



QAMT Early and Middle Years: Uncovering the Mathematics

New Farm State School, Sunday 22 May



	Room 1	Room 2	Room 3	Room 4
8:00-8:45	Registration			
8:45-9:00	Official Opening and housekeeping	Sponsor Talk: Essential Assessment		
Workshop 1: 9:00-10:00	Critical Thinking in Primary Mathematics Classrooms Peter Stowasser	Maths used by Scientists and Engineers John Steinbach	Early Years Keynote: Dr Jodie Miller Sponsor Talk: Matific	
10:00-10:30	Morning tea and networking opportunities			
Workshop 2: 10:30-11:20	Maths in Robotics – a deeper understanding Frances Cameron	STEM Activities in Astronomy Stephen Broderick	<u>Commercial Presentation</u> Uncovering the Power of Formative Assessment with Essential Assessment Jacqueline Clark	(EY) Aboriginal Boomerangs and Propellers Dr Alwyn Powell
Workshop 3: 11:30-12:20	Bringing the Future of Assessment to Every Classroom and Every Student Alex Bunt	(EY) Building Numeracy through Pattern and Structure Libby Foley	<u>Commercial Presentation</u> Matific's Next Generation Student Experience Gerard Tuffield	2-Piece Tangram Dr Alwyn Powell
12:30-1:00	Lunch and networking opportunities			
Workshop 4: 1:00-1:50	Enriching a Highly Gifted Young Mathematicians Cath Griffin	Fun Whole-class Games to Develop Mathematical Concepts and Skills David Ilsley	Games and Explorations: Preparing for Problem Solving and Modelling Tasks Peter Fox	(EY) Hands on Resources when Teaching Fractions Janice Lenarduzzi
Workshop 5: 2:00-3:00	Sponsor Talk: Mathspace Closing Keynote: Professor Lyn English		Differentiating online in mathematics for a class of diverse learners Jennifer Davies and Suzi Carey	(EY) Differentiation Strategies Harinder Kaur Gill
3:00-4:45	Sharing Practice Forum Sponsor Talk: Texas Instruments followed by Prize draw, drinks and cheese			



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Online Conference, Sunday 22 May



8:30	Registration			
8:45-9:00	Official Opening and housekeeping Sponsor Talk: Essential Assessment			
9:00-9:50 Live streamed session	Early Years Keynote: Dr Jodie Miller Sponsor Talk: Matific			
10:00-10:30	Morning tea			
Workshop Recordings	Developing maths concepts with receipt rolls Persistent Misconceptions in Fractions Grabbing Students' Interests Mathematical Problem Solving in the Primary Classroom Playing Cards and Sticky Notes: Keys to Differentiation, Growth Mindset and Engagement in Middle School Mathematics	Tierney Kennedy Tierney Kennedy Melissa Fanshawe Janine Sprakel Bernadette Sheahan	Developing Fluency and Number Sense Incorporating High-yield Mathematics Strategies into a Weekly Routine M in STEM: Effective Evidence-based Pedagogies for your Mathematics Classroom How student can say 'I love maths' through differentiation Minecraft Maths	Michael Minas Mark Hansen Paulina Sliedrecht Narelle Morris Peter Abt
	Lunch			
2:00-3:00 Live streamed session	Sponsor Talk: Mathspace Closing Keynote: Professor Lyn English			
3:00-4:45 Live streamed session	Sharing Practice Forum Sponsor Talk: Texas Instruments			

Abstracts

Workshop One

Critical Thinking in Primary Mathematics Classrooms

Peter Stowasser, Origo Education

This session shares the findings of a PhD case study that examined climates related to critical thinking in primary school mathematics classrooms. Practical tips to promote critical thinking in the primary mathematics classroom will be shared.

Maths used by Scientists and Engineers

John Steinbach, Alexandra Hills State High School

Comparing mathematical needs of scientists and engineers. Examples of how scientists and engineers use Mathematics via 'real-life' problems as examples.

Workshop Two

Maths in Robotics – a deeper understanding

Frances Cameron, Manly State School

Even the beginnings of robotics contain mathematical concepts – number, measurement, geometry, rate, order of operations etc. These concepts can be both embedded in the coding, or taught through the coding. Designed as a hands-on workshop, participants will have access to robots to explore some of the maths that is possible.

STEM Activities in Astronomy

Stephen Broderick, St Ursula's College, Toowoomba

Astronomy is an excellent vehicle for introducing students to real world mathematical concepts such as speed, visual magnitude, estimation and solar activity. Free software such as Stellarium will be used to plan and investigate astronomical phenomena.

Uncovering the Power of Formative Assessment with Essential Assessment

Jacqueline Clark, Essential Assessment

In this session, we will look at:

- How to effectively use My Numeracy® as a powerful formative assessment model to promote growth for all learners
- The specific structure and process used by teachers when using My Numeracy® activities to deliver powerful and targeted teaching episodes.
- How to analyse class data to measure the impact of formative assessment and explicit instruction.

Aboriginal Boomerangs and Propellers

Dr Alwyn Powell, University of Southern Queensland

This practical hands-on workshop will utilise the STEAM concepts of integration of Mathematics, Science and Technology with a focus on materials and adhesive methods. The completed articles are classroom ready and able to be used immediately. They allow for discussion on concepts of fractions, folding and design technology cutting skills as well as gluing.

Workshop Three

Bringing the Future of Assessment to Every Classroom and Every Student

Alex Bunt, Mathspace

Come and dive into the world of 'continuous assessment.' We'll explore how teachers have used unobtrusive continuous skills check-ins and adaptive tasks to track progress, providing opportunities for student goal setting. This exciting talk will provide a special early look at a new, and entirely free, learning product by Mathspace that will give students free access to continuous assessment technology forever. DO NOT MISS THIS TALK.

2-Piece Tangram**Dr Alwyn Powell, University of Southern Queensland**

This practical workshop will utilise the STEAM concepts with a focus on Mathematics in the development of tangrams. The completed articles are able to be used immediately and allow for enrichment ideas for very capable students. They allow for hands-on discussion on concepts of fractions, congruency, perimeter, area, manipulating and cutting skills and mathematical literacy skills and algebra concepts.

Matific's Next Generation Student Experience**Gerard Tuffield, Matific**

Matific's gamified activities have always engaged students but the new student experience takes Matific to the next level. Students complete a placement test to determine their readiness for activities and then intelligent algorithms are used to provide them an on-going personalised learning path. Students earn rewards to enhance their avatar and flying ship, adding to their love of Matific.

Building Numeracy through Pattern and Structure**Libby Foley, QCAA**

Patterns can be found everywhere. There are many examples in both natural and constructed environments. Identifying and exploring patterns and structure is an important numeracy skill. This workshop will explore practical ideas for building students' conceptual understanding of these mathematical relationships.

Workshop Four**Enriching Highly Gifted Young Mathematicians****Cath Griffin, St Joseph's College TERRACE**

Year 5/6 identified highly gifted maths students who are 'bored' and need age level appropriate activities to enrich and develop a passion for mathematics. We will use resources from AMT, APSMO, Brilliant.org, etc to provide easy and affordable enrichment materials.

Fun Whole-class Games to Develop Mathematical Concepts and Skills**David Ilsley, Canterbury College – retired**

This workshop will involve participants in a number of fun whole-class games which I have used to develop concepts like fractions, negatives etc. as well as problem-solving skills. These games (and others) are described on the website m1maths.com under the 'Fun and Games' link in case you would like to check them out beforehand.

Games and Explorations: Preparing for Problem Solving and Modelling Tasks**Peter Fox, Texas Instruments**

Games are accessible to a broad range of abilities, provide motivation, naturally include reflection and can be used to cover a broad range of mathematical content. Participants in this session will play a variety of games that provide a wonderful springboard from which to launch mathematical investigations that help prepare students for more formal Problem Solving and Modelling Tasks encountered later in their high school years. The mathematical content in the games stretches from Year 5 through to Year 10, so come along and enjoy the fun; you're bound to leave with a handful of mathematically rich, ready to use games and ideas.

Note: Some of the games covered in this session require an electronic device such as mobile phone / computer / calculator. Participants are welcome to BYO. Calculators can be provided for those who are not able to access the digital resources.

Hands on Resources when Teaching Fractions**Janice Lenarduzzi, Metropolitan Regional Office**

This workshop will provide a wealth of ideas for assisting students to develop understanding fractional numbers and to recognise, describe, model and represent fractions in different ways.

Workshop Five

Differentiating Online in Mathematics for a Class of Diverse Learners

Jennifer Davies and Suzi Carey, Brisbane School of Distance Education

Diversity in many forms is evident in all classes with the online environment offering particular challenges and opportunities. Pedagogical approaches including co-teaching, peel off strategies and tiered tasks are supported in this class by data informed practice. Gains in assessment data were significant as were increased student self-monitoring and metacognition which then transferred to other learning areas with students able to articulate when they were ready to move to a more independent or more complex level.

Differentiation Strategies

Harinder Kaur Gill, Sunnybank State Special School

Differentiation strategies and AAC will be the focus of this workshop with practical classroom activities and practical resources to assist teachers to cater for students with special needs.

Recorded Workshops

Developing Maths Concepts with Receipt Rolls

Tierney Kennedy, Kennedy Press

In this workshop, we will explore using the Number Line strategy for developing numeracy capability through the use of flexible strategies. Teachers will explore how to use receipt roll to develop connections between measurement, place value, money, addition and subtraction, fractions and decimals, probability, graphing, ratios and proportions, and multistep or worded problems.

Persistent Misconceptions in Fractions

Tierney Kennedy, Kennedy Press

Difficulty in understanding fractions most often stems from persistent misconceptions that students have formed. Routine questions and tasks do not always help to identify student misconceptions. This workshop provides information about common misconceptions, the difference between misconceptions and errors, questions that will help you to identify them and outline the most important ideas that students need to develop.

Grabbing Students' Interests

Melissa Fanshawe, University of Southern Queensland

In this workshop, we will be looking at real-world occurrences and images that can spark mathematical interest. We will look at how to use these to stimulate discussion and plan activities to meet the diverse needs in the classroom.

Mathematical Problem Solving in the Primary Classroom

Janine Sprakel, Australian Maths Trust

The 'art' of developing a problem-solving classroom requires a few good problems and a little bit of structure. In this session we will discuss the positive skills and dispositions for students when problem solving is a focus for delivering curriculum outcomes.

Note: AMT is a not-for-profit. We offer Problemo, our problem-solving teacher platform, at a paid school, paid individual teacher and also a free subscription level.

Playing Cards and Sticky Notes: Keys to Differentiation, Growth Mindset and Engagement in Middle School Mathematics

Bernadette Sheahan, Kedron State School

A difficulty that many teachers face in today's classroom, is having the confidence to differentiate for the needs of their students whilst maintaining the rigour required to ensure the core curriculum is delivered effectively and successfully. Add to this scenario is the increased number of students who regularly disengage from the mathematics curriculum as they begin to feel more challenged and less confident around their ability to operate mathematically and independently in the middle years. With growth

mindset and student engagement as a key focus, this workshop will give educators the means to not only target those key learning behaviours which are needed to successfully deliver and assess the core curriculum, but will also provide the tools to confidently and masterfully differentiate for, capture the engagement of and usher your class to overall and individual student success.

Developing Fluency and Number Sense**Michael Minas, Love Maths Consulting**

One of the most misunderstood parts of the maths curriculum is fluency, with many people believing that this is about students shouting out ROTE learned number facts on command. This session will explore what it means for your students to be truly fluent- thus making them the boss of the numbers and not the other way around. This approach prioritises student engagement, helps build strong links between the classroom and home environments, and has differentiation built into its structure, ensuring students are working on goals that align with their current personal learning needs.

Incorporating High-yield Mathematics Strategies into a Weekly Routine**Mark Hansen, Sandy Strait State School**

It has been over 10 years since Dan Meyer’s “Call to Action” TedTalk proclaimed “Maths Class needs a makeover”. It is suggested that, with a commitment to some relatively minor changes, every primary maths classroom could ensure that students’ mathematical knowledge and disposition can change immeasurably. This workshop will show practical applications for solutions to the so-called “maths wars” between problem solving and fluency.

M in STEM: Effective evidence-based pedagogies for your mathematics classroom**Paulina Sliedrecht, Department of Education: STEM Team**

Problem solving, inquiry and modelling skills as well as productive dispositions are vital to student success in P-10 Mathematics and a successful transition to Senior Mathematics. In this session, you will explore a suite of resources developed by respected maths educators such as Professor Merrilyn Goos and Associate Professor Katie Makar, around six key topics in P-10 and Senior Mathematics. To enhance your professional learning, each topic (Productive Disposition, Problem Solving Inquiry, Problem Solving Modelling, Reasoning, New Senior Content and Pedagogies to Revise, Review and Rehearse) emphasises and models evidence-based pedagogies that you can use in your very next class. You will also witness how these pedagogies are being used in ‘real’ classrooms.

How students can say ‘I love maths’ through differentiation**Narelle Morris, Morris Maths**

Jo Boaler’s research shows that anyone can do maths to a high level. People’s beliefs about their ability in maths is linked to experiences they have very early on in their school career. My session will show you how to make maths fun, engaging and accessible for all, while having success and developing a love and appreciation for the subject.

Minecraft Maths**Peter Abt, Palmview State School**

Participants will learn how Minecraft can be used to revise, deepen and extend learning in a range of P-3 maths concepts including - numerals, 2D / 3D Shapes, angles, number lines, area, perimeter fractions and ten frames.