current research is by joining MERGA, merga.net.au. Educators could also consider attending their annual conference. Keep an eye on their website for information on the 2026 conference. The MERGA website provides access to academic literature as well as practitioner-friendly resources, such as *Quick Reads* and *Teacher Reads*, designed to support the translation of research into classroom practice.

To connect with your own context, MAV highly recommends exploring the conference proceedings to support and grow your practice. Visit the link via the QR code.

MATHS ACTIVE: DERRIMUT PRIMARY

Renee Ladner, Education consultant, MAV

Figure 1: Year 3 students engaging in a story to find the fraction of a quantity.

MAV's Maths Active Schools Ambassador, David Cook, and I visited Derrimut Primary School last term. DPS is a Maths Active School and Sarah Pinder, the Numeracy Leader, is incredibly proud of the school's Maths Active status – it's easy to see why!

WHAT IS A MATHS ACTIVE SCHOOL?

MAV's Maths Active Schools initiative recognises and supports schools that demonstrate effective learning and teaching practices in mathematics. For many years, Derrimut Primary School has prided itself on being a Maths Active School – one that continually reflects on its practice, assessment approaches, community engagement, and the mathematical wellbeing of its students.

LEARNING IN ACTION

David and I were excited to spend time watching the teaching and learning happening in the school. We observed how teachers use the school's spaces and how they engage with their students.

We observed a Year 2 class learning about polygons and how to construct various types using triangle attribute blocks. The emphasis on mathematical language was clear. Students confidently defined a polygon, identified edges and vertices, and named polygons according to the number of sides. Some students even elaborated on whether a polygon was regular or irregular and explained their reasoning. The students proudly shared their thinking and learning with their 'new friends'.

Next, we visited a Year 3 class at the beginning stages of a unit on fractions, focusing on how to find a fraction of a collection. During planning, the teachers had collaborated with Sarah on how the unit would unfold.

The lesson made used one of the Victorian Lesson Plan's key resources, *Billy's Big Haul*. Again, the focus on precise language was evident, with students demonstrating a clear understanding of the terms numerator, denominator, and quantity within the context of the story.

MATHEMATICS AND STRUCTURED PLAY

Shared spaces in school grounds and are used to explore mathematical concepts in a play-based context; money in the shop cubbies, measurement in the breakfast club kitchen, and even a make shift hospital where Foundation students diagnosed their toys with shape-based illnesses!

Figure 2. Not many schools have their own ice cream shop and milk bar!

Figure 3. Year 2 teacher checks for understanding of language by roaming and conversing.

NUMBER SENSE

Foundation students were working diligently on finding number combinations that total 10, with an extension group working towards combinations to 20. Students confidently used manipulatives and precise language, saying things like, '4 and 6 is 10,' or '4 plus 6 equals 10.' The teacher had thoughtfully prepared scaffolds in student books, allowing them to immediately begin recording their combinations using the previous lesson's model to structure their thinking.

Figure 4. Foundation teacher works with an extension group finding facts of 20.

ASSESSMENT WITH PURPOSE

Sarah shared DPS's approach to big-picture assessment. The school uses data to celebrate achievements and identify areas for further focus. This is evident throughout her approach to planning with teams and enacting it in the classroom. Sarah has categorised the school's assessment data into meaningful snapshots that tell a rich story of growth, supported by research, classroom evidence, and future goals. In partnership with MAV Education Consultant, Carmel, and school teams, Sarah leads a data-informed cycle of planning and professional learning that ensures growth remains a focus for both staff and students.

LOOKING AHEAD

Sarah and her team are working on how to plan for and use formative assessment effectively whilst ensuring the lesson structure continues to be enacted as effectively as possible.

Derrimut Primary School has made considerable growth in their approach to the teaching and learning of mathematics. They have overcome many hurdles and ensured that the learning and teaching of mathematics continues to be supported through an evidence based approach, using contemporary research combined with their school context.

David and I cannot wait to visit more of MAV's Maths Active Schools. Thank you to the staff and students of Derrimut Primary School for sharing your mathematics education approach with MAV.

INTERESTED IN BECOMING A MATHS ACTIVE SCHOOL?

Many schools in Victoria are doing brilliant work in strengthening mathematics education. If your school is keen to be recognised as a Maths Active School, please reach out to Renee Ladner at rladner@mav.vic.edu.au or visit www.mav.vic.edu.au/Membership/Maths-Active-Schools

ONE MINUTE WITH MAX STEPHENS

BEING NAMED AS PATRON OF THE MAV....

Is of course a tremendous honour. It's a new position - so the invitation came as a total surprise. The role of patron should be an active one and include advocacy, advice and availability. Thanks to the MAV Board and our CEO Jen Bowden for asking me to be the MAV's first patron.

AS A NEW TEACHER ...

Of Matriculation (Year 12) pure mathematics and later applied mathematics, I was the sole teacher of these subjects in my school. The MAV connected me through its exam solutions and built up my professional confidence.

IN ASIAN COUNTRIES....

Such as Japan and China, enormous importance is attached to teachers, sharing their ideas and constantly improving their teaching. For example, my former student, Zhang Qinqiong, who is now a professor of mathematics education in Fuzhou, holds a Sunday night webinar, which reaches up to 10,000 teachers. Participants share pre-recorded lessons and materials. It shows that mathematics teaching is seen as a collective activity. We need to think about how Australian teachers can be better supported by one another.

RESEARCH AND TEACHERS...

The concerns of classroom teachers and researchers in mathematics education can drift apart. Teachers are good judges of the relevance of research. It's very important that research is framed with teachers and schools in mind, preferably involving teachers in the research process. The key idea is researching with teachers not on teachers. This may not be true of all mathematics education research, but it does serve to keep research grounded in school practice.

MENTORING YOUNG RESEARCHERS...

Has been a highlight of my career. At the recent MERGA meeting in Canberra, Jiqing Sun received the Beth Southwell Practical Implications Award and gave a keynote presentation. He and I have worked together closely.

Eddie Woo was also there. He's now a professor of teaching practice at Sydney University. Knowing these young researchers and others, like Julia Hill, convinces me that the profession is in good hands.

COMPUTATIONAL THINKING IS THE WAY OF THE FUTURE...

The PISA (document) *2025 Learning in the Digital World Framework* clearly takes this view, arguing that 'digital learning technologies are fundamentally changing the way people learn' (p.5). We are still working through the practical implications of this for school mathematics. The curriculum documents are all saying the right things but building teacher capacity and confidence are fundamental to this transition. The MAV is leading the way through its Victorian Coding Challenge (VCC). It's seriously world class in integrating computational thinking and mathematical problem solving. Danijela Draskovic and I are currently writing a chapter on task design and the VCC for *Springer International*.

INTERNATIONAL MATHEMATICS EDUCATION...

My interest was sparked by attending my first overseas conference, the Third International Congress on Mathematics Education in Germany in 1976. We realised that Australia was doing good things in the teaching and learning of mathematics. And we also learned a lot from meeting overseas colleagues. This laid the groundwork for holding ICME 5 in Adelaide in 1984, and more recently ICME 15 in Sydney last year. There's now a strong international community of researchers. I'm now one of a very small group internationally who have attended every ICME without a break since 1976. Will I go to ICME 16 in Prague in 2028? Let's see.

MY COLLEAGUES JOKE...

One of my friends from Melbourne University's Faculty of Education, asked if I am the 'patron saint of the MAV'. That would require a major shift in lifestyle which I hope is not imminent.

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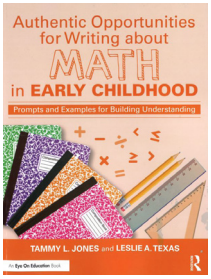

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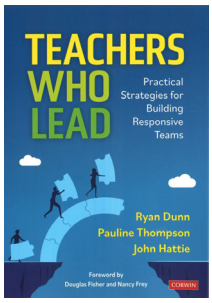

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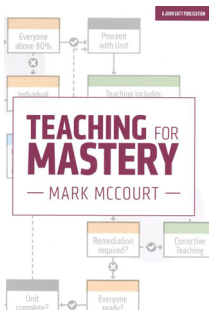

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