

QAMT State Conference timetable VIRTUAL

Friday, 23rd June **all live presentations will be recorded*





































Time	Break-out room 1	Break-out room 2
From 8:30am	Registration and networking	
8:50am Opening Keynote	OPENING KEYNOTE ADDRESS Dr Yana Mohanty Flexagons, an engaging spatial reasoning activity <i>Flexagons are easily made with paper and tape, and are a great spatial reasoning activity and timeless source of mind-bending fun. Yana will be providing pdf files in the virtual satchel to be printed onto cardstock, participants will gain more from the session if this is with them at the session, along with scissors and glue.</i>	
9:45am Session 1	Antje Leigh-Lancaster Visualising decimal place value to build understanding <i>One of the challenges when developing understanding of decimal place value is to represent the size of the smaller place values in correct proportion. In this 'hands-on' virtual session you will have the opportunity to engage with a fresh approach to introducing decimals (10ths, 100ths and 1000ths) using a combination of PDF number lines, number talks and a specially developed number line template in Excel. One of the benefits of using a spreadsheet is the visual representation of decimal place value and the relationships between them. This also leads nicely into equivalence and rounding. Handouts, printable PDF templates for students and the Excel template will be shared with participants.</i>	Paula McMahon Visualising Mathematics: Enhancing understanding of integer operations and algebra concepts using the ATA manipulatives. <i>This presentation showcases the use of Algebra Tiles Australia as a powerful visual aid for teaching the four operations with integers and rearranging and simplifying linear expressions. Through participants will gain a deep understanding of key mathematical concepts, including adding, subtracting, multiplying, and dividing integers, as well as combining like terms with variables. By using Algebra Tiles Australia, educators can help students develop a strong foundation in algebraic thinking, while also promoting critical thinking, problem-solving, and collaboration skills. Overall, this presentation offers practical strategies for enhancing maths instruction and supporting students with understanding.</i>
10:35am	First break	
11:15am Session 2	Leah O'Neill Extending students' own mathematical thinking through challenge and practical use of mathematical processes in the Primary Years <i>The ACv9 includes many processes that students are expected to master. This workshop will explore processes which are useful for encouraging sustained thinking through challenging tasks. We will develop questions, activities and problems aimed at extending students' thinking and understanding.</i>	Dr David Leigh-Lancaster Making a choice with categorical data <i>How do you choose a new restaurant using data provided on the web? This session explores data types and uses the distribution of ordinal categorical data and summary statistics to make a choice in a practical context.</i>
12:10pm Session 3	Michaela Epstein How to build mathematical thinking with games <i>Too often, maths is considered dry and confusing. But, yet it can offer so much more than these stereotypes suggest. In this interactive session, you'll look at a side of maths that is fascinating, fun and gives learners of all ages experiences that leave them hungry for more. With a focus on mathematical games, you'll explore how to not only support students to view maths differently, but to also help them become stronger mathematical thinkers.</i>	Lorraine Day Visualising Mathematics: Enhancing understanding of algebraic expansion and factorisation using the ATA manipulatives <i>This showcases the use of Algebra Tiles Australia as a powerful concrete, visual, area-based model for the conceptual development of algebraic expansion and factorisation and the solution of linear equations. Through examples, participants will gain a deep understanding of key algebraic concepts. By using Algebra Tiles Australia, educators can help students develop a strong foundation in algebraic thinking, while also promoting critical thinking, problem-solving, and collaboration skills. Overall, this presentation offers practical strategies for enhancing maths instruction and supporting students with understanding.</i>
1:00pm	Second break	
1:25pm Session 4	Monique Russell Let's unpack the Australian Curriculum: Mathematics V9 and begin some planning for 2024 <i>The Australian Curriculum: Mathematics Version 9 is here! It provides a wonderful opportunity for rich, proficiency-laden learning and the use of mathematical processes for problem-solving and reasoning. This session will give you valuable information, examples and plans for the 'how-to' of 2024!</i>	Rob Proffitt-White Routines that make Australian Curriculum: Mathematics V9 accessible and enjoyable for all <i>This session will demonstrate how some routine activities in class will help not only to engage your students, give them a positive disposition to learning mathematics and give you as the teacher an idea of their understanding of a concept, they are also aligned to Australian Curriculum: Mathematics V9.0.</i>
2:20pm Session 5	Professor Tim Erickson Mathematical modelling and data investigations SPECIAL INTERNATIONAL GUEST SPEAKER <small>brought to you by EssentialAssessment™</small> <i>CODAP is a free, web-based tool for data analysis in schools. In this virtual talk, I will give you a broad introduction to CODAP and what it can do, and how my colleagues and I have used it with students from the middle grades into the university. What patterns can students find in data? What stories do data tell? You'll see how to use CODAP to make graphs and calculations, how to get data into CODAP, how to use mathematical functions as models for data, and even how to introduce students to up-and-coming topics such as machine learning. You will also get links to free online curriculum materials that your students — or you! — can use to get an introduction to data science.</i>	
3:15PM Session 6	Monique Russell Big Ideas lens on the Australian Curriculum: Mathematics V9.0's Number sequences <i>The Australian Curriculum: Mathematics Version 9.0 provides an opportunity to refresh our understanding of the importance of the developmental sequence in the critical content strand of Number. Using a 'big ideas' lens, this session will provide the theory, misconceptions, teaching points and explanation of activities all aligned to V9 content descriptions.</i>	Melissa Hourigan Scientific Calculators in High School Maths Lessons <i>This session will look at how to teach the use of scientific calculators in maths lessons using the Texas Instruments Emulator Software. Hopefully you will learn some tips and tricks to help your students use their calculators more effectively in lessons and exams.</i>
4:10pm	Close and introduction of special extended broadcast session	
4:20pm (1 hr 10m) Special session	Professor Chris Matthews Mathematics and Culture <i>Professor Chris Matthews, Chair of the Aboriginal and Torres Strait Islander Mathematics Alliance (ATSIMA) and University of Technology, Sydney, introduces the Goompi model and how it can be used to create different pedagogical approaches to the teaching and learning of mathematics. He shows examples from the classroom from this approach that 1) allowed students to create their cultural expressions of certain mathematical concepts and 2) allowed Indigenous educators and students to explore the connection between their culture and mathematical concepts. From these examples, Professor Matthews demonstrates how this approach creates a deeper understanding of mathematics and connects the students to the teaching and learning of mathematics.</i>	







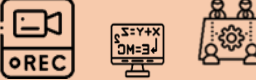

QAMT State Conference timetable SATURDAY 24th June




all keynote presentations will be recorded

 *see conference booklet for details on materials suggested for the session


Will be recorded 	Lecture style 	Workshop style 	Secondary focussed 	Primary focussed 	*Materials suggested 
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Time	Room 1	Room 2	Room 3	Room 4
From 8:30am	Registration, Trade display engagement opportunities and networking			
8:50am Opening Keynote	    Professor Amie Albrecht Getting problem-solving right! OPENING KEYNOTE ADDRESS PERFORMANCE HALL This presentation will explore the nature of mathematical problem solving and how it relates to the curriculum and classroom learning. Amie will consider the pre-requisites and enablers that support students to engage productively, including how to foster the development of learners' skills and confidence in problem solving. She'll also examine how to use problem solving to increase the understanding of mathematical concepts, and the role problem solving might have in the design and sequencing of learning.			
9:45am Session 1	  Chris Powell An interdisciplinary approach to teaching Mathematics in Year 7-10 to increase student engagement and achievement. Chris will share examples of interdisciplinary units for Maths in Year 7, 8 and 9 exploring connections between Mathematics, Art, Science and Humanities as well as connections to surrounding industry partners such as UQ School of Maths and Physics, UQ School of Pharmacy and PA Hospital. He will share a whole school approach to designing and planning these units across multiple curriculum areas	  Kirsty Morrison - QCAA Planning in Years 7-10 with the Australian Curriculum: Mathematics V9.0 Version 9.0 of the P-10 Australian Curriculum introduces changes in Years 7-10 Mathematics. The QCAA has a role in supporting schools to understand these changes and make the most of the curriculum's new opportunities for quality teaching and learning. This hands-on session will support teachers in taking the steps towards creating Year curriculum and assessment plans, as well as becoming familiar with the QCAA resources that are available to support implementation.	  Dr Cal Irons The amazing beginnings of Mathematics, how to enrich the Mathematics you teach Mathematics we teach today had its beginnings long ago. You might know about the history of our number system, but what about some other mathematics topics. Aspects of modern technologies - the GPS and binary technologies - were used 4000 years ago. This session will engage the participant in activities to explore these ideas which can then be shared with students.	   Barry Kissane Exploring functions and tables with a scientific calculator The educational value of calculators derives from the experiences they offer students, not merely from their capacity to generate numerical answers, even though naïve interpretations of the word 'calculator' as a device restricted to 'calculation' continue to be widespread, especially in the early secondary school years. Following a model for the educational use of calculators, this workshop explores several ways in which the use of a calculator facility to construct tables of values for functions can be productively used.
10:35am	First break			
11:15am Session 2	   Alastair Lupton Who cares about scientific calculators Once upon a time, scientific calculators were a big deal, back in the day, but, with the explosion of other electronic technology in the mathematics classrooms, - graphing calculators, laptops and tablets accessing powerful online apps, are they still relevant? Does it matter what calculative tool(s) our students in the middle years use? Does it matter how number is represented or how algebra is first interacted with or statistical calculations performed? Should this be planned, and what happens if it isn't? These questions discussed and stock taken of the technology options in middle school and in General and Essential Maths classrooms of 2023.	  Stephen Broderick Maths enrichment activities for Year 9 and Year 10 In this session we will explore various topics including perfect numbers, continued fractions, Fermi problems and really big numbers.	  Libby Foley – QCAA Planning in Prep to Year 6 with the Australian Curriculum: Mathematics Version 9 Version 9.0 of the P-10 Australian Curriculum introduces changes in Prep-Year 6 Mathematics. The QCAA has a role in supporting schools to understand these changes and make the most of the curriculum's new opportunities for quality teaching and learning. This hands-on session will support teachers in taking the steps towards creating Year curriculum and assessment plans, as well as becoming familiar with the QCAA resources that are available to support implementation.	    Luke D'Astoli The Do's and Don'ts of Delivering a Differentiated and Inclusive Classroom Experience While meeting your students' individual learning needs is a noble goal, it is not without its challenges. Luke is keen to share some guiding principles to help you make a successful transition in your practice so you can help your students reach their mathematical potential.
12:10pm Session 3	   Dr Vince Geiger Tasks aimed at enhancing students' capability with mathematical modelling and big data by testing claims in media reports In this hands-on session, I will present tasks designed to engage students with the mathematical modelling of large data sets for the purpose of testing claims in the media. The tasks have been developed as part of an international project between colleagues at Australian Catholic University and the University of Wurzburg Germany which as a focus on critical thinking within mathematics education. A device with the capacity to handle large data sets (e.g., equipped with Excel) is desirable but not absolutely necessary.	  Rodney Anderson Effective and Efficient use of the TI-Nspire scientific calculator In this workshop participants will explore how to efficiently utilise features of the TI-Nspire non-CAS calculator to answer technology active questions in class and during examinations.	  James Burnett Teaching Fractions in the Primary Years of the Australian Curriculum – What's new! ACARA has increased the focus on fractions in the primary years of the Australian Curriculum: Mathematics 9.0 (ACM). What are these changes and how might they impact your instruction?	   Kathy Lin Using non-examples to boost students' Maths achievement This session will equip Maths teachers with the skills and knowledge to effectively use non-examples as a teaching strategy in their classrooms. Non-examples are examples of what something is not, and they are an effective tool for developing a deeper understanding of mathematical concepts. During the session, Kathy will explore the benefits of using non-examples, look at different types of non-examples (including misconceptions), and examine how to integrate them into lessons to help students understand and apply mathematical concepts. This session is targeted at secondary Maths teachers, and is open to all teachers. You do not need to be using Edrolo to get practical, ready-to-go ideas and resources for your Maths class.

<p>1:00pm</p> <p>1:25pm Session 4</p> <p>2:20pm Session 5</p> <p>3:20pm Close</p>	Second break			
	 <p>Peter Flynn Specialist Mathematics, complex numbers and values, using TI-Nspire CX II calculator <i>In this session we will use the TI-Nspire CX II calculator to explore a range of activities and questions that help develop student understanding in complex numbers and vectors.</i></p> 	 <p>Nadia Abdelal Using the Concrete, Representation and Abstract approach (CRA) in middle school, for the effective consolidation of abstract concepts <i>In this hands-on workshop, we will work through tasks ranging from fractions and algebra to geometry and statistics using conceptual approaches and the concrete, representational, and abstract (CRA) model. Along with this, we discuss why these approaches are far more effective for not just engagement, but mathematical retention and transfer.</i></p>	 <p>Denise Halliday – AAMT (primary focus) Developing teachers' and students' skills in the Australian Curriculum: Mathematics V9 mathematical processes – modelling, investigation and simulation using Maths300 <i>Mathematical processes are embedded across all the strands in the new Prep-6 Australian Curriculum. In this session, we get to play, building pedagogy and exploring how we can help students develop skills in modelling, computational thinking, statistical investigation and probability simulation. Maths300 is a suite of over 200 rich resources that are investigative and collaborative to help you build these mathematical process skills.</i></p>	  <p>Peter Fox Code by Numbers <i>What is an Anti-Prime? What does the Euler Totient Function do? What do they have in common? These are just two of the activities included in a mathematics unit titled: "Code by Numbers." The unit includes multiple opportunities to engage middle school students in problem solving, investigations and pseudo-coding. The series is perfect for preparing students for PSMTs in senior mathematics classes.</i></p>
	 <p>INTERNATIONAL GUEST SPEAKER ADDRESS brought to you by </p>			
	<p>Professor Tim Erickson Zero to CODAP in 50 minutes! <i>CODAP is a free, web-based tool for data analysis in schools. You will learn an amazing amount in this brief workshop, and see how easy it is to get started with this tool to help your students connect data to reality in maths, stats, and computational thinking. We will do at least two activities that you can easily adapt to your classroom, and you will receive extensive online resources. But we have to ask: fifty minutes, are you kidding? No. But there is a lot more to CODAP than you will see in this workshop, so we will crack open the door to additional CODAP features, and whet your appetite for more.</i></p>	<p>Dr Margaret Marshman Playing with platonic solids: developing problem-solving, reasoning and visualisation skills <i>Platonic solids have faces that are identical, regular polygons. These faces all meet at the same 3-dimensional angles. This hands-on workshop we will discuss some of the history of platonic solids and pose some questions about platonic solids. The activities are an engaging way to develop students' ability to problem-solve, reason, and visualise in three-dimensions.</i></p>		
<p>Competition drawing, give-aways, networking with presenters, trade partners, QAMT executives and colleagues WINE AND CHEESE EVENT Free for all delegates and presenters</p>				

From 6:00pm			<p>Texas Instruments State Conference Dinner Sandgate Historical Post Office Hotel <i>(Ticketholders only)</i></p>	<p>Dinner speaker – Peter Fox</p>	
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


QAMT State Conference event timetable SUNDAY 25th June
































6:00am – 7:30am  **Sandgate Historical Foreshore walk and continental breakfast FREE, but please register at conference desk by 5pm Saturday**

QAMT State Conference timetable SUNDAY 25th June

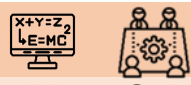
all keynote presentations will be recorded

 *see conference booklet for details on materials suggested for the session

Will be recorded  Lecture style  Workshop style  Secondary focussed  Primary focussed  *Materials suggested 

Time	Room 1	Room 2	Room 3	Room 4
From 8:30am	Registration, Trade display engagement opportunities and networking			
8:50am Mini Keynote	    Mini-Keynote address Professor Michael Milford Education in the Age of A.I. – Impacts and Opportunities <i>Artificial intelligence has been around for many years, but has recently exploded into the wider public consciousness for the first time in just the last few months. What was once a relatively niche technology that had high barriers to access, has become instantly accessible to anyone with a digital device and internet access. Moreover, the technology can now attempt a much wider range of tasks, with varying levels of success, that we previously may have believed to have been solely in the human domain of capabilities. In this talk I'll highlight the key things that have changed to make this so and provide an intuitive understanding for how these technologies work. I'll touch on the impressively wide but flawed range of capabilities these systems now possess, and highlight the key issues and opportunities. In particular I will separately address the ethical concerns, philosophical debates about "Artificial General Intelligence" (AGI), and the impact these technologies could have.</i>	   Louise Kliese Maximising student engagement in mathematics sessions <i>Collaborative problem solving, visual recording and growth mindset are a powerful combination to lift all student ability levels. Just wait until you see this trio in operation!</i>	    Jacinta Browning and Jacqueline Clark Reinvigorate your Maths Assessment using the V9 Australian Curriculum <i>This presentation will introduce our assessment model aligned to the current and new V9 P-10 Australian Mathematic Curriculum, which supports teachers to make data-informed decisions. Our differentiated Numeracy assessment and curriculum model, diagnostically assesses each student. The presentation will highlight the use of Individual and whole class data to target each student's Zone of Proximal Development and identify a learning pathway to foster student growth, engagement, mapping of students to the V3 National Numeracy Progressions.</i>	
9:45am Session 1	  Peter Flynn In this s Australian Curriculum: Scientific Calculator Investigations for Number and Algebra using the TI-30 XB scientific calculator <i>In this session we will use the TI-30 XB scientific calculator to undertake a range of short investigations in Years 8-10 number and algebra.</i>	  Denise Halliday – AAMT (secondary focus) Developing teachers' and students' skills in the Australian Curriculum: Mathematics V9 mathematical processes – modelling, investigation and simulation using Maths300 <i>Mathematical processes are embedded across all the strands in the new 7-10 Australian Curriculum. In this session, we'll be actively exploring resources and building pedagogy to support students to develop skills in modelling, computational thinking, statistical investigation and probability simulation. Maths300 is a suite of over 200 rich resources that are investigative and engaging in your classroom.</i>	  David Ilesley Shifting the emphasis from memorising to thinking in Mathematics education <i>Teaching children to think and solve problems can be difficult, not least because doing so takes time which is needed to get through the prescribed content. But, in the longer term, it can produce better and more motivated thinkers who will be able to work out a lot of the content logically rather than having to memorise it and who will therefore be much less likely to forget material and have to take time re-learning it. This workshop will share some strategies and resources for developing thinking and problem solving skills in motivating ways.</i>	   Shirly Griffith Jacaranda Maths Quest for the Australian Curriculum: Mathematics Version 9.0 <i>In this session, Shirly will take teachers on a journey of exploration through Jacaranda's latest Maths Quest resources designed especially for the Australian Curriculum Version 9.0. Shirly will demonstrate Jacaranda's commitment to learning that is personal, effortful and rewarding for all students regardless of where they are on their learning journey. She will also demonstrate how Jacaranda can help save teachers' time by providing them with the resources, advice and tools they need.</i>
10:35am	First break			
11:15am Session 2	   Scott Wiggins My top 5 Mathemagic tricks to engage <i>This interactive workshop will demonstrate interesting number tricks to as ice-breakers or to begin lessons. These include: calculating fast cube and fifth roots, determining the missing digit from a large scrambled integer, how to determine the day of the week from any 20th century date and how to construct a 4x4 magic square based on someone's birthday. These activities could be used for students in middle or senior secondary years. Participants will require their smartphone (with a calculator and calendar app), and bring a pen a paper.</i>	  Paulina Sliedrecht and Linda Carroll – DoE M in STEM: Mathematical Modelling <i>The M in STEM PL Suite provides a range of modules for self-paced PL, including Mathematical Modelling. This session unpacks the mathematical modelling module to enrich your understanding of this mathematical process. Participants will; actively track the development of mathematical modelling skills across Australian Curriculum P-10; work through an evidence-based modelling framework applying it to an example, triangulate the framework, the ACARA definition and the sequence of skills development of modelling within the Australian Curriculum to help develop this skill with students in an age-appropriate manner.</i>	   Rachael Pelling Mathematics and Mindset <i>A workshop designed to highlight the latest mathematics and mindset research and the impact of this on student achievement. Participants will be given practical ways in which to improve mathematical mindsets through hands-on activities and praise.</i>	   Barry Kissane Learning about rational and irrational numbers with a scientific calculator <i>Although rational and irrational numbers are key elements of the Number strand of the Australian Curriculum: Mathematics, little guidance is offered in the official documents or in most textbooks on the place of calculators to support the associated learning. This workshop will explore the opportunities presented by modern scientific calculators for this purpose, highlighting incidentally the frequent misunderstanding of the calculators as devices mostly of value for computation.</i>

12:10pm
Session
3



Dr Vince Geiger

Activities for enhancing Critical Mathematical Thinking – issue of equity, diversity and social justice

We live in a time of disruptive events that give rise to challenges that are most often addressed through the application of mathematics. Such disruptive events include phenomena associated with health (e.g., COVID-19), the environment (e.g., sustainability), societal issues (e.g., financial insecurity, and rapid technological advancement (e.g., AI). To acquire the capabilities needed to be informed and responsible citizens, students must develop the capacity to solve real world problems while also being considerate of issues associated with issue of equity, diversity and social justice. In this session, tasks will be presented that are aimed at engaging students with such issues. The session will also include the demonstration of an instrument aimed at identifying teaching approaches that support student development in this space.



Rebecca Burtenshaw

The Hidden messages in Mathematics Assessment

What and how teachers choose to assess mathematics sends powerful messages to students about what matters for learning. The emphasis on alignment often concerns a unit's mathematical content and its assessment. However, the alignment of our choices and what is valued can also significantly impact students' engagement and success in mathematics. This presentation will share ideas emerging from my doctoral research and invite participants to contribute their own insights on assessment in mathematics classrooms. The aim is to find some answers to the question, "What does it mean to be successful in mathematics?"



Carly Millichap and Alana Bandholz - BCE

Challenging Tasks in Mathematics: the experience of Brisbane Catholic Education

In 2023 we have embarked on a professional learning journey across our system focused on implementing Challenging Tasks in primary Mathematics classrooms. By partnering with Dr. James Russo and Jane Hubbard, schools have developed their understanding of structured inquiry centred around challenging tasks and drawing upon a Launch, Explore, Summarise/Review pedagogy. In this session, we will share stories of success where the impact has been greatest, and future steps scaling this work. Teachers will leave with an understanding of Challenging Tasks, as well as how these can be leveraged to build an engaging approach to Maths in a primary school.



Peter Fox

Preparing students for exams

What is the best way to prepare students for end of year mathematics exams? Evidence shows that a lot of students cram in the days leading into an exam, certainly not a particularly effective strategy. Some students claim they went 'blank' in an exam, is this real? What strategies are their to help avoid this situation. In this session we will discuss and experience a range of strategies to support student engagement, learning and success.



1:00pm

Second break

1:25pm
Session
4



Robert Yen

Unpacking the content in the new Australian Curriculum V9

We will analyse how the content has been decluttered and restructured for 2024. We will also showcase Nelson Maths QLD, a series of 6 books with inbuilt pedagogy, classroom investigations and other features to engage and support all types of students and teachers (especially new and out-of-field teachers).



Anita Walker

Teacher Beliefs about Mathematics and Mathematics Teaching and Learning: A comparison between Ireland and Australia.

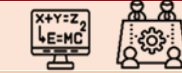
The strong influence of teacher beliefs on teaching practices in mathematics education has been recognised for some time (e.g., Ernest, 1989). Teaching practices, influence how students perceive mathematics and their ability to do mathematics (Mosvold, & Fauskanger, 2014). The Australian Curriculum: Mathematics (Australian Curriculum, Assessment and Reporting Authority [ACARA], 2018), is framed around four proficiency strands: understanding; fluency; problem-solving; and reasoning through which mathematical content is taught. These proficiencies are best developed through constructivist teaching approaches that teachers are unlikely to adopt if these approaches are contrary to their beliefs. This project is the second part of analysis from data collected in 2019-2020, providing a comparison of the beliefs of Australian and Irish teachers. Ireland recently added problem solving into their mathematics curriculum, changing from more traditional teaching methods. This project aims to identify the beliefs about mathematics and mathematics teaching and learning of mathematics teachers, and to determine what influence the curriculum documents and assessment have on teachers' beliefs about mathematics and mathematics teaching and learning.



Leah O'Neill

Extending students' own mathematical thinking through challenge and practical use of mathematical processes in the Primary Years

The ACv9 includes many processes that students are expected to master. This workshop will explore processes which are useful for encouraging sustained thinking through challenging tasks. We will develop questions, activities and problems aimed at extending students' thinking and assisting students to deepen their understanding.



Presenter TBA



2:20pm
Session
5



Bill Simpson Closing Plenary Address – PERFORMANCE HALL

Dr Michael Bulmer - Senior Lecturer, School of Mathematics and Physics University of Queensland

Creativity and Mathematics

Mathematics is an inherently creative endeavour and so it is important to develop creativity through problem solving and modelling tasks. However, creativity in the classroom also gives students ownership of their learning, and creativity more broadly has become recognised as a vital "21st century skill". In this talk I will share a range of activities from my past thirty years of teaching mathematics that have aimed to nurture student creativity.




3:20pm
Close

Competition drawing, give-aways, networking with presenters, trade partners, QAMT executives and colleagues

WINE AND CHEESE EVENT

Free for all delegates and presenters

QAMT State Conference VIRTUAL Presenter and session information

Presenter		Session information
	<p>KEYNOTE ADDRESS Dr Yana Mohanty, Founder, Imathgination, San Diego USA</p> <p>Yana Mohanty is an educator, mathematician and inventor. She is the founder of Imathgination LLC, whose award-winning product Geometiles has gained popularity in schools, universities and math festivals all over the United States and abroad. A former mathematics lecturer at the University of California in San Diego, she has also taught at Math Circles and coached children of age 10 and up in school math clubs.</p>	<p>Flexagons, an engaging spatial reasoning activity LIVE <i>Flexagons are easily made with paper and tape, and are a great spatial reasoning activity and timeless source of mind-bending fun. Presenter will be providing pdf files to be printed onto cardstock Participants will be asked to have these along with tape and scissors with them.</i></p>
	<p>INTERNATIONAL GUEST SPEAKER Professor Tim Erickson, Senior Data Scientist, Education Consultant, Epistemological Engineering, Massachusetts, USA</p> <p>Tim Erickson has been developing data analysis and modelling technology and curriculum for schools for decades. He is one of the designers of CODAP and Fathom, and currently works to create web-based tools for data analysis and visualization, especially in the form of CODAP plugins. Then he inflicts them on high-school students. He frequently presents to teachers and researchers across the US and internationally. Before all this technology, he created materials for cooperative learning including the books Get It Together and United We Solve.</p>	<p>Data Investigations and Mathematical Modelling LIVE <i>CODAP is a free, web-based tool for data analysis in schools. In this virtual talk, I will give you a broad introduction to CODAP and what it can do, and how my colleagues and I have used it with students from the middle grades into the university. What patterns can students find in data? What stories do data tell? You'll see how to use CODAP to make graphs and calculations, how to get data into CODAP, how to use mathematical functions as models for data, and even how to introduce students to up-and-coming topics such as machine learning. You will also get links to free online curriculum materials that your students — or you! — can use to get an introduction to data science.</i></p>
	<p>Dr Chris Matthews Professor, CEO and Founder, Aboriginal and Torres Strait Islander Mathematics Alliance</p> <p>Dr. Chris Matthews is a Noonuccal man from Quandamooka country, who's passionate about connecting culture and mathematics, having developed a highly awarded method of teaching maths to Aboriginal and Torres Strait Islander students. His work is transformative, using creativity as a form of cultural expression and allowing students to take a mathematical concept and create their own expression of that concept. Chris said, "I want to ensure students are afforded the full breadth of opportunities life has to offer." A Bachelor of Science graduate in 1991, Dr Matthews obtained First Class Honours for his Bachelor of Science (Honours) in Applied Mathematics in 1993. He completed his PhD in Applied Mathematics at Griffith, in 2003 before undertaking a Postdoctoral position in the Centre for Environmental Systems Research (2004-2006).</p>	<p>Mathematics and Culture PRE-RECORDED <i>Dr Matthews introduces the Goompi model and how it can be used to create different pedagogical approaches to the teaching and learning of mathematic. He shows examples from the classroom from this approach that 1) allowed students to create their cultural expressions of certain mathematical concepts and 2) allowed Indigenous educators and students to explore the connection between their culture and mathematical concepts. From these examples, Professor Matthews demonstrates how this approach creates a deeper understanding of mathematics and connects the students to the teaching</i></p>
	<p>Leah O'Neill, Primary Mathematics Education Advisor, QAMT executive</p> <p>Leah has many years of experience as a classroom teacher, small school principal, education advisor and Head of Curriculum. Recent roles including author and teacher mentor have been avenues for passing on her passion for teaching Mathematics.</p>	<p>Extending students' own mathematical thinking through challenge and practical use of mathematical processes in the Primary Years LIVE <i>The ACv9 includes many processes that students are expected to master. This workshop will explore processes which are useful for encouraging sustained thinking through challenging tasks. We will develop questions, activities and problems aimed at extending students' thinking and assisting students to deepen their understanding. Extending students' own mathematical thinking through challenge and practical use of mathematical processes in the Primary Years</i></p>
	<p>Rob Proffitt-White, Executive Director of Mathematics, The Learner First, New Zealand</p> <p>Rob Proffitt-White is Executive Director Maths, at The Learner First in Christchurch. As an influential educator in both Australia and Aotearoa, NZ Rob is a recognised leader in Mathematics. From 2013 to 2019 he worked with Queensland Schools using resources from his award-winning Maths Alliances in enacting best practice routines for a balanced and sustaining approach for teaching maths across primary and high school settings. Putting The Learner First in Maths was recognised by the New Zealand Ministry in getting all schools ready for a refreshed curriculum – a short course to empower all teachers to differentiate and assess "in the moment". With over 200 schools engaged in 2023 he is committed to showing teachers and leaders how they can balance explicit and inquiry practices, support all learners, and extend knowledge with rich everyday routines. Holistic and consistent assessment tools and practices are modelled.</p>	<p>Routines that make Australian Curriculum: Mathematics V9 accessible and enjoyable for all PRE-RECORDED <i>This session will demonstrate how some routine activities in class will help not only to engage your students, give them a positive disposition to learning mathematics and give you as the teacher an idea of their understanding of a concept, they are also aligned to Australian Curriculum: Mathematics V9.0.</i></p>
	<p>Michaela Epstein, Founder, Maths Teacher Circles</p> <p>After searching for ways to make professional learning more meaningful, in 2020 Michaela Epstein founded Maths Teacher Circles. Since then, over 800 primary and secondary teachers and school leaders have come together to share expertise and uncover new maths teaching ideas. Michaela has taught maths at schools in rural and urban areas, served as President of the Mathematical Association of Victoria and on the Council of the Australian Association of Mathematics Teachers. She has also completed Masters research and presented internationally on the intent of the mathematics curriculum. At heart, Michaela is an avid learner and maths enthusiast. Her aim is to help primary and secondary teachers reignite their own curiosity for mathematics and develop strategies that will enable all students to become confident mathematical thinkers.</p>	<p>How to build Mathematical Thinking with Games LIVE <i>Too often, maths is considered dry and confusing. But, yet it can offer so much more than these stereotypes suggest. In this interactive session, you'll look at a side of maths that is fascinating, fun and gives learners of all ages experiences that leave them hungry for more. With a focus on mathematical games, you'll explore how to not only support students to view maths differently, but to also help them become stronger mathematical thinkers.</i></p>



Antje Leigh-Lancaster, Education Consultant, Leigh-Lancaster Consulting

Antje has worked closely with teachers, academics, educational organisations and resource developers across Australia. She started her career as a classroom teacher and then took on successive roles at the Mathematical Association of Victoria (MAV), Texas Instruments (TI), the Department (VIC), the Australian Mathematical Sciences Institute (AMSI) and as Pearson Mathematics K-12 Portfolio Manager. In these roles she focused on teacher capacity building through professional learning and creating resources focused on incorporating evidence-based practice for print, blended and digital only modes of delivery.

Visualising decimal place value to build understanding

LIVE

One of the challenges when developing understanding of decimal place value is to represent the size of the smaller place values in correct proportion. In this 'hands-on' virtual session you will have the opportunity to engage with a fresh approach to introducing decimals (10ths, 100ths and 1000ths) using a combination of PDF number lines, number talks and a specially developed number line template in Excel. One of the benefits of using a spreadsheet is the visual representation of decimal place value and the relationships between them. This also leads nicely into equivalence and rounding. Handouts, printable PDF templates for students and the Excel template will be shared with participants.



Dr David Leigh-Lancaster, Education Consultant, Leigh-Lancaster Consulting

David is an Education Consultant focusing on mathematics and numeracy for Leigh-Lancaster Consulting and has worked with various education organisations. He was the Mathematics Manager at the Victorian Curriculum and Assessment Authority from June 1998 to July 2021. David has been extensively involved in curriculum development, resource development and delivering professional learning to school leaders and teachers. Before that, David was a secondary mathematics teacher and Head of Faculty.

Making a Choice with Categorical Data

LIVE

How do you choose a new restaurant using data provides on the web? This session explores data types and uses the distribution of ordinal categorical data and summary statistics to make a choice in a practical context.



Paula McMahon, Executive member Mathematical Association of Western Australia (MAWA)

Paula McMahon has worked in high schools for more than twenty years. Since 2019 she has worked as the MAWA Executive Officer. Paula has a passion to ensure students demonstrate understanding rather than learning 'maths tricks or rules'.

Visualising Mathematics: Enhancing understanding of integer operations and algebra concepts using the ATA manipulatives

PRE-RECORDED

This recorded presentation showcases the use of Algebra Tiles Australia as a powerful visual aid for teaching the four operations with integers and rearranging and simplifying linear expressions. Through a series of examples, participants will gain a deep understanding of key mathematical concepts, including adding, subtracting, multiplying, and dividing integers, as well as combining like terms with variables. By using Algebra Tiles Australia, educators can help students develop a strong foundation in algebraic thinking, while also promoting critical thinking, problem-solving, and collaboration skills. Overall, this presentation offers practical strategies for enhancing maths instruction and supporting students with understanding.



Lorraine Day, Senior Lecturer, Mathematics Education University of Notre Dame

Lorraine's teaching experience spans many decades in schools and university. Her passions are engaging students in mathematics and supporting the important work of teachers. She is a regular contributor to professional learning facilitation and has been involved in the development of resources and mathematics education at both a state and national level in Australia.

Visualising Mathematics: Enhancing understanding of algebraic expansion and factorisation using the ATA manipulatives.

PRE-RECORDED

This recorded presentation showcases the use of Algebra Tiles Australia as a powerful concrete, visual, area-based model for the conceptual development of algebraic expansion and factorisation and the solution of linear equations. Through a series of examples, participants will gain a deep understanding of key algebraic concepts. By using Algebra Tiles Australia, educators can help students develop a strong foundation in algebraic thinking, while also promoting critical thinking, problem-solving, and collaboration skills. Overall, this presentation offers practical strategies for enhancing maths instruction and supporting students with understanding.



Melissa Hourigan - Mathematics teacher at Murrumba State Secondary College

Melissa's passion is mathematics teaching and doing what can be done to help students learn and enjoy mathematics. A Texas Instruments T³ National Instructor and Melissa loves integrating technology into high school maths lessons.

Scientific Calculators in High School Maths Lessons

PRE-RECORDED

This session will look at how to teach the use of scientific calculators in maths lessons using the Texas Instruments Emulator Software. Hopefully you will learn some tips and tricks to help your students use their calculators more effectively in lessons and exams.



Monique Russell, Primary Mathematics Educator, QAMT Executive Member

Monique Russell has been a classroom and specialist teacher, Head of Curriculum, Numeracy coach and Principal Advisor in state schooling for over 32 years. Monique is currently serving as the Vice President of Professional Learning for the Queensland Association of Mathematics Teachers. Monique has a special passion for the teaching of Mathematics using a conceptual understanding approach, and the utilisation of developmentally appropriate strategies with considered use of physical materials and through a reasoning and problem-solving focus. Monique enjoys supporting primary teachers of mathematics embed these philosophies in their teaching.

Unpacking the Australian Curriculum: Mathematics V9 Foundation to Year 6, ready for 2024!

LIVE

The Australian Curriculum: Mathematics Version 9 is here! It provides a wonderful opportunity for rich, proficiency-laden learning and the use of mathematic processes for problem-solving and reasoning. This session will give you valuable information, examples and plans for the 'how-to' of the special year that is 2024

Big Ideas lens on the Australian Curriculum: Mathematics V9.0's Number sequences

PRE-RECORDED

The Australian Curriculum: Mathematics Version 9.0 provides an opportunity to refresh our understanding of the importance of the developmental sequence in the critical content strand of Number. Using a 'big ideas' lens, this session will provide the theory, misconceptions, teaching points and explanation of activities all aligned to V9 content descriptions.

QAMT State Conference FACE to FACE Presenter and session information

Presenter



KEYNOTE ADDRESS

Professor Amie Albrecht, Professor of Mathematics Education and Professional Lead in UniSA Education Futures, University of South Australia

Amie Albrecht is Professor of Mathematics Education in Education Futures at the University of South Australia. Amie currently teaches secondary mathematics curriculum courses, and has a keen interest in developing mathematical thinking and fostering positive dispositions towards mathematics. Her teaching has been recognised with national and university awards. Amie's main research interests in mathematics education are:

- the role of authentic mathematical practices such as problem solving, reasoning and communication within mathematics curriculum, pedagogy and assessment, and the impact on teachers and students' attitudes, self-efficacy, and mathematical thinking
- supporting pre- and in-service teacher development in mathematics through professional learning and reflective practice.

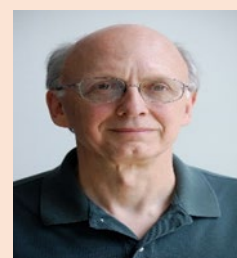
As a mathematician for many years, Amie's research focused on industrial applications of mathematics, particularly scheduling and control methods for efficient railway operations and energy-efficient driving strategies and implemented in railways around the world. Amie regularly conducts professional learning for teachers and has delivered workshops, presentations, and keynotes at maths teacher conferences across Australia. She connects with teachers around the world through her blog (amiealbrecht.com) and twitter (@nomad_penguin).



BILL SIMPSON CLOSING PLENARY ADDRESS

Dr Michael Bulmer - Senior Lecturer, School of Mathematics and Physics, University of Queensland

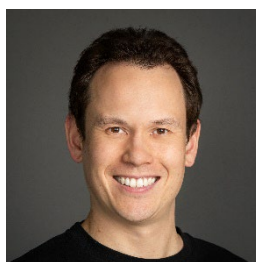
Michael is a Senior Lecturer in Mathematics and Statistics at the University of Queensland. He spends his days using technology to engage students from a range of backgrounds in learning statistics, receiving an Australian Award from University Teaching for his efforts. In his spare time, he likes creating mathematical puzzles.



INTERNATIONAL GUEST SPEAKER

Professor Tim Erickson – Senior Data Scientist, Education Consultant, Epistemological Engineering, Massachusetts, USA

Tim Erickson has been developing data analysis and modelling technology and curriculum for schools for decades. He is one of the designers of CODAP and Fathom, and currently works to create web-based tools for data analysis and visualization, especially in the form of CODAP plugins. Then he inflicts them on high-school students. He frequently presents to teachers and researchers across the US and internationally. Before all this technology, he created materials for cooperative learning including the books *Get It Together* and *United We Solve*.



MINI-KEYNOTE ADDRESS

Professor Michael Milford – Professor, Joint Director, QUT Centre for Robotics and ARC Laureate Fellow

Professor Michael Milford conducts interdisciplinary research at the boundary between robotics, neuroscience and computer vision and is a multi-award-winning educational entrepreneur. His research models the neural mechanisms in the brain underlying tasks like navigation and perception to develop new technologies in challenging application domains such as all-weather, anytime positioning for autonomous vehicles. He has led or co-led projects collaborating with leading global organizations including Amazon, Google, Intel, Ford, Rheinmetall, Air Force Office of Scientific Research, NASA, Harvard, Oxford and MIT. From 2022 – 2027 he is leading a large research team combining bio-inspired and computer science-based approaches to provide a ubiquitous alternative to GPS that does not rely on satellites. He currently holds the positions of Australian Research Council Laureate Fellow, Joint Director of the QUT Centre for Robotics and QUT Professor of Robotics.



Dr Cal Irons – Co-Founder ORIGO Education, Director Mathema Foundation

Calvin has been working with mathematics (studying, teaching, writing about, or presenting) since the 1960s. He is currently involved in the construction of The Mathema Gallery that will share interesting aspects of mathematics to the general public and of course school students.



James Burnett – Co-Founder and Senior Author, ORIGO Education

James Burnett is the co-founder and Senior Author of ORIGO Education. He started the company in 1995 because he is passionate about education and is continually striving to make mathematics meaningful, enjoyable and accessible for all students and their teachers. He has authored and contributed to more than 300 mathematics resources for teachers and students aged 5 to 12 and regularly speaks to audiences across Australia and North America.

Session information

Getting problem-solving right!

This presentation will explore the nature of mathematical problem solving and how it relates to the curriculum and classroom learning. Amie will consider the pre-requisites and enablers that support students to engage productively, including how to foster the development of learners' skills and confidence in problem solving. She'll also examine how to use problem solving to increase the understanding of mathematical concepts, and the role problem solving might have in the design and sequencing of learning.

Creativity and Mathematics

Mathematics is an inherently creative endeavour and so it is important to develop creativity through problem solving and modelling tasks. However, creativity in the classroom also gives students ownership of their learning, and creativity more broadly has become recognised as a vital "21st century skill". In this talk I will share a range of activities from my past thirty years of teaching mathematics that have aimed to nurture student creativity.

Zero to CODAP in 50 minutes

CODAP is a free, web-based tool for data analysis in schools. You will learn an amazing amount in this brief workshop, and see how easy it is to get started with this tool to help your students connect data to reality in maths, stats, and computational thinking. We will do at least two activities that you can easily adapt to your classroom, and you will receive extensive online resources. But we have to ask: fifty minutes, are you kidding? No. But there is a lot more to CODAP than you will see in this workshop, so we will crack open the door to additional CODAP features, and whet your appetite for more.

Education and the Age of A.I.: Impacts and Opportunities

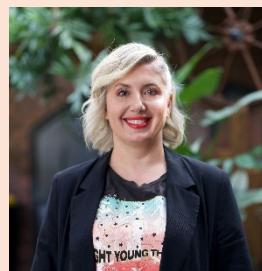
Artificial intelligence has been around for many years, but has recently exploded into the wider public consciousness for the first time in just the last few months. What was once a relatively niche technology that had high barriers to access, has become instantly accessible to anyone with a digital device and internet access. Moreover, the technology can now attempt a much wider range of tasks, with varying levels of success, that we previously may have believed to have been solely in the human domain of capabilities. In this talk I'll highlight the key things that have changed to make this so and provide an intuitive understanding for how these technologies work. I'll touch on the impressively wide but flawed range of capabilities these systems now possess, and highlight the key issues and opportunities. In particular I will separately address the ethical concerns, philosophical debates about "Artificial General Intelligence" (AGI), and the impact these technologies could have.

The Amazing Beginnings of Mathematics – how to enrich the mathematics you teach

Mathematics we teach today had its beginnings long ago. You might know about the history of our number system, but what about some other mathematics topics. Aspects of modern technologies - the GPS and binary technologies - were used 4000 years ago. This session will engage the participant in activities to explore these ideas which can then be shared with students.

Teaching Fractions in the Primary Years of the Australian Curriculum – What's new!

ACARA has increased the focus on fractions in the primary years of the Australian Curriculum: Mathematics 9.0 (ACM). What are these changes and how might they impact your instruction?



Nadia Abdelal – Mathematics Education Consultant, EM Maths

With almost 20 years of teaching experience, Nadia's passion for mathematics extends beyond the classroom. She has authored multiple textbooks and her work has been featured on various websites and in mathematics and educational publications. She has been supporting primary and secondary schools across Australia for over six years and helping them to improve mathematics teaching practice and curriculum design.

Nadia has a special passion for the conceptual and contextual teaching of mathematics. She has presented at multiple mathematics conferences Australia-wide, sharing her teaching and subject-matter expertise along with her love of mathematics.

Nadia continues to work with schools and educational organisations all across Australia.

Using the Concrete, Representation and Abstract approach (CRA) in middle school, for the effective consolidation of abstract concepts

In this hands-on workshop, we will work through tasks ranging from fractions and algebra to geometry and statistics using conceptual approaches and the concrete, representational, and abstract (CRA) model. Along with this, we discuss why these approaches are far more effective for not just engagement, but mathematical retention and transfer.



Rodney Anderson – Mathematics Teacher, Moreton Bay College, QAMT Executive member

Rodney is a Senior Mathematics teacher at Moreton Bay College, and Vice-President of the QAMT. Although an experienced teacher, he is passionate about learning new approaches to teaching mathematics from others at conferences and online discussion groups. He uses many forms of technology in his teaching and is enthusiastic about STEM in the classroom. Rodney shares his experience through presenting online webinars, at conferences around Australia and internationally.

Effective and Efficient use of the TI-Nspire calculator in a Mathematical Methods (and Specialist) Examination

In this workshop participants will explore how to efficiently utilise features of the TI-Nspire non-CAS calculator to answer technology active questions in class and during examinations.



Kirsty Morrison – Principal Project Officer, Australian Curriculum: Mathematics QCAA

Kirsty has over 20 years of experience working in education in both the Primary and Secondary settings across Queensland as a classroom teacher, numeracy coach and as a Head of Department. In her current role at the Queensland Curriculum and Assessment Authority (QCAA), Kirsty has been actively involved in the Australian Curriculum: Mathematics review as well as continuing to provide advice and support for schools and teachers with curriculum planning and assessment .

Planning in Years 7-10 with the Australian Curriculum: Mathematics Version 9

Version 9.0 of the P–10 Australian Curriculum introduces changes in Years 7-10 Mathematics. The QCAA has a role in supporting schools to understand these changes and make the most of the curriculum's new opportunities for quality teaching and learning. This hands-on session will support teachers in taking the steps towards creating Year curriculum and assessment plans, as well as becoming familiar with the QCAA resources that are available to support implementation.



Libby Foley – Principal Project Officer, Primary, QCAA

Libby Foley is passionate about engaging all learners in Mathematics. She is an experienced primary school educator with a background in remote and multi-age contexts. In her current role as PPO: Primary at QCAA, Libby enjoys providing curriculum and assessment advice, support and resources for schools and teachers across Queensland.

Planning in Years Prep – Year 6 with the Australian Curriculum: Mathematics Version 9

Version 9.0 of the P–10 Australian Curriculum introduces changes in Years 7-10 Mathematics. The QCAA has a role in supporting schools to understand these changes and make the most of the curriculum's new opportunities for quality teaching and learning. This hands-on session will support teachers in taking the steps towards creating Year curriculum and assessment plans, as well as becoming familiar with the QCAA resources that are available to support implementation.



Louise Kliese – Head of Department-Curriculum, Chapel Hill State School

Working with highly capable students for over 20 years. Master of Education- management and leadership. Showcase State Finalist Teacher of the Year (2018), Gifted Education Graduate Certificate UNSW/GERRIC. Future Problem-Solving Australian Champion Coach representing Australia in USA for International competition.

Maximising student engagement in mathematics sessions.

Collaborative problem solving, visual recording and growth mindset are a powerful combination to lift all student ability levels. Just wait until you see this trio in operation!



Alastair Lupton -Teacher of STEM, Adelaide Botanic High School

Alastair is a teacher at Adelaide's STEM-iest new high school. His focus there is the ways in which STEM teaching can best support students to succeed in senior secondary mathematics courses, with a special interest in the Mathematical Methods course. Alastair produces video resources as a way to simulate student learning, enhance their use of technology and support them in high stakes assessment tasks.

Who Cares about Scientific Calculators?

Once upon a time, scientific calculators were a big deal, back in the day ... but, with the explosion of other electronic technology in the mathematics classrooms, including graphing calculators, laptops and tablets accessing powerful online apps, are they still relevant? Does it matter what calculative tool(s) our students in the middle years get their hands on? Does it matter how number is represented? How algebra is first interacted with? Statistical calculations performed? Should this use be planned, and what happens if it is not? These questions will be discussed and stock will be taken of the technology options in the middle schools and the General and Essential Maths classrooms of 2023.



Rachael Pelling – A/Deputy Principal, Coolum State School

Rachael Pelling has over 20 years of experience in education. She has worked across all sectors of education as a Principal Advisor for the Australian Curriculum: Mathematics. Rachael is the co-creator of the very successful Gympie Mathematics Alliance and has worked tirelessly to help both students and teachers to improve their mathematics mindset. She was rated as a top ten presenter at the 2022 TAFE Queensland virtual summit for her presentation on Growth Mindset.

Mathematics and mindset

A workshop designed to highlight the latest mathematics and mindset research and the impact of this on student achievement. Participants will be given practical ways in which to improve mathematical mindsets through hands-on activities and praise.

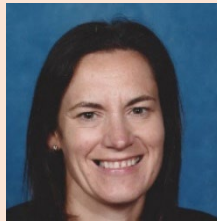


Stephen Broderick – Mathematics teacher, St Ursula's College and QAMT Executive member

Stephen Broderick has been a teacher of Mathematics and Science at St Ursula's college for 38 years and was the mathematics coordinator for 22 of those years. Stephen is currently a T^3 National Instructor with Texas Instruments (Teachers Teaching with Technology) and enjoys promoting the connections between Mathematics and Astronomy. He hopes to see Halley's Comet again. Mathematics enrichment activities for Year 9 and Year 10. In this session we will explore various topics including perfect numbers, continued fractions, Fermi problems and really big numbers.

Mathematics enrichment activities for Year 9 and Year 10

In this session we will explore various topics including perfect numbers, continued fractions, Fermi problems and really big numbers.



Denise Halliday, Education Specialist, Australian Association of Mathematics Teachers (AAMT)

Denise is an Education Specialist with AAMT, who has worked for eight years in schools in mathematics classrooms and in leadership roles. She is a committed believer that maths is for everyone and wants to promote engagement and a positive disposition to maths learning across all student achievement levels spectrum of student achievement levels.

Developing teachers' and students' skills in the Australian Curriculum: Mathematics V9 mathematical processes – modelling, investigation and simulation using Maths300 resources (primary focus)

Mathematical processes are embedded across all the strands in the new Prep-6 Australian Curriculum. In this session, we get to play, building pedagogy and exploring how we can help students develop skills in modelling, computational thinking, statistical investigation and probability simulation. Maths300 is a suite of over 200 rich resources that are investigative and collaborative to help you build these mathematical process skills in your classroom.

Developing teachers' and students' skills in the Australian Curriculum: Mathematics V9 mathematical processes – modelling, investigation and simulation using Maths300 resources (secondary focus)

Mathematical processes are embedded across all the strands in the new 7-10 Australian Curriculum. In this session, we'll be actively doing maths, exploring resources and building pedagogy to support students to develop skills in modelling, computational thinking, statistical investigation and probability simulation. Maths300 is a suite of over 200 rich resources that are investigative and engaging to help build these mathematical process skills in your classroom.

Extending students' own mathematical thinking through challenge and practical use of mathematical processes in the Primary Years

The ACv9 includes processes that students are expected to master. This workshop will explore processes which are useful for encouraging sustained thinking through challenging tasks. We will develop questions, activities and problems aimed at extending students' thinking and assisting students to deepen understanding.

The Hidden Messages in Mathematics Assessment

What and how teachers choose to assess mathematics sends powerful messages to students about what matters for learning. The emphasis on alignment often concerns a unit's mathematical content and its assessment. However, the alignment of our choices and what is valued can also significantly impact students' engagement and success in mathematics. This presentation will share ideas emerging from my doctoral research and invite participants to contribute their own insights on assessment in mathematics classrooms. The aim is to find some answers to the question, "What does it mean to be successful in mathematics?"

Playing with platonic solids: developing problem-solving, reasoning and visualisation skills

Platonic solids have faces that are identical, regular polygons. These faces all meet at the same 3-dimensional angles. This hands-on workshop we will discuss some of the history of platonic solids and pose some questions about platonic solids. The activities are an engaging way to develop students' ability to problem-solve, reason, and visualise in three-dimensions.

Teacher Beliefs about Mathematics and Mathematics Teaching and Learning: A comparison between Ireland and Australia.

The strong influence of teacher beliefs on teaching practices in mathematics education has been recognised for some time (e.g., Ernest, 1989). Teaching practices, in turn, influence how students perceive mathematics and their ability to do mathematics (Mosvold, & Fauskanger, 2014). The Australian Curriculum: Mathematics (Australian Curriculum, Assessment and Reporting Authority [ACARA], 2018), for example, is framed around four proficiency strands: understanding; fluency; problem-solving; and reasoning through which mathematical content is taught. These proficiencies are best developed through constructivist teaching approaches that teachers are unlikely to adopt if these approaches are contrary to their beliefs. This project is the second part of analysis from data collected in 2019-2020, providing a comparison of the beliefs of Australian and Irish teachers. Ireland recently added problem solving into their mathematics curriculum, changing from more traditional teaching methods. This project aims to identify the beliefs about mathematics and mathematics teaching and learning of mathematics teachers, and to determine what influence the curriculum documents and assessment have on teachers' beliefs about mathematics and mathematics teaching and learning.

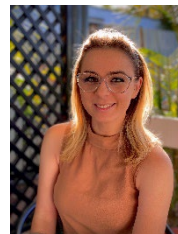
Unpacking the content in the new Australian Curriculum V9.

We will analyse how the content has been decluttered and restructured for 2024. We will also showcase Nelson Maths QLD, a series of 6 books with inbuilt pedagogy, classroom investigations and other features to engage and support all types of students and teachers (especially new and out-of-field teachers).



Leah O'Neill – Mathematics consultant, QAMT executive member

Leah has many years of experience as a classroom teacher, small school principal, education advisor and Head of Curriculum. Recent roles including author and teacher mentor have been avenues for passing on her passion for teaching Mathematics.



Rebecca Burtenshaw - PhD student Mathematics Education, University of the Sunshine Coast

Rebecca has taught within various educational contexts - from early childhood to tertiary education - and included classroom, curriculum development, coaching and leadership roles. She's particularly interested in broadening mathematics success, inclusive education and empowering teachers. Rebecca is now undertaking her PhD in Mathematics Education under the supervision of Dr Margaret Marshman and Professor Merrilyn Goos.



Dr Margaret Marshman - Senior Lecturer Mathematics and Physics Education, University of the Sunshine Coast

Margaret Marshman is a mathematics educator at the University of the Sunshine Coast. She has is passionate about mathematics teacher education and encouraging students to engage with problem solving in mathematics. Margaret's research focuses on peoples' beliefs about mathematics, its teaching and learning, including mathematics teacher educators and how their beliefs influence mathematics pre-service teachers. She also researches how to support pre-service teachers to engage their students with real world problems, helping others to visualise and reason in three dimensions and statistical thinking.



Anita Walker- Pre-service student, Bachelor of Education (Secondary) / Bachelor of Science, University of the Sunshine Coast

Anita returned to full time university study as a mature age student at the University of the Sunshine Coast as a part of the first student cohort at the new Moreton Bay campus. Anita is due to graduate at the end of 2023 with a Bachelor of Education (Secondary) / Bachelor of Science double degree, where Dr Marshman has been a course coordinator for many of Anita's science, mathematics and education courses. Through lectures and conversations with Dr Marshman, Anita has been inspired to better understand influences on mathematics educators, and the effect on student engagement and mathematical thinking. Anita is assisting Dr Marshman as an Undergraduate Research Fellow.



Robert Yen – Mathematics educator

Series editor Robert Yen taught at Hurlstone Agricultural High School in Sydney and works for Cengage as the mathematics publisher. He has managed and authored numerous mathematics texts for Years 7 to 12.



Kathy Lin – Education consultant, Edrolo

Kathy Lin is a former school teacher from the United States. She has 12 years of teaching experience, teaching at the International School of Beijing and the Shanghai American School. Kathy holds a bachelor's degree in Economics from Duke University, a graduate certificate in Elementary Teaching from Drexel University, and a Maths Specialist in International Schools (MSIS) credential. Kathy is currently heading junior Mathematics content development at Edrolo and lives in Melbourne with her family including her fur baby Barkley.

Using non-examples to boost students' Maths achievement

This session aims to equip Maths teachers with the skills and knowledge to effectively use non-examples as a teaching strategy in their classrooms. Non-examples are examples of what something is not, and they are an effective tool for developing a deeper understanding of mathematical concepts. During the session, Kathy will explore the benefits of using non-examples, look at different types of non-examples (including misconceptions), and examine how to integrate them into lessons to help students understand and apply mathematical concepts. By joining this session, you will:

- have a deeper understanding of the role of non-examples in teaching Maths
- be able to identify and create non-examples
- understand how non-examples (as a numeracy strategy) can help you cater for mixed abilities within your class (Teacher Standards 1.5 and 2.5)
- be able to integrate non-examples into lessons, and use them to help students learn

This session is targeted at secondary Maths teachers, and is open to all teachers. You do not need to be using Edrolo to get practical, ready-to-go ideas and resources for your Maths class.



Emeritus Associate Professor Barry Kissane – Mathematics educator, Murdoch University, WA

Barry is a retired mathematics educator with significant experience in the use of technology for teaching and learning mathematics. He has a history of professional activity, including AAMT and MAWA President, editor of The Australian Mathematics Teacher, and engagement in professional learning in Australia and internationally.

Exploring functions and tables with a scientific calculator

The educational value of calculators derives from the experiences they offer students, not merely from their capacity to generate numerical answers, even though naïve interpretations of the word 'calculator' as a device restricted to 'calculation' continue to be widespread, especially in the early secondary school years. Following a model for the educational use of calculators, this workshop explores several ways in which the use of a calculator facility to construct tables of values for functions can be productively used in the secondary school.

Learning about rational and irrational numbers with a scientific calculator

Although rational and irrational numbers are key elements of the Number strand of the Australian Curriculum: Mathematics, little guidance is offered in the official documents or in most textbooks on the place of calculators to support the associated learning. This workshop will explore the opportunities presented by modern scientific calculators for this purpose, highlighting incidentally the frequent misunderstanding of the calculators as devices mostly of value for computation.



Dr Vince Geiger - Professor and Research Director - STEM in Education: Design and growth across the disciplines; Editor-in-Chief Mathematics Education Research Journal

Professor Vince Geiger is the Research Director for the STEM in Education Program in the Institute of Learning Science and Teacher Education at Australian Catholic University. Before his work in the tertiary sector, Vince was a secondary teacher of mathematics and science for 22 years. He has held various national and state-wide roles including, President of the Australian Association of Mathematics Teachers, President of the Queensland Association of Mathematics Teachers, and State Assessment Panel Chair. He now works in an interdisciplinary research space focused on the enabling and transformative role of mathematics within the STEM disciplines and other areas of across the curriculum. His work is driven by awareness that the capacity to know and use mathematics confidently is vital for an individual's career prospects and their empowerment as informed citizens.

Tasks aimed at enhancing students' capability with mathematical modelling and big data by testing claims in media reports

In this hands-on session, I will present tasks designed to engage students with the mathematical modelling of large data sets for the purpose of testing claims in the media. The tasks have been developed as part of an international project between colleagues at Australian Catholic University and the University of Wurzburg Germany which as a focus on critical thinking within mathematics education. A device with the capacity to handle large data sets (e.g., equipped with Excel) is desirable but not absolutely necessary.

Activities for enhancing Critical Mathematical Thinking – issue of equity, diversity and social justice

We live in a time of disruptive events that give rise to challenges that are most often addressed through the application of mathematics. Such disruptive events include phenomena associate with health (e.g., COVID-19), the environment (e.g., sustainability), societal issues (e.g., financial insecurity, and rapid technological advancement (e.g., AI). To acquire the capabilities needed to be informed and responsible citizens, students must develop the capacity to solve real world problems while also being considerate of issues associated with issue of equity, diversity and social justice. In this session, tasks will be presented that are aimed at engaging students with such issues. The session will also include the demonstration of an instrument aimed at identifying teaching approaches that support student development in this space.



Chris Powell - Head of Department, Mathematics, Brisbane South State Secondary College

Chris is a Mathematics education leader with 10 years HOD Mathematics experience and 15 years Senior Mathematics teaching experience both in Australia and abroad. Chris has led large teaching teams to implement best pedagogical practice and has also led the development of many units of work using the Year 7-10 Australian Curriculum, QCAA Senior Subjects (General, Methods and Specialist Mathematics) and International Baccalaureate Maths AA and AI syllabuses. Chris is a Mathematical Methods specialist teacher and have previously taught Mathematics B and C across Year 11 and 12. Prior to the new QCAA Senior Syllabus in QLD Chris was a Mathematics B Panel Member for 5 years. At BSSSC Chris has collaborated with many stakeholder partners including UQ School of Maths and Physics, UQ School of Biomedical Sciences, UQ Pharmacy, QIMR and CSIRO to develop interdisciplinary units of work yielding outstanding results for student engagement and academic achievement in Mathematics. Chris currently co-leads the design, partnerships and implementation of a STEM(M) Biomedical Science Academy for 200 students in years 7-9 focussing on STEM with a (M)edical focus, in collaboration with UQ. Chris has a keen interest in interdisciplinary STEM curriculum development in Year 7-10 and their impacts on student achievement and attainment in Senior Mathematics.

An interdisciplinary approach to teaching Mathematics in Year 7-10 to increase student engagement and achievement.

Chris will share examples of interdisciplinary units for Maths in Year 7, 8 and 9 exploring connections between Mathematics, Art, Science and Humanities as well as connections to surrounding industry partners such as UQ School of Maths and Physics, UQ School of Pharmacy and PA Hospital. He will share a whole school approach to designing and planning these units across multiple curriculum areas

**David Ilsley – Educator, Mathematics Advisor, Curriculum writer**

David Ilsley has taught maths at a number of high schools in SE Queensland. This work was interspersed with periods as a regional mathematics adviser, a writer of senior mathematics materials for Open Learning, a curriculum developer for the 2002 Queensland P-10 Maths Syllabus and a classroom coach training teachers in middle schools in the Bronx, New York. David has published articles in professional journals and presented at conferences and was Vice President of the Queensland Association of Mathematics Teachers and editor of their journal Teaching Mathematics from 1998 to 2000.

Shifting the emphasis from memorising to thinking in Mathematics education

Teaching children to think and solve problems can be difficult, not least because doing so takes time which is needed to get through the prescribed content. But, in the longer term, it can produce better and more motivated thinkers who will be able to work out a lot of the content logically rather than having to memorise it and who will therefore be much less likely to forget material and have to take time re-learning it. This workshop will share some strategies and resources for developing thinking and problem-solving skills in motivating ways.

**Peter Fox – Education consultant, Texas Instruments**

Peter is passionate about mathematics, education and the way technology can be used to engage, excite and enhance student learning and understanding. Peter taught high school mathematics for 25 years; he has also taught in the DipEd program at Monash University, worked with the VCAA in course review and on examination panels, and was part team that supported the development of TI-Nspire and TI-Navigator. Peter currently works with Texas Instruments providing resources and professional development to teachers all over the globe.

Code by Numbers

What is an Anti-Prime? What does the Euler Totient Function do? What do they have in common? These are just two of the activities included in a mathematics unit titled: "Code by Numbers." The unit includes multiple opportunities to engage middle school students in problem solving, investigations and pseudo-coding. The series is perfect for preparing students for PSMTs in senior mathematics classes.

Preparing students for exams

What is the best way to prepare students for end of year mathematics exams? Evidence shows that a lot of students cram in the days leading into an exam, certainly not a particularly effective strategy. Some students claim they went 'blank' in an exam, is this real? What strategies are there to help avoid this situation. In this session we will discuss and experience a range of strategies to support student engagement, learning and success.

**Shirly Griffith – Senior Director and Head of School, Jacaranda**

Shirly has been part of the Jacaranda team for more than 15 years, firstly in the capacity of Mathematics Publisher as well as having responsibilities for the development of Australia's most powerful learning platform, learnON. Prior to joining Jacaranda, Shirly taught Mathematics for almost twenty years and it was her passion for improving learning outcomes for all students that attracted her to the creation of online learning tools and all that they could bring to the classroom

Jacaranda Maths Quest for the Australian Curriculum: Mathematics Version 9.0

In this session, Shirly will take teachers on a journey of exploration through Jacaranda's latest Maths Quest resources designed especially for the Australian Curriculum Version 9.0. Shirly will demonstrate Jacaranda's commitment to learning that is personal, effortful and rewarding for all students regardless of where they are on their learning journey. She will also demonstrate how Jacaranda can help save teachers' time by providing them with the resources, advice and tools they need.

**Peter Flynn – Education Technology consultant**

Peter is an Educational Technology Consultant with Texas Instruments Australia. He has been involved in secondary and tertiary mathematics education for over 30 years and has a keen interest in the effects of CAS and other technologies on teaching, learning and assessment. Peter generously shares his experience via mentoring, hands-on workshops, and conference presentations both locally and internationally.

Specialist Mathematics, complex numbers and values, using TI-Nspire CX II calculator

In this session we will use the TI-Nspire CX II calculator to explore a range of activities and questions that help develop student understanding in complex numbers and vectors.

Australian Curriculum: Scientific Calculator Investigations for Number and Algebra using the TI-30 XB scientific calculator

In this session we will use the TI-30 XB scientific calculator to undertake a range of short investigations in Years 8-10 number and algebra.

**Paulina Sliedrecht – Department of Education, STEM and QAMT Executive**

Paulina is a Principal Project Officer in the Department of Education, Curriculum Branch, STEM team. The STEM team deliver projects to support teachers in all areas of STEM across the state of Queensland. Paulina joined the STEM team in 2020, and brings recency of practice with a clear understanding of and focus on the realities of the classroom. Paulina collaboratively leads the M-in-STEM initiative to deliver on the Department's mathematics priority. Paulina is an experienced junior secondary mathematics teacher with leadership experience in large and small schools.

M in STEM: Mathematical Modelling

The M in STEM PL Suite provides a range of modules for self-paced PL, including Mathematical Modelling. Come along to this session, which unpacks the mathematical modelling module to enrich your understanding of this mathematical process. In this session participants will;

- *actively track the development of mathematical modelling skills across Australian Curriculum Prep – Year 10,*
- *work through an evidence-based modelling framework applying it to an example,*
- *triangulate the framework, the ACARA definition and the sequence of skills development of modelling within the Australian Curriculum to help develop this skill with students in an age-appropriate manner.*

**Linda Carroll – Department of Education, STEM**

Linda is a Principal Project Officer in the Department of Education, Curriculum Branch, STEM team. The STEM team deliver projects to support teachers in all areas of STEM across the state of Queensland. Linda joined the STEM team in 2020, and brings recency of practice with a clear understanding of and focus on the realities of the classroom. Linda collaboratively leads the M-in-STEM initiative to deliver on the Department's mathematics priority. Linda is a senior experienced senior mathematics teacher with over twenty years' experience in regional and metropolitan schools.

**Scott Wiggins – Mathematics teacher, West Moreton Anglican College**

I am currently and have been a senior secondary mathematics teacher at West Moreton Anglican College, Ipswich for 16 years, and was a district Mathematics C panellist for 8 years. I hold a Masters in Applied Statistics from Macquarie University and am a fully accredited member of the Australian Mathematical Society. My current area of interest in mathematics is in fractional calculus.

My top 5 Mathemagic tricks to engage students.

This interactive workshop will attempt to demonstrate some interesting number tricks that could be performed to students as ice-breakers at the beginning of each school term or year. These include: calculating fast cube and fifth roots, determining the missing digit from a large scrambled integer, how to determine the day of the week from any 20th century date and how to construct a 4x4 magic square based on someone's birthday. Elements of this workshop could be used for students in either middle or senior secondary years. Participants will require their smartphone (with a calculator and calendar app), and are encouraged to bring a pen a paper.

**Jacinta Browning – Consultant, Essential Assessment**

Jacinta Browning has been teaching in Australian Schools for 25 years. Jacinta has recently completed her Masters of Clinical Teaching (Melbourne University). She is a passionate and energetic leader who partners with teachers to ensure rigorous professional data-driven conversations as well as facilitates conversations to enhance collective teacher efficacy as well as enhance student learning.

**Jacqueline Clark – Consultant, Essential Assessment**

Jacqueline Clark is a primary trained educator with 30 years of experience in education. She is passionate about teaching literacy. After many years of classroom teaching experience Jacqueline qualified as a Reading Recovery teacher. Jacqueline was the lead teacher in implementing the Levelled Literacy Intervention program across the school, coaching teachers from Kindergarten to Year Six.

**Luke D'Astoli – Mathematics consultant, Maths Pathway**

A former primary teacher and lifelong maths enthusiast, Luke has spent the past seven years working with teachers to help them to implement a fully differentiated learning and teaching model. The hundreds of teachers Luke has worked with have achieved substantial improvements to the growth their students achieve while creating a safer and more joyful classroom experience. Luke achieves these results by listening carefully and sharing actionable advice that is grounded in research while respecting the context, goals and readiness of the teacher

**Carly Millichap – Brisbane Catholic Education**

Carly is an Education Officer in Mathematics for Brisbane Catholic Education. She has a keen interest in STEM and comes from a primary teaching background where she has been a Maths and Science Specialist driving engaging learning in Victorian primary schools. Along with her colleague Alana, Carly has been prioritising the development of engaging and inspiring professional learning for teachers.

**Alana Bandholz – Brisbane Catholic Education**

Alana is an Education Officer in Mathematics for Brisbane Catholic Education. She comes from a primary teaching background and spent many years in early years classrooms making Mathematics engaging and exciting and leading those around to do the same. Along with her colleague, Carly, Alana has been **prioritising the development of engaging and inspiring professional learning for teachers.**

Reinvigorate your Maths Assessment using the V9 Australian Curriculum

This presentation will introduce our assessment model aligned to the current and new V9 P-10 Australian Mathematic Curriculum, which supports teachers to make data-informed decisions. Our differentiated Numeracy assessment and curriculum model, diagnostically assesses each student. The presentation will highlight the use of Individual and whole class data to target each student's Zone of Proximal Development and identify a learning pathway to foster student growth, engagement as well as mapping of students to the new Version 3 National Numeracy Progressions.

The Do's and Don'ts of Delivering a Differentiated and Inclusive Classroom Experience

While meeting your students' individual learning needs is a noble goal, it is not without its challenges. Luke is keen to share some guiding principles to help you make a successful transition in your practice so you can help your students reach their mathematical potential.

Challenging Tasks in Mathematics: the experience of Brisbane Catholic Education

In 2023 we have embarked on a professional learning journey across our system focused on implementing Challenging Tasks in primary Mathematics classrooms. By partnering with Dr. James Russo and Jane Hubbard, schools have developed their understanding of structured inquiry centred around challenging tasks and drawing upon a Launch, Explore, Summarise/Review pedagogy. In this session, we will share stories of success where the impact has been greatest, and future steps scaling this work. Teachers will leave with an understanding of Challenging Tasks, as well as how these can be leveraged to build an engaging approach to Maths in a primary school.