

QAMT Early Years: Building Maths Futures
Moorooka State School, Sat 27th February



	Room 1:	Room 2:	Room 3: Commercial	Virtual
8:45-8:55	Registration			
8:45-10:00	Official Opening & Keynote: Bronwyn Ewing - Cultivating inclinations of young learners [But why?]: Tinkering Around in Number Talks			
10:00-10:30	Morning tea and networking opportunities			
Workshop 1: 10:30-11:20	Dyscalculia <i>Eduarda Van Klinken</i>	Developing Basic Fact Fluency with Understanding - Not Gimmicks! <i>James Burnett and Dr Calvin Irons</i>	Differentiation and Progress: how to use a sequential framework in the early years to accurately identify student maths levels and have a clear framework for filling gaps <i>Esther White, Maths Australia</i>	Using Games to Engage Students, Teachers and Families in Maths <i>Michael Minas and Jess Greenbaum</i>
Workshop 2: 11:30-12:20	Teaching mathematics online - strategies and resources for students with disabilities in the early and middle years <i>Jennifer Davies & Barbara Mead</i>	Practical Ways to Enhance Number Sense with Number Lines <i>Brenda Kettle</i>	Essential Assessment: using Australian curriculum assessment data to inform teaching <i>Jacqueline Clark, Essential Assessment</i>	Engagement, conversations, reasoning and problem solving in early years classrooms <i>Jana Visnovska & Jose Luis Cortina</i>
12:30-1:00	Lunch and networking opportunities			
Workshop 3: 1:00-1:50	Augmented Reality in Maths <i>Peter Abt</i>	Facilitating thought-provoking mathematical conversations <i>Melinda Ross & Kylie-Jo Harvey</i>	A language approach to developing mathematical concepts <i>Peter Stowasser, ORIGO</i>	Interleaved Maths Practice in the Early Years <i>Leah O'Neill</i>
Workshop 4: 2:00-2:50	We're Going on a Maths Walk <i>Libby Foley</i>	How to differentiate for and engage students who struggle with mathematics <i>Lynelle Campbell</i>	What's new in Maths 300? <i>Dr John West</i>	Using LEGO to Engage and Consolidate Early Years Maths Concepts <i>Monique Russell</i>
3:00-4:45	Sharing Practice with workshop presenters, followed by drinks and cheese			

Please Note: workshops shaded in grey are to be provided by interstate speakers and may be subject to change if travel restrictions are in place. Should this occur, the following standby workshop is available:

- Maths Manipulatives: using just three simple multi-sensory tools to teach Number and Algebra K-9 with absolute ease
Esther White, Maths Australia

Abstracts for Saturday

Dyscalculia (Euarda Van Klinken – Fairholme College)

Dyscalculia (Specific Learning Disorder: Impairment in Mathematics) while rarely diagnosed, is a familiar problem for students in our classrooms. This workshop will outline the characteristics of the disorder and some possible ways of assisting students. It recommends a strong emphasis on number sense in all aspects of mathematics teaching to support students with a dyscalculia profile.

Developing Basic Fact Fluency with Understanding - Not Gimmicks! (James Burnett and Dr Calvin Irons – ORIGO Education, cofounders and senior authors)

Fluency is more than memorisation of isolated facts. Students need to see connections between facts and visual representations to help form a 'mind picture' that connects to a thinking strategy. This session will utilize easy-to-make visual aids and games that help students to master the basic addition and subtraction facts – with understanding!

Differentiation and Progress: how to use a sequential framework in the early years to accurately identify student maths levels and have a clear framework for filling gaps (Esther White – Maths Australia)

Please Note: This workshop is not strictly commercial as participants will be given access to a free resource. However, it is located on a commercial site along with other materials available for purchase.

If students miss out on the "Big Ideas of Maths" in the early years, this sets up negative patterns and a lack of confidence that has devastating effects further into their schooling. Too often they decide they "don't have a maths brain", "will never understand maths", or are just "dumb". When we identify their current level of mastery and then teach key concepts (such as Place Value) as necessary prior knowledge, we give our students the opportunity to understand - and love - this language that explains the universe. In this workshop, participants will gain an understanding of the sequential nature of maths; use a free tool to "place" students within this broader sequence; and be able to identify gaps that MUST be filled for their students to easily progress.

Teaching mathematics online - strategies and resources for students with disabilities in the early and middle years (Jennifer Davies and Barbara Mead – Brisbane School of Distance Education)

Internationally, online teaching has been a topic of professional discussion through 2020. In this workshop, we will share some resources and strategies that have worked in supporting students with disabilities in an online learning environment. The emphasis is on student ownership, student voice and gathering authentic work samples using interactive strategies.

Practical Ways to Enhance Number Sense with Number Lines (Brenda Kettle – Queensland Curriculum and Assessment Authority)

Number lines can support students' mental representations of the order and magnitude of numbers, number relationships and mathematical operations. In this session, participants will be involved in practical activities that illustrate how to systematically move from bridging experiences to the incorporation of standard number lines in ways that strengthen students' number sense.

Essential Assessment: using Australian curriculum assessment data to inform teaching (Jacqueline Clark – Essential Assessment, Qld regional manager)

In this workshop, I will discuss the reasons for assessing students in maths and the benefits of using both summative and formative assessments. I will show how Essential Assessment enables teachers to pre-, and post-assess their students (summative assessment) in relation to a particular strand, sub-strand or topic of the Australian Curriculum, to diagnose what content descriptors have been understood and misunderstood by a student, class, or group.

I will also demonstrate how to interpret and apply the pre-assessment data to create targeted teaching opportunities and track student growth through our print and digital formative resources such as Individual Numeracy Learning Plans, My Numeracy and Sunset Maths.

Augmented Reality in Maths (Peter Abt – Palmview State School)

Please Note: This workshop requires an iPad, the AR Makr app and Pages app (free)

Participants will learn how Augmented Reality can be used to revise, deepen and extend learning in a range of Year 2 and Year 3 maths concepts including - odd and even, time, place value, shape, number lines, fractions and ten frames.

Facilitating thought-provoking mathematical conversations (Melinda Ross and Kylie-Jo Harvey – Brisbane Catholic Education)

In this workshop, we will share our experience with implementing daily maths talks to facilitate student mathematical discourse in the early years classroom.

A language approach to developing mathematical concepts (Peter Stowasser – ORIGO Education)

Mathematical concepts built on everyday language experiences can deepen understanding. This workshop will model how storybooks (print and animated) can be used to develop early years concepts such as, addition, subtraction, multiplication and more.

We're going on a Maths Walk (Libby Foley – Chevallum State School)

Enjoy mathematics in your everyday life. Come along for an exploratory workshop where we investigate Maths in the world around us. We will take notice of Maths in our environment and describe what we observe. Bring your imagination, curiosity and Maths eyes.

How to differentiate and engage students who struggle with mathematics (Lynelle Campbell – Lynz Education)

Using a model, developed from research on what works for students who are at risk of failing in mathematics, this workshop will explore practical ideas teachers can use to differentiate the difficulty level of their content and to engage a wide range of students' interests and needs. The model can assist teachers to program activities and even to make decisions 'on the run' when their students aren't 'getting it'! Teachers will be introduced to simple, practical resources they can readily make available to their students in each maths lesson.

What's new in Maths 300? (Dr John West – AAMT, voluntary position)

In 2019, I was hired to update the look and feel of all 194 existing Maths 300 lessons and to assist in migrating the content across to the new website, thereby giving Maths 300 some much-needed (and long-overdue) TLC. In 2020, I was appointed to Chair the new Maths 300 Writers' Group, which has so far developed 15 brand-new lessons, all of which are now live on the new site. In this workshop, I will explore the new Maths 300 site (including the new browser-based software), share with you some of the new content and AAMT's plans to continue to add value for existing and new subscribers (such as new Maths 300 YouTube channel).

Virtual workshops

Using Games to Engage Students, Teachers and Families in Maths (Michael Minas – Love Maths, education consultant)

Games are a popular feature of many maths classrooms, in part because of their capacity to engage students and teachers alike. This workshop will discuss the five principles of educationally-rich games to support teachers to decide which games they should be using with students. We will explore these principles in the best way possible- by giving participants the chance to play a selection of my favourite games.

Engagement, conversations, reasoning and problem solving in early years classrooms (Jana Visnovska and Jose Luis Cortina – University of Queensland and UPN Mexico)

Engaging a full class of young learnings in a thoughtful mathematical conversation can be difficult. We illustrate how teaching students to hold a shared mathematical conversation at a classroom level is crucial to allowing us, teachers, to support students' reasoning and problem solving. We use teaching early number as an example for "bringing students there", showing that a well-structured mathematics sequence can help us in doing so.

Virtual workshops Continued

Interleaved Maths Practice in the Early Years (Leah O'Neill – Back-to-Front Maths, teacher mentor)

Revision and practice assist students to retain and recall mathematical concepts and strategies. This presentation will explore interleaved maths practice and how it can be adapted to suit early years settings.

Using LEGO to engage and consolidate early years maths concepts (Monique Russell – Queensland Education Department, Education Officer)

Using an online mode, discover how LEGO can be used to facilitate exploration and consolidation of early years mathematical concepts. Grab a few pieces of LEGO, or interact online with Monique and discover how this manipulative can engage learners in mathematics activities.

QAMT Middle Years: Building Maths Futures

Moorooka State School, Sun 28th February



Queensland
Association of
Mathematics
Teachers

	Room 1:	Room 2:	Room 3: Commercial	Virtual
8:45-8:55	Registration			
8:45-9:00	Opening and house keeping			
Workshop 5: 9:00-9:50	Astronomical Activities in the Middle Years <i>Stephen Broderick</i>	Using multiple fraction representations to build a foundation of success in mathematics <i>James Burnett and Dr Calvin Irons</i>	Maths Manipulatives: using just three simple multi-sensory tools to teach Number and Algebra K-9 with absolute ease <i>Esther White, Maths Australia</i>	Making high-yield activities a habit in your classrooms <i>Mark Hansen</i>
10:00-10:30	Morning tea and networking opportunities			
Workshop 6: 10:30-11:20	Problem Solving: Criteria for rich problem-solving tasks <i>Peter Stowasser</i>	Tracking mathematical achievement to ensure accurate and appropriate differentiation <i>Barbara Mead & Manuela Andrew</i>	What's new in Maths 300? <i>Dr John West</i>	ST Math - digital numeracy program, K-8 <i>Julie McCann, MTA</i>
Workshop 7: 11:30-12:20	Multiplicative Thinkers <i>Guy Constable</i>	Raising Reasoning <i>Darren Clark</i>	Creating Thinkers, not Calculators <i>Gerard Tuffield, Matific</i>	My Favourite Middle School Resources and Activities - Part 2 <i>Rex Boggs</i>
12:30-1:00	Lunch and networking opportunities			
Workshop 8: 1:00-1:50	Exciting lessons with pattern blocks for the middle years <i>Jan Cavanagh</i>	Enrichment Maths: teaching problem solving with the help of AMTs PROBLEMO <i>Cath Griffin</i>	Maths, Magic and Mind Reading <i>Brad Felstead</i>	Doing Maths like a Research Mathematician <i>Anita Ponsaing</i>
2:00-2:50	Closing Keynote: Dr Leicha Bragg - Engaging Students through Teaching Mathematics for Social Justice			
3:00-4:45	Sharing Practice with workshop presenters and prize draw and followed by drinks and cheese			

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- **Using LEGO to engage and consolidate middle years maths concepts (Monique Russell – Queensland Education Department, Education Officer)**
Discover how LEGO can be used to facilitate exploration and consolidation of early years mathematical concepts. Grab a few pieces of LEGO, or interact online with Monique and discover how this manipulative can engage learners in mathematics activities.
- **Developing Basic Fact Fluency with Understanding - Not Gimmicks! (James Burnett and Dr Calvin Irons – ORIGO Education, cofounders and senior authors)**
Fluency is more than memorisation of isolated facts. Students need to see connections between facts and visual representations to help form a 'mind picture' that connects to a thinking strategy. This session will utilize easy-to-make visual aids and games that help students to master the basic addition and subtraction facts – with understanding!

Abstracts for Sunday

Astronomical Activities in the Middle Years (Stephen Broderick – St Ursula's College, Toowoomba)

Astronomy is an excellent vehicle for linking mathematical ideas with the real world. For example, the sunspot number is a good way of introducing algebra and solving simple linear equations. Graphing and plotting the sunspot number also reveals useful information about the solar cycle. Other interesting activities include: determining the angular width of constellations such as the Southern Cross, calculating the speed of the International Space Station (ISS), estimating the brightness of a variable star. None of these activities require a telescope, although a telescope would add another dimension to these activities.

Using multiple fraction representations to build a foundation of success in mathematics (James Burnett and Dr Calvin Irons – ORIGO, cofounders and senior authors)

This workshop will introduce and explore the four different representations of fractions that must be covered in the primary grades and why each is so critical. In so doing, you will be better prepared to monitor how each representation will either support or interfere with students' understanding of fraction concepts.

Maths Manipulatives: using just three simple multi-sensory tools to teach Number and Algebra K-9 with absolute ease (Esther White – Maths Australia)

Often, as teachers, we think that 'the greater the variety of hands-on resources, the better'. However, recent research is now showing that the use of just one manipulative - for a minimum time period of three years - is much more supportive of students as they gain confidence in the one teaching tool, and can spend time learning the new maths concept rather than learning the plethora of new teaching tools we may place in front of them. In this workshop, come and experience for yourself the ease of teaching Place

Value, Addition, Subtraction, Multiplication and Division using our specialised manipulatives and simple concrete - representational - abstract framework.

Problem Solving: Criteria for rich problem-solving tasks (Peter Stowasser – ORIGO Education)

Research tells us that many children are exposed to an overabundance of routine, low level, problem-solving tasks. Participants in this workshop learn the difference between routine and non-routine problems and establish shared criteria to identify rich problem-solving tasks.

Tracking mathematical achievement to ensure accurate and appropriate differentiation (Barbara Mead and Manuela Andrew – Brisbane School of Distance Education)

Students with some disabilities can display 'splinter skills', appearing to be able to perform at or above year level in some mathematics strands, while struggling significantly with others. This workshop will unpack how to use formative assessment to determine and record student ability, enabling data driven instruction. This approach also allows three-way conversations between students, families and teachers to develop a shared understanding of current ability and next steps

What's new in Maths 300? (Dr John West – AAMT, voluntary position)

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AAMT's plans to continue to add value for existing and new subscribers (such as new Maths 300 YouTube channel).

Multiplicative Thinkers (Guy Constable – Learning Through Doing)

Please note: Reference will be made to the Learning Through Doing website

Which topics in mathematics need or build on an understanding of multiplicative thinking

Raising Reasoning (Darren Clark – Nambour SC and Coolum SHS)

This workshop explores reasoning and how it can be harnessed to improve outcomes and enrich mathematical experiences in upper primary and junior secondary. You will be shown practical examples of how reasoning can extend your high achieving students, and enable the re-engagement of your more reluctant students regardless of their level. You will take away questioning tools to try on Monday morning!

Creating Thinkers, not Calculators (Gerard Tuffield – Matific)

Too much time teaching maths focuses on the skills employers don't need because technology does it faster and better. Students need to learn different maths skills for today's world.

Keynote Address: Dr Leicha Bragg

Dr. Leicha Bragg is a Senior Lecturer in Mathematics Education at Deakin University, Melbourne. She has worked in education with preservice and practising primary mathematics teachers for over 20 years. Leicha has an international reputation for her work in developing engaging educational tasks for children. She is the author of 70+ journal articles and three teacher resource books, including two on Geocaching, and one on engaging with mathematics through picture books with colleagues around Australia. Leicha was the project director for the Department of Education and Training (Victoria), Birth to Level 10 Numeracy Guide. Leicha's current research projects focus on: Teaching Mathematics for Social Justice; Online adult learning of numeracy; foster home-school mathematical connections; mathematical games; and, champions of mathematical reasoning.

Engaging Students through Teaching Mathematics for Social Justice

In a rapidly changing world, it is vital that we understand mathematics and make critical decisions based on the individual and collective wellbeing of our society. This infusion of mathematics with social justice emphasises being globally aware whilst contextualising local dilemmas. Issues of global and local importance such as the COVID-19 pandemic, climate change, water and food insecurity, and displacement, require critical perspectives across disciplines. Transforming our future requires a deep understanding of mathematics so that students and educators can anticipate, act, and reflect.

In her keynote, Leicha will examine the importance of teaching mathematics from a social justice perspective. She will present tasks for your future exploration and share stories of the challenges and rewards that these tasks offer where mathematics is used as a tool to understand the critical social justice issues that face the world today.

Exciting lessons with pattern blocks for the middle years (Jan Cavanagh)

Hands on materials are essential for developing confidence, especially in Geometry and Measurement. Most schools have Pattern Blocks, mostly valued in the very early years, BUT what a wonderful variety of topics can be explored with Pattern Blocks in the Middle Years. This hands-on session will open the way to develop many exciting lessons.

Enrichment Maths: teaching problem solving with the help of AMTs PROBLEMO

(Cath Griffin – St Joseph's College, Gregory Terrace)

Please Note: This workshop refers to a commercial product

This workshop will demonstrate a hands-on approach to maths enrichment using Problemo, a resource created by the Australian Mathematics Trust.

Maths, Magic and Mind Reading (Brad Felstead – Felstead Education, Melbourne)

See maths from a different angle and engage your students with the wonder and power of mathematics. During this workshop, you will be amazed by a range of maths-based mind reading, magic and card tricks. You will then be challenged to work out the maths behind the tricks, before being shown how to engage and entertain your students with them.

Virtual workshops

Making high-yield activities a habit in your classrooms (Mark Hansen – Sandy Strait State School)

There are so many great, research-based mathematics activities. How do we know which ones to include in our classroom and how do we make these a routine for us and students? This workshop will give some background on how to do this as well as which activities to include for maximum engagement and learning.

ST Math - digital numeracy program, K-8 (Julie McCann – Modern Teaching Aids)

Please Note: This is a commercial workshop

ST Math, developed by a not-for-profit organisation, is a visual instructional program that builds a deep conceptual understanding of maths and is based on years of research around how children learn maths best.

Students explore and play games that rely on problem solving rather than literacy skills. The interactive hands-on nature of the games supports students developing understanding of the reason why the maths works rather than just memorising a formula to solve a maths problem.

The difficulty scales really well, allowing students to work on their areas of weakness and extending their strengths.

My Favourite Middle School Resources and Activities - Part 2 (Rex Boggs – Semi-retired maths teacher)

This workshop is a continuation of Part 1 of this topic, which was presented at the 2020 QAMT State Conference. In this workshop I will share my favourite resources, activities and teaching approaches for Middle School Mathematics. The resources will be available for download after the presentation.

Maths Craft (Anita Ponsaing – University of Adelaide)

Doing maths like a research mathematician. A program that offers all students the chance to engage in authentic, challenging adventures using ideas and processes with which they are operational.