Welcome to the AAMT 2013 Mathematics: Launching Futures conference

AAMT holds a conference every two years to showcase quality teaching in mathematics. Teachers of primary, secondary and tertiary students, teacher educators, researchers and government representatives share and discuss ways to promote the learning of mathematics. This conference is especially significant as it is the first national mathematics education conference following the launch of the *Australian Curriculum: Mathematics*.

Participants from all states and territories of Australia, as well as from other countries, provide a rich source of teaching and learning ideas. The diversity of contributions to the conference is a real strength and provides an opportunity not to be missed.

*Mathematics: Launching Futures* will be no exception; internationally recognised speakers in mathematics education will set the scene for stimulating discussions about the teaching and learning of mathematics. Presentations and workshops by teachers and researchers will highlight effective classroom practices and exhibitors will present a range of the latest resources.

Enjoy sharing your experiences, learn about new initiatives and network with others who have a passion for mathematics.

My fellow AAMT Councillors and I look forward to meeting and working with you at what I know will be an informative and rewarding few days.

Kim Beswick
PRESIDENT
The Australian Association of Mathematics Teachers
General conference information

Registration and information
Registration is on Wednesday morning from 8.00 am at the AAMT stand on the 1st floor, Law School, The University of Melbourne. (See map pg 46.) General enquiries can also be made here.

Name badges and admission
Admission to all conference sessions and social events will be strictly by name badge or ticket/invitation. Please remember to wear your name badge at all times. If you lose your name badge, please contact the registration desk.

Trade display
There is a trade display on the 1st floor, Law School The University of Melbourne which is open for the majority of the conference. (See map pg 46.)

Social events
A combined Presidents’ Reception will be held at University House (see back cover map) Professors Road, The University of Melbourne at 5.45 pm on Wednesday afternoon. This is a short 15 minute walk from the Spot Theatre. Guides will lead a walking party, or you may make your own way there. If you would prefer, catch a tram on Elizabeth Street at stop 9 and alight at stop 12. Details on how to purchase a tram ticket can be found here http://ptv.vic.gov.au/tickets/myki/buying-your-myki/. All Wednesday’s registered delegates (and registered partners) are welcome to attend.

At the Presidents’ reception, there will be an informal launch of the AAMT’s exciting new professional learning website, Top Drawer Teachers. Each drawer provides expert advice based on sound research, practical teaching suggestions and high quality classroom activities. You can enter our competition to win an iPad or a $500 Westfield voucher.

The conference dinner is on Thursday evening in the Members’ Dining Room at the Melbourne Cricket Ground (Gate 2) Jolimont Terrace, East Melbourne. (See map pg 53.) The optional pre-booked MCG tour commences at 6.30 pm at Gate 2. Pre-dinner drinks are at 7.00 pm at the Percy Beams Bar, followed by dinner at 7.30 pm. Entry to the dinner venue is also via Gate 2. Please bring your pre-purchased ticket.

The happy hour is on Friday evening at 5.45 pm and will be in the trade display area, 1st floor, Law School. (See map pg 46.) All of Friday’s delegates (and registered accompanying partners) are welcome to attend. Proudly sponsored by The Australian Mathematics Trust.

Tape recordings and photographs
The recording of sessions can only be undertaken with prior consent of the presenter. Delegates are encouraged to share photos or videos on the AAMT Facebook page. If you do not want your photograph taken please advise a staff member at the AAMT stand.

Catering
All morning teas, lunches and afternoon teas will be served in and around the trade display area. (See map pg 46.) There is a large space available on the 2nd floor with a number of tables and chairs. On Wednesday, the joint day, the venue will be at its capacity. It is advisable to collect your lunch and move through the area to either the ground or 2nd floor to avoid congestion.

Email, Internet and phones
Computer access to check emails
To access The University of Melbourne guest wireless network follow these steps:
1. Turn wireless ON on your device.
2. Select ‘Visitor’ from available Guest wireless network.
3. Launch your web browser and access any website - on some devices this is done automatically. Your web browser will redirect to the login screen.
4. Enter the user name and password.
   Guest User Name: MERGA/AAMT Password: oWtNKfHW

Twitter & facebook
Anyone who likes to ‘tweet’ is encouraged to add ‘#AAMT13’ to messages so that the comments can be easily found. Delegates are encouraged to post comments about the conference in general, or about specific sessions.

Feel free to post photos or comments on Facebook at https://www.facebook.com/aamttinc

Program changes and information updates
Delegates will be notified of any program changes or other relevant information as soon as possible. ‘Housekeeping’ announcements will be made each morning prior to keynotes and major presentations. Information will also be posted at the AAMT stand and to the conference website at http://www.cvent.com/d/kcqw2k and Twitter.

USB flash drives
Delegates will receive a copy of conference proceedings on USB.

Meeting rooms
For anyone wishing to hold a public or private meeting, you can book a meeting room for Friday morning from 8.30-9.30 am. For bookings please go to the AAMT stand.

Parking
Delegate parking is available for a fee at the University Square Underground Car Park. More information can be found at http://maps.unimelb.edu.au/parkville/building/107 (see back cover map).

Help for presenters
There will be an ‘ask for help’ person, easily identified by a purple T-shirt, in each room to assist presenters with any IT issues.

Location of rooms
LAW SCHOOL 185 Pelham Street
Ground Floor: G29
Ground Mezzanine: GM15, GM16, GM17 (accessible from 1st floor)
1st Floor: 102, 106, 108, 109
2nd Floor: 221, 223, 224
6th Floor: 605, 608, 609
10th Floor: Woodward 1, Woodward 2

MELBOURNE GRADUATE SCHOOL OF EDUCATION
234 Queensberry Street
2nd Floor: 217, 218 (computer labs)
4th Floor: 427, 419, 420, 421
5th Floor: 521, 545

The final keynote on Wednesday will be held in: The Spot-Basement Theatre (Basement 198 Berkeley Street).

See Map section for room types and capacities.
AAMT 2013 Mathematics: Launching Futures concurrent program

[1] Launching futures: You can’t drive by looking in the rearview mirror
Mike Askew

Keynote
It has become a cliché to say we are living in times of great change. This does not make it any less true and it does pose challenges for us as mathematics educators. In this presentation I focus on the issue of how mathematics taught today might best support launching learners into an unknown future. I will invite us to step back from the day-to-day concerns of how best to cover the curriculum and help learners be prepared for short term success (I’m looking at you, NAPLAN) and to consider why mathematics is held to be important in the school curriculum and whether it still deserves to hold such status (hint: I think it does). But I shall argue that we need to pay closer attention to how we teach mathematics (not just ‘what’ mathematics) and the impact this can have on what students learn not only about mathematics but also about themselves as learners and citizens, and why this might be the best ‘launchpad’ for their futures.

SESSION 1
Wed 11.30–1.00
GM15 Law School

Berinderjeet Kaur

Major Presentation –S–1.2, 3.4
TIMSS 2011 is the fifth international mathematics and science assessment, conducted every four years. TIMSS is designed to provide trends in fourth and eighth grade mathematics and science achievement in an international context. This paper reviews the mathematics achievement of eighth-graders from Asia-Pacific countries that participated in TIMSS 2011. The achievement data shows that Korea, Singapore, Chinese Taipei, Hong Kong and Japan ranked as the top five countries respectively. The paper also examines Number test items, for Taipei, Hong Kong and Japan ranked as the top five countries.

SESSION 1
Wed 9.30–1.00
102 Law School

Susie Groves, Brian Doig, Wanty Widjaja, David Garner, Kathryn Palmer

Major Presentation –P–1.2, 1.3, 2.2, 3.1, 3.2
There is growing worldwide interest in Japanese Lesson Study as a model for professional learning, with large-scale adaptations of Lesson Study taking place in many countries. This presentation will describe how teachers and researchers collaborated in a Lesson Study project carried out in three Victorian schools in 2012. It will illustrate the typical Japanese structured problem-solving research lessons that form the basis for Lesson Study, and discuss how such research lessons are planned, the role of the teacher, as well as identify issues relating to the adaptation in Australia of Lesson Study as a means of professional development.

SESSION 1
Wed 12.15 –1.00
108 Law School

Leong Yew Hoong, Tay Eng Guan, Quek Khiock Seng, Yap Sook Few, Tong Cheng Luen

In this symposium, we discuss our project Mathematical Progress and Value for Everyone (MProVE) which is about doing this hard research on helping low achievers at the Secondary levels improve in their learning of mathematics. We start with the recognition that a complex confluence of factors contribute to students’ low achievement. It is not restricted to their difficulties with the traditional ‘content’ domain – the subject matter of mathematics is viewed as difficult to grasp and they lack good foundations in mathematical knowledge. Other factors that contribute towards/ hinder their learning include metacognitive dispositions, learning habits, threshold for frustration, feelings of confidence etc. It is our stance that efforts that can result in sustainable improvements in their achievement should take into consideration all these interacting factors that influence their learning of mathematics.

SESSION 1
Wed 9.30–12.15
108 Law School

[5] Using a Modified Form of Lesson Study to Develop Students’ Relational Thinking in Years 4, 5 & 6
Lei Bao, Max Stephens

A modified form of Lesson Study was used to deliver several lessons over two weeks to develop students’ relational thinking and to improve teachers’ knowledge of this thinking. Fifteen students in a multi-grade 4, 5 & 6 classroom were surveyed and interviewed using true/false sentence and open number problems involving one unknown number before and after the study. Students in all three grades increased their understanding of the role of equivalence and their capacity to use relational thinking. Questionnaires were also undertaken by three participating teachers before and after the study. Their knowledge about students’ relational thinking improved, and they demonstrated how they would integrate it into their future teaching of number and number operations.

SESSION 1
Wed 11.30–1.00
106 Law School

[6] Beginning Inference in Fourth Grade: Exploring Variation in Measurement
Lyn English, Jane Watson

This paper addresses one of the foundational components of beginning inference, namely variation, with 5 classes of Year 4 students undertaking a measurement activity using scaled instruments in two contexts: all students measuring one person’s arm span and recording the values obtained, and each student having his/her own arm span measured and recorded. The results included documentation of students’ explicit appreciation of the variety of ways in which variation can occur, including outliers, and their ability to create and describe valid representations of their data.
SESSION 1  
Wed 11.30–12.15  
GM16 Law School

[7] Teaching roles in technology: rich teaching and learning environments (TRTLEs)  
Jill Brown  
This paper reports part of a study of secondary mathematics teachers in Technology-Rich Teaching and Learning Environment (TRTLEs). Three TRTLEs, two year 11 and one year nine class and their teachers were the focus of the study. Seven Teaching Roles were identified as teachers acted to allow students to perceive and enact affordances of TRTLEs appropriate to the learning of functions. Each role is important in allowing future independent perception and enactment of affordances by students.

SESSION 1  
Wed 12.15 –1.00  
GM16 Law School

[8] Pre-service mathematics teacher education: trying something new!  
Jason Loke  
Seminar – S, G – 1.1, 1.3, 2.2, 3.2  
Driven by growing concern about the falling levels of student engagement in secondary school mathematics, personnel from within a South Australian University and Secondary School worked together to develop and implement an innovative approach to pre-service teacher education. Pursuing a vision of pre-service teachers with enhanced capacity to engage young people in learning science and mathematics, an opportunity was provided within this approach for pre-service teachers to learn important pedagogical content knowledge first hand, by observing and work shadowing experienced classroom teachers of senior school mathematics using the scaffold of critical reflection.

SESSION 1  
Wed 11.30–12.15  
GM17 Law School

Dave Tout  
Seminar – M, S, G – 1.1, 1.2, 1.3, 2.3, 3.2, 3.4  
This presentation will look at research about adults’ abilities in numeracy, and how this relates to mathematical literacy in PISA’s assessment of 15 yo students. Items in both the adult assessments and PISA are set in a range of different, realistic contexts. The presentation will look at the Australian results of two international assessments which show that over 50% of the adult population are in the lower two levels, and compare the frameworks and items that are used in the different assessments. Issues related to the teaching and learning of mathematics and numeracy and the implications for life as an adult in the 21st century will be discussed.

SESSION 1  
Wed 11.30–12.15  
G29 Law School

[10] Mathematical knowledge for teaching AAMT members  
Rosemary Callingham  
Seminar – G – 2.1, 2.2  
At the previous AAMT conference at Alice Springs, AAMT members expressed interest in examining and responding to an online survey addressing knowledge for teaching mathematics that had been developed for use with pre-service teachers. This seminar honours a commitment to report back to AAMT members about the survey and their responses. The responses of AAMT members, both primary and secondary teachers, are presented. Responses addressed beliefs about mathematics, content knowledge and pedagogical content knowledge.

SESSION 1  
Wed 12.15 –1.00  
GM17 Law School

[11] Launching confident numerate learners  
Peter Wade With Ann Gervasoni, Catherine Smith, Catharine Mcquade  
Workshop – M, S – 1.2, 1.3, 2.2, 3.2, 3.3  
This workshop explores how a secondary school in western Sydney used educational research as an impetus to change its mathematical education culture over a three year period. Key changes include increased professional conversations, adoption of a numeracy lesson structure, regular use of manipulatives and open ended tasks and a structured intervention program for mathematically vulnerable students. Critical to the success of these changes have been partnerships with a university academic and system leadership team as well as school leadership participation in professional learning. The workshop activities will provide participants with an outline of the research and associated initiatives that have been pivotal to bringing about changes in four areas; Leadership, Pedagogy, Structures for teaching and learning and Mathematical environments.

SESSION 1  
Wed 11.30–1.00  
G29 Law School

[12] Can professional learning improve teachers’ confidence, attitudes and beliefs about algebra?  
Lorraine Day, Derek Hurrell  
Workshop – E, M, S – 1.2, 1.3, 2.2, 3.2, 3.3  
This interactive, hands-on workshop will demonstrate how it is possible to repackage a topic that is quite daunting for many teachers in such a way that it is accessible for all teachers. Participants will see what the algebra sub-strand along with the mathematical proficiencies in the Australian Curriculum: Mathematics should ‘look like’in real classrooms. The research into the change in confidence, beliefs and attitudes about algebra will be woven into the workshop.
intermediate mathematics at school? How do universities cater
in university mathematics subjects if they have only studied
grounds than previous generations. How do students perform
Queensland, based on whether students studied intermediate
in university mathematics subjects at The University of
for these students? This paper investigates student performance
mathematics–based degrees with weaker mathematical back
the mid-1990s. As such, universities are accepting students into

I want to go to uni: should I study one
maths subject or two in Years 11 and 12?
Michael Jennings

The proportion of students studying advanced mathematics
in Years 11 and 12 in Australian schools has been declining since
the mid-1990s. As such, universities are accepting students into
mathematics–based degrees with weaker mathematical back-
grounds than previous generations. How do students perform
in university mathematics subjects if they have only studied
intermediate mathematics at school? How do universities cater
for these students? This paper investigates student performance
in university mathematics subjects at The University of
Queensland, based on whether students studied intermediate
mathematics only or both intermediate and advanced
mathematics at school.

For beginners in mathematics, does
language limit learning?
Douglas Hainline

Learning is mediated through language, spoken and written.
Although the language of higher mathematics strives for
precision, the language in which mathematics is taught and
learned may be far from ideal as a vehicle for comprehension
by beginners. This seminar, after a brief survey of previous
research in the area of language and mathematics pedagogy,
will examine some examples where current language arguably
hinders the learning of mathematics. Most examples will be of
problems in English, but other languages – both Indo-European
and others – will be mentioned. Finally, we will entertain proposals
for ways in which the current problems might be addressed.

Building a community of practice: primary
and secondary teachers collaborate in profes-

ional learning groups
Judy Anderson

Teachers from a cluster of primary and secondary schools met
during 2012 to share understandings and develop new approaches
to improve the mathematics achievement, motivation and
engagement of middle years’ students. To facilitate sharing
of the diversity of knowledge and experiences, participants
representing the range of participating schools were allocated
to professional learning groups. We observed significant mutual
benefits within groups and data collected from the teachers
confirmed the efficacy of the approach. Groups were observed
discussing mathematical ideas, sharing practices, and debating
approaches. They did not always agree on the best way forward
but they developed a new appreciation for the others’ context
and the limitations placed on teachers. Providing time and
opportunity for teachers from across the primary/secondary
divide to learn together was invaluable.
The papers presented in the symposium will build on the new Dimensions Learning Framework for Australia and the Australian Curricula in both prior-to-school and school settings: transition to primary school, including prior-to-school and the mathematics learning and teaching at the time of children’s transition to school.

This relationship is built around the researchers’ interests and research concerning young children’s powerful mathematics at the time of transition to school. In this symposium, we consider a variety of ways that we have used to ‘notice’ and ‘explore’ children’s mathematical learning and the ramifications of these for future research and practice. This work is particularly timely in Australia because of the recent introduction of the first national curriculum and curricular resources for state implementation of the Australian Curriculum. The aim of the symposium is to present perspectives from key stakeholders for scaling up research.

[18] Symposium: from small project to large-scale implementation: bridging research and practice

Katie Makar, Sue Allmond, Christine Debnitz, Shelley Dole, Rhonda Horne, Karen Huntby, Roberta Hunter

Bridging research and practice is often at the core of collaborative research with schools. Longitudinal research designed to study teachers’ learning to teach mathematical inquiry grew from a small pilot into a large nationally funded project that has provided curricular resources for state implementation of the Australian Curriculum. The aim of the symposium is to present perspectives from key stakeholders for scaling up research.

[19] Symposium: methodologies for noticing young children’s powerful mathematics at the time of transition to school

Bob Perry, Jill Cheeseman, Barbara Clarke, Sue Dockett, Wendy Goff, Amy MacDonald

This symposium is the initial outcome of a new collaborative relationship among early childhood mathematics researchers from Charles Sturt and Monash universities. This relationship is built around the researchers’ interests and research concerning mathematics learning and teaching at the time of children’s transition to primary school, including prior-to-school and the first years of school. In this symposium, we consider a variety of ways that we have used to ‘notice’ and ‘explore’ children’s mathematical learning and the ramifications of these for future research and practice. This work is particularly timely in Australia because of the recent introduction of the first national curriculum documents in both prior-to-school and school settings: The Early Years Learning Framework for Australia and the Australian Curriculum - Mathematics.

The papers presented in the symposium will build on the new sociology of childhood by considering the strengths and agency of young children in accessing powerful mathematical thinking and then will consider complementary accounts of these strengths through the observations and analyses of mathematics education researchers, prior-to-school and school educators and young children themselves. Methodological approaches to gaining access to these accounts will be considered in the four papers to be presented.

The proposed symposium program is as follows.

Paper 1: Noticing young children's mathematical strengths and agency (Sue Dockett, Wendy Goff).

Paper 2: Researchers noticing young children’s mathematics (Barbara Clarke).

Paper 3: Visual stimuli that prompt young children to notice their mathematical thinking: Two researchers’ experiences (Amy MacDonald, Jill Cheeseman).

Paper 4: Preschool and school educators noticing young children’s mathematics (Bob Perry).

[20] ipads: improving numeracy learning in the early years

Peta Spencer

The concept of mobile technologies is now an emergent theme in educational research, yet the playing of these edutainment applications and their impact on early childhood learning needs to be fully explored. This study highlights current research and explores how iPads improve student learning. It also examines how the introduction of iPads, affects children’s motivation and self-efficacy towards numeracy learning. These findings contribute to the positive use of iPads to foster children’s development in numeracy.

[21] Translating between and within representations: mathematics as lived experiences and interactions

Philemon Chigez

Students develop understanding of mathematics when they translate between and within different mathematical representations. This paper explores a student-generated story and content descriptors from the Australian Curriculum: Mathematics to highlight how primary school students can represent mathematical concepts through exploring the links between everyday physical objects, pictures, oral/written language, models and mathematical symbols. This active experience enhances the students’ capacity to represent mathematical concepts and ideas, symbolise these, and eventually learn to abstract and generalise.

[22] The effect of ‘New Generation Learning Spaces’ on technology, pedagogy and student engagement and learning outcomes in middle school mathematics

Terry Byers, Paul Diete

Seminar – P, M, S – 1.1, 1.3, 3.1, 3.2, 3.3, 3.4

Significant investment and change is taking place in schools at present, with the shift to a more personalised approach to teaching and learning facilitated by integration of digital technology through 1-to-1 programs. However, consensus within the literature is that technology alone cannot be the sole impetus of change and is the reason why many 1-to-1 programs have fallen well short of their intended goals. Only when all of the elements of technology, pedagogy and the learning space are intertwined, is it then possible to achieve the significant and scalable improvements to teacher practice and student learning outcomes. This presentation will report on the results from a longitudinal University of Melbourne PhD research project, which has applied a quasi-experimental design to examine the effect of the synergy between technology, pedagogy and space on teachers’ practice and student engagement and learning outcomes in middle school mathematics.
SESSION 2
Wed 2.45–3.30
GM16 Law School
[23] CAS: ten years on.
Sue Garner, Robyn Pierce
Seminar – S – 1.2, 1.3, 3.1, 3.4
2002 was the year that Year 12 students in Victoria (3 pilot schools) first sat Mathematical Methods external examinations for which using a Computer Algebra System (CAS) was permitted. Ten years on all students studying Mathematical Methods are assessed with technology–free and technology active examinations. This session will present a case study from one school reflecting on their decade of experience.

Questions considered are:
1. What gains have we made in using CAS in senior classes in Victoria?
2. How has the use of CAS changed teaching and learning in mathematics classes?
3. How has CAS changed the sorts of questions we ask in class and in assessments?
4. Where to from here?

SESSION 2
Wed 2.00–2.45
GM17 Law School
[24] Team teaching in senior secondary mathematics
Jason Loke, Amanda Watkin
Seminar – S, G – 1.1, 1.3, 2.2, 3.1, 3.2, 3.3
Innovative practices are needed to ensure engagement and success in mathematics. Two senior maths classes, at Stage 1 and 2, provided an opportunity to change pedagogical approaches to focus on increasing the engagement and resilience of senior secondary students. It was hypothesised engagement would increase through the implementation of team teaching. Analysis of feedback from pre/post surveys (using domains 2, 3, and 4 of the Teaching for Effective Learning framework), focus group discussions, attendance data, and anecdotal comments suggest students’ enjoyment and engagement in mathematics increased as a result of team teaching.

SESSION 2
Wed 2.45–3.30
GM17 Law School
[25] Culturally responsive mathematics pedagogies: Focussing on classroom respect
Robin Averill
Seminar – M, S – 1.1, 1.2, 1.3, 2.1, 3.1
Feeling respected is important to students. Classroom respect, crucial for creating effective teacher–student relationships and culturally responsive teaching, is essential for maximising students’ achievement and their future mathematics related options. This interactive seminar will use mathematical tasks and discussion to consider implications of findings from a study conducted with Year 12 and 13 mathematics students and teachers that explored teachers’ ways of demonstrating respect for their students as people and as mathematics learners. Students’ and teachers’ views and short lesson vignettes will be considered to discuss dispositional, pedagogical, and professional behaviours and teaching strategies that convey teacher respect.

SESSION 2
Wed 2.00–3.30
221 Law School
Kim Beswick, Linda Farrington, Rosemary Callingham, Tracey Muir, Katara Jade
Workshop – M, S – 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.4
Students’ attitudes to mathematics tend to decline over the years of schooling. In fact, certain aspects of schooling appear designed to kill off interest in the subject. Participants in this workshop will hear from teachers and researchers involved in the implementation of an entirely project–based learning approach to mathematics adopted in a Year 9–12 school in which none of the teachers were mathematics specialists. Discussion will be encouraged about the implications of the approach for teachers and its impact on students. Questions raised by the approach about what teachers actually need to know in order to teach mathematics effectively, the nature of mathematics learning, and implications for curriculum and assessment will be provided as stimulus material.

SESSION 2
Wed 2.00–3.30
G29 Law School
[27] Being mathematicians: teaching and learning through problem solving and reasoning
Rhys Coulson, Mike Askew, Robert Smart
Workshop – P – 1.3, 3.2, 3.3
This workshop will explore a collaboration between two primary schools and a university researcher that is looking into how we might encourage students to think of themselves as mathematicians. This is being done through tasks that takes problem solving as the entry point into the number aspects of the primary curriculum and pedagogies that explicitly attend to student reasoning. We will present the ideas and research behind this approach to teaching, share some of the experiences of teachers developing this in their classrooms and consider the issues for curriculum and staff development.

SESSION 2
Wed 2.00–3.30
Woodward 1 Law School
[28] Teaching conceptual place value
David Ellemor–Collins
Workshop – P – 1.2, 1.3, 3.3, 3.4
A key goal of our primary curriculum is skilful mental computation with 2– and 3–digit numbers. Conventional instruction in place value is designed to prepare students for formal written computation, but fails to support many students in developing mental computation. By contrast, a distinctive instructional topic called conceptual place value (CPV) is designed to support mental computation. Essentially, CPV involves flexibly incrementing and decrementing by 1s, 10s, and 100s. The workshop draws on extensive research and curriculum development. We will practise specific teaching procedures for CPV, and analyse video footage for insights into the ways students learn CPV.
SESSION 2
Wed 2.00–2.45  Woodward 2 Law School

[29] Insights into early career teachers’ developing mathematics pedagogic content knowledge and classroom practice in remote Indigenous community schools
Lorraine Jacob
Seminar – P – 1.1, 1.2, 1.3, 3.3
The Fitzroy Valley Numeracy Project (FVNP) aims to improve numeracy outcomes for Indigenous students by developing a systematic, coordinated approach to teaching mathematics that can be sustained beyond staff turnovers, transfer of ‘expert’ teachers, or one off funding arrangements. Teacher interviews and classroom observations, in particular with three early career teachers who remained in the schools for the three years of a research project, indicate important learning about the mathematics, how children learn that mathematics and the pedagogy occurred. However some content pedagogic knowledge, classroom practices and beliefs were more difficult to change. Implications for systems and teacher education are discussed.

SESSION 2
Wed 2.45–3.30  Woodward 2 Law School

[30] Investigating the use of everyday words in English and Kimberley Kriol in the mathematics classroom
Kaye Treacy, Donita Button
Seminar – E – 1.1, 1.2, 1.3, 2.3, 3.2, 3.4
Forty-seven Aboriginal students (K–Yr3) in the Kimberley were interviewed in English and Kimberley Kriol to investigate their understanding of the ‘everyday’ words used within the mathematics classroom. The results showed that some of the kindergarten and pre-primary students had difficulty with both the Kriol and English words, indicating that they need to learn the concepts associated with the words. For example, many students had difficulty with the English and Kriol version of the word ‘after’. The research also showed that many of the year three students understood most of the Kriol words, but still need to learn some of the commonly used English words and phrases.

SESSION 3
Thurs 11.00–12.30  106 Law School

[31] A ‘way of thinking’ about quadratic functions
Anthony Harradine
Major Presentation – S – 1.1, 1.2, 1.3, 2.2, 3.2, 3.3
Quadratics functions form a significant part of the secondary school curriculum. If students are to engage with this topic successfully, they need a ‘way of thinking’ about quadratics that will drive their success. This presentation will share how to develop one way of thinking that seems to drive success.

SESSION 3
Thurs 11.00–11.45  106 Law School

[32] A time to reflect before we launch forward
Kathryn Palmer
Keynote
In 2011 I attended my 30 year high school reunion. What a brilliant time to reflect on where I started...as a student...a small 3 teacher rural school...college...to my first position and onto many teaching posts to my present role of numeracy coaching. I will focus on how numeracy coaching has worked in Victoria Ed.

SESSION 3
Thurs 11.45–12.30  106 Law School

[33] A ‘way of thinking’ about quadratic functions
Anthony Harradine
Major Presentation – S – 1.1, 1.2, 1.3, 2.2, 3.2, 3.3
Quadratics functions form a significant part of the secondary school curriculum. If students are to engage with this topic successfully, they need a ‘way of thinking’ about quadratics that will drive their success. This presentation will share how to develop one way of thinking that seems to drive success.

SESSION 3
Thurs 11.00–11.45  106 Law School

[34] Negotiating developmental assumptions in early years mathematics curricula: lessons from the language of space.
Cris Edmonds-Watthen
Seminar – E, P – 1.1, 1.2, 1.3, 2.3, 3.1
Students who begin school with different everyday language to that used in the curriculum and in the school do not have the advantage of their early mathematics lessons building on the language and concepts which they use at home. This seminar explains some of the discord between the sequencing of location in Early Years mathematics curricula and the understandings of Indigenous language speaking students using a typology of spatial frames of reference from cognitive linguistics. It shows how developmental progressions in early mathematics can contain culturally and linguistically specific assumptions which may be implicit in curricula and teaching practices.

SESSION 3
Thurs 11.45–12.30  106 Law School

[35] Launching futures: building a stronger foundation
Tabitha Jos, Grant Baker, Mike Sawbridge
Seminar – P – 1.1, 1.2, 1.3, 2.2, 2.3, 3.1, 3.2, 3.3
As an ‘Affiliate School of Excellence’ for the Queensland University of Technology’s Yumi Deadly Maths Centre (YDC), we would like to share the successes we are having in our Early Years. We have been implementing and engaging with the YDC Reality – Abstraction – Mathematics – Reflection (RAMR) framework for the past 3 years and ongoing data analysis show steady gains across P–7. Our session will focus around the development of a schoolwide professional learning culture that meets the needs of our staff and students.
Young students should be given the opportunity to manipulate strategies can be driven by stories which focus on mathematics. A range of strategies to assist this development and many of these to acquire from the start of the mathematics journey. There are prepared for schools. A series of original problems relevant to Mathematics of Planet Earth appears on the website, http://mathsofplanetearth.org.au/ The ability to think flexibly in mathematics is an important skill numeracy of literacy? Is it the literacy of numeracy or the Mathematical opportunities are an important aspect of everyday life. It has also shown to be an important tool for success in mathematics spatial visualisation. Experiences with geometrical figures and solids in the primary years may assist in developing this skill for use in second-year mathematics. As teachers, we are constantly looking for ways in which we can provide students with mathematical opportunities to engage in purposeful and authentic learning experiences. On a daily basis we need to select teaching content and approaches that will motivate and challenge our students. This requires a level of knowledge that extends beyond content, to pedagogy and learning styles. In this seminar, we will provide some examples of mathematical opportunities and how teachers can capitalise on these opportunities in their own classroom to engage and challenge students. Is it the literacy of numeracy or the numeracy of literacy? The ability to think flexibly in mathematics is an important skill to acquire from the start of the mathematics journey. There are a range of strategies to assist this development and many of these strategies can be driven by stories which focus on mathematics. Young students should be given the opportunity to manipulate materials, draw the mathematics and communicate their knowledge. There are many graphic organisers which assist and organise their thinking. These mathematics ideas are linked to problem solving, reasoning, number, word problems and early algebraic thinking.

[36] Mathematics of Planet Earth
Michael Evans, Simi Henderson
Seminar – M, S
2013 is the International Year of Mathematics of Planet Earth. The Australian Mathematical Sciences Institute is teaming up with societies and organisations in Australia to spread the word about the role of mathematics and statistics in understanding the challenges of our world in a fun and accessible way. In this session we will discuss the events of the year and in particular the materials which have been prepared for schools. A series of original problems relevant to Mathematics of Planet Earth appears on the website, http://mathsofplanetearth.org.au/

[37] The Shoemaker’s Knife
Hussein Tahir
Seminar – M, S – 1.1, 1.2, 1.3, 3.3
The Shoemaker’s Knife (Arbelos) is the region enclosed by three semicircles on the same diameter. This geometric characteristic has amazing properties, some of which were first pointed out by Archimedes. Over the years, more mathematicians have investigated the Arbelos and added to it many interesting features. Do yourself a favour – find out about the mysterious properties of the Shoemaker’s Knife and take it into the classroom and fascinate your students!

[38] Mathematical opportunities
Tracey Muir, Sharyn Livy
Seminar – P – 1.1, 1.2, 1.3, 3.1, 3.2
As teachers, we are constantly looking for ways in which we can provide students with mathematical opportunities to engage in purposeful and authentic learning experiences. On a daily basis we need to select teaching content and approaches that will motivate and challenge our students. This requires a level of knowledge that extends beyond content, to pedagogy and learning styles. In this seminar, we will provide some examples of mathematical opportunities and how teachers can capitalise on these opportunities in their own classroom to engage and challenge students.

[39] Is it the literacy of numeracy or the numeracy of literacy?
Richard Korbosky
Seminar – E – 1.1, 1.2, 1.3, 2.2, 3.1, 3.2,
The ability to think flexibly in mathematics is an important skill to acquire from the start of the mathematics journey. There are a range of strategies to assist this development and many of these strategies can be driven by stories which focus on mathematics. Young students should be given the opportunity to manipulate materials, draw the mathematics and communicate their
### SESSION 3  
**Thurs 11.00–12.30**  
**521 School of Education**

| [43] | Expanding the roles of geometry in middle school mathematics: an integrated approach using manipulatives, Mathomat and the Geometer’s Sketchpad  
John Lawton, Michael O’Connor  
Workshop – MS – 1.2, 1.3  
This workshop demonstrates some ways of teaching middle school mathematics through geometry. Our approach deepens student understanding by replacing rote text book activities with more interesting, open ended, lessons. A new lesson series from OLM by Michael O’Connor and Henri Picciotto will be introduced here and participants will gain hands on experience with widely available geometry based materials, including, Mathomat, The Geometer’s Sketchpad software and pattern blocks. These are used in an integrated way so that middle school students are encouraged to think visually and to expand their mathematical vocabulary while discussing and reflecting on subtle and important ideas. |

### SESSION 3  
**Thurs 11.00–12.30**  
**217 School of Education**

| [46] | Modelling mathematics: rich learning tasks  
Peter Fox  
Workshop – S – 1.2, 1.3, 3.1  
In Year 10 students solve problems of linear equations, solve simultaneous equations using algebraic and graphical techniques including using digital technologies and explore relationships such as quadratics. This workshop includes content relevant to these standards as well as a range of proficiency strands. Images such as the Calatrava bridge in Jerusalem provide a wonderful back drop to this task. There are numerous explorations that stem from this task into the senior mathematics curriculum helping define this as a Rich Learning Task! |

### SESSION 3  
**Thurs 11.00–12.30**  
**545 School of Education**

| [44] | Word problems, mathematical literacy and the Australian Curriculum proficiencies: one school’s approach  
Samantha Horrocks  
Workshop – M, S – 1.3, 2.1, 3.3  
The Australian Curriculum proficiencies include problem solving and reasoning and this is something our students find difficult. Worded problems were causing issues for all my classes from Year 7 to 12 and in the responses students gave, explanations were either nonexistent or very simplistic. This workshop will introduce a selection of strategies we have trialled at Werribee Secondary College to improve students’ ability to tackle worded questions and then explain their thinking clearly and concisely using mathematical language. The main strategy used is an adaptation of the work of Bortolot, Reilly and Parsons on reciprocal teaching in mathematics. |

### SESSION 3  
**Thurs 11.00–12.30**  
**Woodward 1 Law School**

| [45] | Do it, see it, record it, analyse it  
John Bament  
Workshop – M, S – 1.2, 1.3, 3.1, 3.3  
We will collect actual data using motion sensors and images of various practical situations that you will undertake. Then experience the ease in which this information can be downloaded on to an electronic devise. This rich and relevant data will allow for in depth discussion and statistical analysis to occur. |

### SESSION 3  
**Thurs 11.00–12.30**  
**218 School of Education**

| [48] | Prime explorations with Mathematica  
David Leigh – Lancaster  
Workshop – M, S, G – 1.2, 2.2, 3.2, 3.3  
In this workshop we will use Mathematica to investigate prime numbers in relation to the Year 6 – 12 curriculum. The technology will be used to generate examples and explore related aspects of their mathematical behaviour, including some applications from the Wolfram Research Demonstrations Project. |

### SESSION 4  
**Thur 1.30–3.00**  
**GM15 Law School**

| [49] | Numeracy, mathematics and Indigenous learners: what we have learned about developing responsive mathematics pedagogy  
Caty Morris, Andrew Peters, Peter Sullivan, Kate Naughtin  
Major Presentation – P, M, S  
Indigenous students’ mathematics outcomes in Australian schools continue to remain substantially behind those of their |
non–Indigenous counterparts. Developing responsive mathematics pedagogy that will improve these outcomes has been the goal of the national project Make It Count of the Australian Association of Mathematics Teachers. This project developed an evidence base of practices in the teaching of mathematics in a variety of clusters of schools in regional and urban communities across Australia. Through an analysis of insights, successes and failures, a number of Cluster Findings were developed and aligned with AITSL’s Professional Standards for Teaching. Three case studies, drawn from the project, illustrate these cluster findings and responsive mathematics pedagogy in action with particular reference to the Healesville Cluster in Victoria.

**SESSION 4**
**Thur 1.30–2.15** 106 Law School

**[50] Livescribe Pen for teaching and learning**
Coral Connor

Seminar – P, M, S – 1.1, 1.2, 1.3, 3.1, 3.2, 3.3, 3.4
Teach from the comfort of your lounge whilst students access the content at their convenience or teach and simultaneously record for revision or those absent. New content, examination solutions, a specific problem: see how easy it all is for everyone to be happy. The resulting file can be emailed or uploaded to the intranet in only a few clicks.

**SESSION 4**
**Thur 2.15–3.00** 106 Law School

**[51] Using online resources in the mathematics classroom**
Jim Green

Seminar – S – 1.1, 1.2, 1.3, 3.1, 3.3
In today’s mathematics classroom the greatest challenge is to engage students, keep them motivated and show them that they can learn mathematics. Their confidence, interest and motivation can be increased via the use of technology in the mathematics classroom. This workshop is about my journey with technology in teaching mathematics since 1985.

**SESSION 4**
**Thur 1.30–2.15** 108 Law School

**[52] A distinctive launching pad: taking off with the Australian Curriculum and ABS resources**
Vivienne McQuade

Seminar – P, M – 1.2, 1.3, 3.2
How can statistics launch the future of your students? In today’s information-rich society, being statistically literate will give your students an edge. It will make them more attractive to future employers and put them ahead of your competitors in the workplace. Broadening their statistical knowledge will enable them to engage in discussions and decision-making processes with authority, accuracy and integrity. Statistics and probability is one of three strands in the Australian Curriculum Mathematics. Statistical literacy is one element of the seven general capabilities. This element involves students gaining familiarity with the way statistical information is represented through solving problems in authentic contexts that involve collecting, recording, displaying, comparing and evaluating the effectiveness of data displays of various types. Aboriginal and Torres Strait Islander histories and cultures, Asia and Australia’s engagement with Asia and Sustainability are the local, regional and global issues identified as the Cross Curriculum Priorities in the Australian Curriculum. While it may be these issues rather than the statistics that grab people’s attention, it should be recognised that often it is the statistics that inform the issues. Statistical literacy, then, is the ability to accurately understand, interpret and evaluate the data that inform these issues.

**SESSION 4**
**Thur 2.15–3.00** 108 Law School

**[53] Maths in the stock market**
Andrew Armstrong

Seminar – M, S – 1.2, 1.3, 2.3, 3.2, 3.3
The session will look at how the Stockmarket Game and Yahoo Finance can be used as a jumping off point to look at Statistics and Probability while providing an excellent platform for a large scale project. The session will look at assessment ideas as well as opportunities for cross curricular involvement.

**SESSION 4**
**Thur 1.30–2.15** 109 Law School

**[54] Raising the profile of mathematics in your school**
Sandra Rowden, Sean Ebert, Peter Chandler

Seminar – P, M, S – 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3
Maintaining and raising the profile of mathematics is a challenge shared by all schools. At Penrhos College we have tackled this issue using a range of programs and activities including Maths Mentor Program, Maths Week, Homework Club, Maths Games Night, two newly created numeracy support positions, staff producing resources such as vodcasts and study guides, technology integration and MathsNight@Penrhos, and an end of year celebration of the achievements of the top Mathematics students in the school. Our aim is to inspire the students to enjoy and value the learning of mathematics and we are seeing the benefits of this fantastic program.

**SESSION 4**
**Thur 2.15–3.00** 109 Law School

**[55] Learning mathematical skills with understanding: the multiplication tables**
Steve Flavel

Seminar – P, M – 1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 3.4
There is a strong connection between enjoyable tasks that are personally challenging and meaningful to the learner and long term memory. This workshop will examine computer based lessons that engage students in incrementally challenging tasks in a supportive and inquiring environment. These activities allow students to make predictions and develop strategies in a game environment.
[56] Empowering teachers in new ways
Alexander [Alec] Young
Workshop – E, P, M, S – 1.1, 1.3, 3.1, 3.4
Collaborating in seeing how teachers can: 1. Improve their ‘assessment for learning’ through the innovative use of their school photocopier as a high speed scanner obtaining exceptionally powerful insights into their assessment of written responses and multiple choice assessment. 2. Measure ‘the effect size’ of their teaching through the use of pre-test/post-test scenarios. 3. Reduce their workload and at least double their students’ rate of learning compared with the national average. 4. Identify gaps in student learning at any point in time not observable under conventional assessment. 5. Quantify question quality through the automatic application of classical test theory.

SESSION 4
Thur 1.30–3.00
609 Law School

[57] Algebra as story-telling
Michael Clapper
Workshop – M – 1.1, 1.2, 1.3, 2.2, 3.1, 3.2, 3.3, 3.4
This presentation describes a framework for the introduction and development of algebraic thinking which develops in students the understanding that algebra is about ‘things that happen to numbers’ in a narrative context. Whilst it draws on some well understood pre-algebraic pedagogies such as machine games and back-tracking, it develops these into a fuller picture of algebraic processes using the technique of ‘unambiguous labelling’ which relates every algebraic expression (or equation) to the story which it tells about numbers. Many examples will be given of practical activities which will allow students to use their emerging algebraic skills in exploring patterns and develop algebraic thinking.

SESSION 4
Thur 1.30–3.00
421 School of Education

[58] It’s not just the clock: teaching time concepts in the early years
Chris Debnitz, Rhonda Horne
Workshop – E – 1.2, 1.3, 2.2, 3.1, 3.2, 3.3
In this session, we will explore how the Australian Curriculum provides insights into the concepts of time and how children develop these understandings. From Foundation on, the concepts of duration, sequence, point in time and rhythm are identified. It is proposed that, as informed practitioners, teachers from P-Y4 will be able to question students in a variety of learning contexts to maximise mathematical understanding.

Recent studies have highlighted the power of marring the rich possibilities of active learning with focused mathematical reflection to heighten mathematical learning.

While many early years’ experiences engage students in mathematical activity, it is how teachers identify these moments wand the discourse they promote that will make the difference to student learning. To do this, teachers require a number of tools including mathematical and developmental knowledge.

SESSION 4
Thur 1.30–3.00
421 School of Education

[59] Authentic inquiry maths: how it plays out in the primary classroom
Bruce Ferrington
Workshop – P – 1.3, 2.2, 3.2, 3.3
The inquiry process is central to engaging students in their own learning. Mathematics offers a multitude of opportunities for students to explore and make sense of the world around them. Starting with a theoretical exploration of the inquiry process, this workshop will have a practical emphasis and provide a range of ideas and activities that can be used in the primary classroom.

SESSION 4
Thur 1.30–3.00
521 School of Education

[60] A treasure chest of investigations for the mathematics classroom
Robin Nagy
Workshop – S – 1.1, 1.2, 1.3, 2.2, 3.1, 3.2, 3.3
It is often difficult to find stimulating enrichment activities and investigations for the mathematics classroom, without spending large amounts of time on planning and preparation. This presentation, accompanying booklet and associated resources presents a variety of engaging projects, conundrums and investigations for Years 7 to 12, which can be used with a minimum of effort to provide a rich complementary learning experience for students of all abilities. A balance between book work and experiential learning is essential for developing students’ independent thinking and problem solving skills. You can expect these activities to engage and enthuse your students.

SESSION 4
Thur 1.30–3.00
545 School of Education

[61] The Mathematics Challenge for young Australians, a rewarding problem solving program
Anna Nakos, Howard Reeves
Workshop – M, S – 1.1, 1.2, 1.3, 3.3, 3.4
Initially my year 8s say they like mathematics, they are pretty good at it but end with the classic phrase “I can’t do problem solving”. So, I give them the Mathematics Challenge for Young Australians. At first they are wary, then become engaged, excited and empowered to become great problem solvers! We call the questions the Chocolate Challenges as there are small rewards along the way. I love to see students who thought they had no skills end with the classic phrase “I can’t do problem solving”.

SESSION 4
Thur 1.30–3.00
Woodward 2 Law School

[62] Launching geometric reasoning in years 7–10: part 1 of 2
Stuart Palmer, Nikky Vanderhout
Workshop – M, S – 1.2, 1.3, 2.2, 3.3, 3.4
The Australian Curriculum includes a variety of topics in the Measurement and Geometry content strand which focus on the...
development of geometric reasoning. Helping students make the transition from an informal treatment of shapes to a deep understanding of geometric concepts is a challenge for teachers. This workshop will provide teachers with practical activities they can use in their classrooms to foster the development of their students’ fluency, understanding and reasoning. A variety of strategies for assessing student achievement in geometric reasoning will also be presented. Participants will need a laptop with access to GeoGebra in order to engage fully in the workshop.

Computer and Internet access are required in this workshop.

### SESSION 4
**Thur 1.30–3.00**  218 School of Education

[64] **Design, construct and blog 3-D mathematical microworlds**
Andy Yeh

**Workshop – P, M, S, G – 1.2, 1.3, 2.2, 3.2, 3.3**

Geometry is a perfect entering point to connect the other strands, aspects and make meanings of mathematics. The current advancement of ICTs has made it possible for us to create from simple to sophisticated 3-dimensional virtual worlds easily on desktop or laptop computers over the Internet. In this session, the presenter will introduce an online learning environment empowered by a geometric programming language (LOGO) and an interactive 3-D graphics, on a Web 2.0 style website. This enables learners to design, construct and blog their created microworlds, while learning and applying their mathematical knowledge and understanding.

Computer and Internet access are required in this workshop. Participants are encouraged to bring their own laptop computers to this workshop.

### SESSION 5
**Thur 3.30–5.00**  GM15 Law School

[65] **Teaching inferential reasoning to children: the power of prediction!**
Katie Makar, Debra McPhee

**Major Presentation – E, P – 1.2, 1.3, 2.1, 3.1, 3.2, 3.3**

We make predictions everyday. The power of statistics as a tool to predict is the eventual aim of the probability and statistics curriculum, but children in the primary and early years rarely have an opportunity to connect predictions to learning about chance and data. This workshop will share some new classroom tested research on teaching statistics to children called informal statistical inference. Simple principles of inferential reasoning will be used as a basis of hands on activities for teaching young children to make predictions from data. Practical examples and resources from early years and primary classrooms will be provided.

### SESSION 5
**Thur 3.30–4.15**  106 Law School

[66] **Statistically similar – China’s and Australia’s new national curricula: key emphases in teaching statistics in the primary and middle school years**
Max Stephens, Richard Xu Keqiang

**Seminar – P, M, S, G – 1.2, 1.3, 2.2, 3.1, 3.2, 3.3**

Remarkable similarities exist between the treatment of Statistics in China’s (2012) *National Curriculum for Mathematics* and our own *Australian Curriculum Mathematics* (2010). Both documents place Statistics first in the title of the content strand. Both emphasise the importance of representing, interpreting and communicating statistical information; and the need to link statistics with real life contexts, including the use of secondary data. This presentation will explain some reasons for these close similarities, and will explore implications for teaching and learning key statistical ideas, such as sampling and variability.

### SESSION 5
**Thur 3.30–4.15**  108 Law School

[67] **Update F–10 mathematics: Australian curriculum**
Margaret Bigelow

**Seminar – P, M, S**

Margaret will be giving an update on the F–10 *Australian Mathematics Curriculum*. She will be looking at the work sample portfolios and how they can be used to enhance the teaching and learning in classrooms.

### SESSION 5
**Thur 4.15–5.00**  108 Law School

[68] **Thinking deeply of simple things: 45 years of the National Mathematics Summer School**
Leon Poladian, Leanne Rylands

**Seminar – S – 1.1, 1.2, 1.3, 3.1**

The ANU-AAMT National Mathematics Summer School is a two week residential program for the discovery and development of mathematically gifted and talented students. Each January, approximately 75 senior high school students from across Australia attend the summer school. The goals of the school include engaging such gifted and talented students with an appropriately challenging mathematical curriculum, providing them the opportunity to meet like-minded students and academics from around the country and raising students’ awareness of the study and career opportunities in mathematics. This paper will discuss the ways we try to achieve these goals and the results of our evaluation.

### SESSION 5
**Thur 4.15–5.00**  108 Law School

[69] **The joy of informatics**
Jan Honnens

**Seminar – M, S – 2.2, 3.1, 3.2**

Informatics is the mathematics related to computer programming and includes interesting and useful topics such as networks, logic and algorithms. In this session we will go through some of the past questions from the Australian Informatics Competition and appreciate the relevance and elegance of this kind of modern mathematics. It will be beneficial to attempt the 30 sample questions at www.amt.edu.au/aicsample.html before the session.
SESSION 5
Thur 3.30–4.15  109 Law School

[70] On developing problem solving strategies
Hussein Tahir
Seminar – M, S – 1.1, 1.2, 1.3, 3.3

Conic sections can be used as tools in solving tangency problems related to circles. In this seminar, some historical problems will be considered and use newly developed algebraic and graphical methods to solve them. These methods are based on a new approach to the conics whose efficiency becomes evident when dealing with problems with multiple answers and construction problems with multiple answers and construction problems related to infinite chains of tangent circles.

SESSION 5
Thur 4.15–5.00  109 Law School

[71] Removing the classroom lock-step: Maths Pathway
Justin Matthys, Richard Wilson
Seminar – M, S – 1.3, 3.1, 3.2, 3.4

Maths Pathway is a new piece of blended learning instructional design – an online tool made by teachers for teachers. It reduces teacher work-load by removing lock-step teaching and streamlining planning, assessment and reporting. Academic content is explicitly crafted around local curriculum. In addition to elements of ‘gamification’ and motivation theory, student choice is balanced against accountability. Teacher direction combines with student–set goals to form a calendar of learning tasks, to which students are held accountable. Maths Pathway not only captures and displays data, but also performs analysis to guide the teacher as a coach of students’ personal learning.

SESSION 5
Thur 3.30–5.00  221 Law School

[72] Geometry in art and design: Escher, the MATHOMAT and the Australian Curriculum
Susie Groves
Workshop – M – 1.2, 3.2

This workshop will illustrate ways in which an analysis of geometry in art and design can be used to underpin a range of exciting lessons to address the Measurement and Geometry strand of the Australian Curriculum. Participants will be asked to undertake mini-investigations related to regular and homogeneous tessellations, using the MATHOMAT as a tool to aid their investigations. A particular focus will be the work of M. C. Escher.

SESSION 5
Thur 3.30–5.00  609 Law School

[73] Developing children’s mathematical reasoning and problem solving
Brian Doig
Workshop – E, P, M – 1.3, 3.2

This workshop is for teachers interested in primary and middle school mathematics education and those particularly interested in developing children’s mathematical reasoning and problem solving. Examples of children’s reasoning will be described and sample tasks presented and solved by participants. Discussion will centre on the strategic thinking shown by different solution approaches of the participants, and how these reveal the reasoning of the solver. Further, sample tasks and their use with classes of Victorian primary children will be presented for discussion and possible replication by participants.

SESSION 5
Thur 3.30–5.00  521 School of Education

[74] Encouraging disengaged mathematics learners: the EMPower metric program at AllSaints’ College Perth
John Lawton, Kellie Knoblauch, Richard Korbosky
Workshop – M, S – 1.2, 1.3, 3.1, 3.2, 3.4

The EMPower metric program focuses on building understanding through contextualised lessons that engage all students in a classroom. This important new series from OLM gives teachers of non-traditional mathematics programs a well written, flexible and comprehensive resource. Performance understanding is required as students work collaboratively on numeracy foundation concepts in a real world setting. Kellie Knoblauch has begun using EMPower metric in her teaching program at All Saints’ College in Perth and will discuss the outcomes from it during this session. Richard Korbosky will present to a hands on experience with an actual EMPower lesson during the session.

SESSION 5
Thur 3.30–5.00  545 School of Education

[75] Making sense of mathematical problems in Yr 7–10
Janelle O’Neill
Workshop – S – 1.3, 3.1, 3.3

Do your students need to develop thinking, reasoning and communicating skills? Do you wish your students could make links, translate information and make generalisations? Are you grumbling about the retention of maths content from one day to the next? You are not alone! There is not a magic wand at the conference but there are teaching strategies and focus points that can be used to assist your students on a daily basis. This workshop will allow you to reflect on your own teaching practice while inspiring you through the presentation of the Language of Mathematics, Forseeable Stumbling Blocks and Step-to-Success. The activities will be superimposed on the backdrop of the Australian Curriculum.

SESSION 5
Thur 3.30–5.00  609 Law School

[76] Learning to understand algebra through hands-on activities and spreadsheets
Ian Lowe
Workshop – M, S – 1.1, 1.2, 1.3, 3.2, 3.3

Ian will engage teachers in a series of activities to generate algebraic understanding – linear and quadratic – using a mixture of hands–on equipment (two-sided cardboard strips and squares) and spreadsheets. This will focus on the use of functions to understand relationships, graphs, factorising and expanding and equations.
SESSION 5
Thur 3.30–5.00  Woodward 1 Law School

[77] Launching geometric reasoning in years 7–10: Part 2 of 2
Nikky Vanderhout, Stuart Palmer
Seminar – M, S – 1.2, 1.3, 2.2, 3.3, 3.4
The Australian Curriculum includes a variety of topics in the Measurement and Geometry content strand which focus on the development of geometric reasoning. Helping students make the transition from recognising the properties of shapes to writing formal proofs is a challenge for teachers. This workshop will provide teachers with practical activities that they can use in their classrooms to foster the development of their students’ fluency in geometric reasoning. Strategies for writing formal proofs and investigative activities exploring circle geometry will be included. A variety of strategies for assessing student achievement in geometric reasoning will also be presented. Participants will need a laptop with access to GeoGebra in order to engage fully in the workshop.

SESSION 5
Thur 3.30–4.15  Woodward 2 Law School

[78] Demonstration of the new Maritime Engineering Maths in Schools microsite for teachers and students
Roberto Ojeda
Seminar – Trade – 1.2, 3.3
With a major reduction in the number of students studying pre-tertiary mathematics, we attempt to motivate and inspire students to continue with their mathematics studies. A new interactive website and package has been developed for both students and teachers, which includes real world applications of integral calculus, differential equations, trigonometry and data analysis, all linked to the current mathematics curriculum for Australian years 9 to 12. Our presentation will include how to use the new Maths in Schools microsite to enhance your student’s learning in your classroom.

SESSION 5
Thur 3.30–5.00  218 School of Education

[80] Solving the sock problem: statistics in the Top Drawer
Jane Watson
Workshop – M, S –1.1, 1.2, 1.3, 2.2, 3.2, 3.3, 3.4
AAMT has produced five electronic professional learning ‘drawers’. Each drawer holds expert advice, teaching suggestions and classroom activities. In this workshop, the Statistics drawer will be opened to show you some of the exciting resources that can be found in it. How do the five big ideas of statistics inter-connect? How can misunderstandings affect the proper use of statistics and the decision-making process? And how can you prevent or correct those misunderstandings? What are the best teaching approaches? Help your students become informed citizens. The Top Drawer Teachers project has been created by the Australian Association of Mathematics Teachers with Education Services Australia for DEEWR.

SESSION 6
Fri 11.30–1.00  Woodward 1&2 Law School

[83] Family maths: making it count for Indigenous students and parents
Geoff Gillman, Ali Brady, Laura Gilbody, Patty Raymond
Major Presentation – E, P – 1.3, 3.3
In 2002, Humpty Doo Primary School was invited to become a ‘Resource School’ for the Australian Association of Mathematics Teachers (AAMT) Make It Count numeracy improvement plan to enhance educational outcomes for Indigenous students. Part of this plan was to provide professional learning to staff in developing culturally-responsive pedagogy and increasing parent engagement in school programs. This workshop will describe strategies that the school has explored to improve engagement of students and parents in the teaching and learning of mathematics.
## SESSION 6
**Fri 11.30–12.15**  
106 Law School

### [84] Teaching mathematics in a 360° virtual and physical learning space in a 1-1 tablet school

Paul Diete  
**Seminar – P, M, S – 1.1, 1.3, 2.2, 3.1, 3.2, 3.3, 3.4**  
Anglican Church Grammar School is a 1–1 tablet school and identified very early that by giving a student 1–1 access does not automatically facilitate improved learning outcomes, nor does it necessarily have a positive effect on a teacher’s practice. This session will examine the combination of engaging and interactive learning resources housed in Microsoft OneNote, plus other applications including Vodcasting, DyKnow, Camstudio, Web 2.0 applications and Keepad technology. Much of this work is multi-modal and collaborative and operates within New Generation Learning Spaces, which use the affordance created by flexible furniture, writable walls and multiple plasma screen televisions to create a complete 360 degree learning space. Differentiation is fostered as we connect ‘like-ability’ students within a virtual and actual landscape and target their needs based on diagnostic testing. The 1–1 environment now allows teachers to immediately gather, assess and disseminate student work across the class so that all students (no matter their level of ability) will have examples of their peers’ and teachers’ responses to work. This integrated approach of hardware, software and pedagogy is now starting to create real and effective change to the teaching and learning processes and, most importantly, student learning outcomes.

### SESSION 6  
**Fri 12.15–1.00**  
106 Law School

### [85] Flipped learning

Coral Connor  
**Seminar – P, M, S – 1.1, 1.2, 1.3, 3.1, 3.2, 3.3, 3.4**  
Moodle, Captivate, Camtasia, Livescribe Pen, ShowMe, Khan Academy, all used alternatively to allow students to learn in the comfort of their own home with drill in the classroom whilst accessing the teacher for issues in comprehending. See how easy it all is and how much more the students learn.

### SESSION 6
**Fri 11.30–12.15**  
108 Law School

### [86] Primary mathematics education in USA, Japan and Singapore

Bruce Ferrington  
**Seminar – P – 1.3, 2.2, 3.3**  
In 2012, Bruce Ferrington was awarded a Churchill Fellowship to study mathematics education in the USA, Japan and Singapore. He undertook this study leave in early 2013 and visited 15 primary schools, talking with teachers and students about the way that maths is taught and learnt in these countries. This seminar will present the story of the Winston Churchill Memorial Trust Fellowship awards and one man’s journey of discovery.

### SESSION 6
**Fri 12.15 –1.00**  
108 Law School

### [139] PATMaths

Julia Inglis  
The ACER Progressive Achievement Tests Maths (PATMaths) are Australian normed tests designed to provide objective information to teachers about the level of achievement attained by their students in the skills and understandings of mathematics. The tests are available in both print and online format. This presentation will focus on ways that PAT Maths data can be used to identify specific areas of need in mathematics learning for individual students and whole classes. The presentation will also show delegates how, by using PAT Maths they can:
- provide meaningful achievement data for schools, districts and education departments for analysis and discussion;  
- help inform teaching practice;  
- evaluate effective teaching methods across achievement bands;  
- inform the targeted use of resources;  
- track progress across year levels.

### SESSION 6
**Fri 11.30–1.00**  
109 Law School

### [88] How posing challenging mathematics tasks changes the quality of student responses

Peter Sullivan, Amanda Aulert, Brendan Hislop, Alli Lehmann, Owen Shepherd, Alan Stubbs  
**Workshop – S**  
We have been working together on a project that is posing more challenging mathematics tasks to students. This session will present examples of the type of task we are using and will outline the pedagogies that are effective in encouraging students to persist on those tasks.

### SESSION 6
**Fri 11.30–1.00**  
221 Law School

### [89] Developing spatial reasoning and concepts to optimise students’ futures

Pamela Hammond  
**Workshop – P – 1.2, 1.3, 2.2, 3.1, 3.2, 3.3, 3.4**  
Having students make sense of the space around them, including features and transformations of 2D and 3D shapes, the ability to visualise images, then describe and represent them has been seen increasingly as vital for success in a wide range of courses and careers. This area of mathematics has a strong emphasis in the Australian Curriculum, both in the content strand ‘Measurement and Geometry’ and the General capability ‘Using Spatial Reasoning’. This hands–on workshop will explore the curriculum at Level 1 to Level 6 through engaging classroom activities and resources, linking these to appropriate content descriptions in the Australian Curriculum.
[90] Making mathematics visual: the model method to enhance problem solving skills and foster pre-algebraic thinking
Yeuh Mei Liu, Vei Li Soo
Workshop – P, M – 1.2, 1.3, 2.2
Multiplicative thinking and proportional reasoning underpin numeracy skills and mathematics learning at higher levels and teachers need to be equipped with problem-solving strategies which can help students reinforce these basic concepts and apply them to a variety of contexts. The model method is a visually powerful tool that enables students to understand and represent problems pictorially as a precursor to the abstract manipulation in problem-solving. This method has been a key strategy for all primary students in Singapore, especially effective with problems involving whole numbers, fractions and percentages, and ratio, to name a few. It has been used successfully with struggling mathematics students in an Australian high school.

[91] Primary problems from the challenge stage of the Mathematics Challenge for Young Australians
Katrina Sims
Workshop – P – 1.1, 1.3
The Australian Mathematics Trust runs three independent stages in the Mathematics Challenge for Young Australian (MCYA), which provides enrichment problems competitions for the top 20 percent of students in Years 5 to 10. This workshop focuses on the Challenge Stage comprising of four problems for primary students and six problems for students in Years 7 to 10. There are separate problems for Primary (Year 5-6), Junior (Year 7-8) and Intermediate (Year 9–10) students. We will be working through a variety of primary problems from previous years competitions.

[92] Quantifying inequality: where development economics meets integral calculus
Alastair Lupton
Workshop – S – 1.3, 2.3, 3.4
The world of development economics might seem like a strange place to come across meaningful uses for integral calculus, but its attempts to measure complex and important social quantities are underpinned by some fascinating mathematics. In this workshop you will be introduced to some of this mathematics, providing either an engaging context through which to introduce the definite integral or a real application of existing knowledge. Participants will need to be able to determine a polynomial of best fit to data, so bring your choice of laptop (e.g. MS Excel) or handheld technology (e.g. graphics calculator).

[93] Don’t worry, be ‘Appy’!
Terry Jacka With Janine Stewart
Workshop – M, S – 1.1, 1.2, 1.3, 3.1, 3.3, 3.4
Mobile technologies are the way of the future, they are in student hands now and students want to use them now. The device or the App do not in themselves promote positive outcomes for students, however, the potential to create engaging and challenging tasks using productive technology-based pedagogies is unlimited. See how we use these technologies to support good classroom practice. In the week leading up to the conference, download the iTunesU App (https://itunes.apple.com/au/app/itunes-u/id490217893?mt=8) and search the catalog for “Don’t worry be appy”. Download the Apps and ibook for the first 3 tasks.

[94] Find some reasons in your Top Drawer
Colleen Vale
Workshop – E, P, M, S
AAMT has produced five electronic professional learning ‘drawers’. Each drawer holds expert advice, teaching suggestions and classroom activities. In this workshop, the Reasoning drawer will be opened to show you some of the exciting resources that can be found in it. Why is Reasoning one of the four proficiencies in the Australian Curriculum? How do you teach students to reason? What is the difference between problem solving and reasoning? How can you embed Reasoning into all mathematics lessons? The Top Drawer Teachers project has been created by the Australian Association of Mathematics Teachers with Education Services Australia for DEEWR. The Reasoning drawer was developed by Judy Mousley, Deakin University, based on In Teachers’ Hands, a project of the Mathematical Association of Victoria.

[95] The Catholic Education Office Melbourne’s number intervention specialist program: a long-term, systemic, professional learning project using learning trajectories in assessment and teaching
Major presentation – E, P, M – 1.1, 1.2, 1.3, 3.1, 3.2, 3.4
The Catholic Education Office Melbourne’s five year project (2009–2013) to develop and implement a program to support low-attainers will be described. The program has been implemented in 60 schools and undergone external evaluation. In each school, the participating teacher undergoes a two-year professional learning program, each year conducting pre and post-assessment interviews and approximately 40 individualised instructional sessions with eight students. The program involves routinely videotaping assessment and teaching sessions. We will describe: (a) the professional development; (b) the use of learning trajectories; (c) a case study of implementation; (d) the role of system-wide advisors; and (e) results of the external evaluation.
AAMT 2013 Mathematics: Launching Futures concurrent program

SESSION 7  
Fri 2.00–2.45  
106 Law School

[96] Using card games to promote thinking and problem solving  
Richard Korbosky  
Seminar – E, P, M – 1.1, 1.2, 1.3, 2.2, 3.1, 3.2, 3.4  
The card games played in this session are linked to the Australian Curriculum content and the Proficiency strands. This set of card games gives students the opportunity to see the same concept of mathematics in a variety of ways and develops in the student a range of different mental thinking strategies. These card games also focus on essential number mathematics ideas, language of maths, ideas associated with partitioning and flexible thinking. As students play the games they have to think mathematically, they have to justify why they should pick up the cards and communicate this knowledge to their opponent.

SESSION 7  
Fri 2.50–3.30  
106 Law School

[97] Data and Measurement in year 4 of the National Curriculum: Mathematics  
Jane Watson, Lyn English  
Seminar – P – 1.1, 1.2, 1.3, 2.2, 3.3  
Outcomes of a research project will be used to introduce a motivating measurement activity for Year 4 students that explicitly addresses the strands of the National Curriculum: Mathematics for Data as well as Measurement. The activity involves measuring the arm span of one student in a class many times and then of all students once. The appreciation of variation and how to represent it graphically are features of presentation, including student work samples.

SESSION 7  
Fri 2.00–2.45  
108 Law School

[98] Modules for the senior curriculum  
Michael Evans  
Seminar – M, S – 1.2, 2.2, 3.1, 3.2, 3.3  
Twenty-five modules for year 11 and 12 teachers have been developed. They deal with topics in Functions, Coordinate Geometry, Probability and Statistics. They are written for teachers and provide coverage of topics in the Australian Curriculum but many of these topics are in state and territory curriculum now. The resources are web based and free. These modules follow on from the modules developed by AMSI for the F–10 curriculum that are available through SCOOTLE.

SESSION 7  
Fri 2.50–3.30  
108 Law School

[99] Maths partnerships really count  
Gill Lunnis  
Seminar – M, S, G  
CSIRO Education’s Scientists and Mathematicians in Schools creates and supports ongoing partnerships between volunteer teachers and scientists or mathematicians. Learn about the innovative ways Mathematicians in Schools partnerships enhance classroom learning and encourage students to appreciate real world practice and impact of mathematics. Discover other CSIRO resources that you and students can use to provide a window into the exciting world of maths in action.

SESSION 7  
Fri 2.00–2.45  
109 Law School

[100] Constructing knowledge of the finite limit of a function: an experiment in senior high school mathematics  
Pham Sy Nam, Max Stephens  
Seminar – S – 1.2, 1.3, 2.2, 3.1, 3.2, 3.3  
A finite limit of a function is a difficult mathematical concept, even for good students. It is a key to the study of many areas of advanced mathematics. Textbooks typically introduce two kinds of definitions of the concept of limit: a sequence version and an epsilon–delta version. Even for very able students, understanding both definitions is difficult. Using a constructivist approach, this study developed tasks that support students in constructing the concept of the finite limit of a function. Experimentation using dynamic manipulations enabled students to form and verify hypotheses, reject the wrong ones and construct their knowledge about the finite limit of a function in an easier way.

SESSION 7  
Fri 2.50–3.30  
109 Law School

[101] Using Wolfram|Alpha to aid learning: pitfalls and pleasures  
Anthony Peck  
Seminar – M – 1.2, 1.3, 3.1, 3.2  
Wolfram|Alpha is an online computational engine that has the stated goal: “Our goal is to build on the achievements of science and other systematizations of knowledge to provide a single source that can be relied on by everyone for definitive answers to factual queries” Students can use Wolfram|Alpha to perform traditional homework tasks, including showing all working! The implications for learning and assessment are profound. In this presentation we will look at how and why we can incorporate this amazing learning tool.

SESSION 7  
Fri 2.00–2.45  
221 Law School

[102] Mathematical proficiencies and teaching principles: assessing more through inquiry  
Kym Fry  
Workshop – P – 1.1, 1.3, 3.1, 3.4  
With pressures from national tests to perform well, Australian schools are looking at high–performers for the answers to improved performance. Explicit teaching, structured lesson plans, good teachers and high expectations seem to offer a sound response. Social perspectives and authentic contexts appear to be overlooked in these models where procedural fluency and strategic competence provide the focus. This workshop will unpack the mathematical proficiencies in the Australian Curriculum and demonstrate assessment opportunities from a Year 3 inquiry unit which promotes proficiencies of adaptive reasoning, conceptual understanding and productive disposition. Assessment examples will align also with the six teaching principles derived by ACER (2011).
SESSION 7
Sat 2.00–3.30 605 Law School

[132] Hunting for Pythagorean triads
Alastair Lupton
Workshop – M, S – 1.2, 1.3, 3.4
Within modern curricula there is much said about investigation, conjecture and proof. Sounds good to me! We just need learning activities featuring meaningful investigation, a range of conjectures accessible to students of differing abilities and proofs that sit comfortably within the scope of curriculum content. And they better not take too much time, and better tick a few assessment boxes! One such activity can be found in the rich world of Pythagorean triples. Go beyond \{3,4,5\} and don't be seduced by \{2nm,n²–m²,m²+n²\}, students can find relationships within the triples leading to their own generators, a plethora of provable conjectures and a purpose for some middle school algebra.

SESSION 7
Fri 2.00–3.30 417 School of Education

[104] The power of indices: with roots in the National Curriculum
Peter Fox
Workshop – M, S, G – 1.2, 1.3, 3.1
In Year 7 students represent a number as a product of its prime factors. Building a robust understanding of this process is critical in the development and understanding of other skills. The prime factorisation of a number can help students work with fractions, identify LCM and HCF, determine the quantity of factors for a given number, work with surds and be used to develop algebraic understanding. Participants in this workshop will see how the proficiency strands in the National Curriculum are naturally incorporated into the teaching and learning associated with content strands.

SESSION 7
Fri 2.00–3.30 419 School of Education

[105] Putting world-best research into practice in the mathematics classroom using research informed strategies
Mark Ward
Workshop – E, P, M, S, G – 1.1, 1.2, 1.3, 2.2, 3.1, 3.2, 3.3
In Mathematics at Urrbrae, we have been reviewing our pedagogies using the recommendations of Professor Peter Sullivan, which represents a collection of world research into practices that make a difference to student outcomes and engagement in mathematics. We have been reviewing the current practices and resources we are using, but also looking further afield to examine available resources which are consistent with world research. We have been trialling pedagogical approaches in our faculty meetings as well as our T&D sessions, and then integrating some of the pedagogies where appropriate into our school programs. I would be delighted to share with you the approach we are using at Urrbrae to improve pedagogies, in particular some uses of Maths300 (in providing collaborative learning opportunities in moving from the concrete to the abstract), as well as some of the Malcolm Swan Resources (UK) intended to support students in thinking and working differently in mathematics.

SESSION 7
Fri 2.00–3.30 420 School of Education

[106] Hands-on CAS for upper school teachers
Charlie Watson
Workshop – S – 1.2, 1.3, 2.2, 3.1, 3.2, 3.4
This workshop is for teachers of Year 10, 11 and 12 students to explore some of the features of handheld CAS technology that may be useful for them and their students in learning (and being assessed in) mathematics. We will use the latest CAS platform developed for high school students by Casio, the ClassPad colour fx-CP400, and there will be loan models available for participants to use. No previous knowledge of CAS will be assumed.

SESSION 7
Fri 2.00–3.30 Woodward 1 Law School

[107] Teach maths for understanding: differentiated learning plans for the Australian Curriculum
Ian Lowe
Workshop – P, M, S
1.1, 1.2, 1.3, 3.1, 3.2, 3.3, 3.4
Over the last few years there has been a growing concern about the need to differentiate teaching in the classroom. In addition, the Australian Curriculum stresses that a key proficiency is understanding. The MAV's response to these has been a set of differentiated plans: teach maths for understanding, with thousands of hyperlinks. Teachers report that students are succeeding at learning at their own level, through the dual approach: 1. Open-ended investigations that are accessible to all students (often Maths300 and RIME) 2. Targeted teaching and practice (both hands-on and ICT) at the level of the student, so they can achieve success.

SESSION 7
Fri 2.00–2.45 Woodward 2 Law School

[108] I cancelled all maths classes!
Erin Gallagher
Case study – S, G – 1.1, 1.3, 2.1, 2.3, 3.1, 3.2, 3.3
This is a Case Study explaining the disruptive change process, ideas and outcomes that I implemented in my previous school. In a very traditional public senior secondary system I cancelled math classes, implemented flexible options within the schools static timetable, front ended curriculum online, challenged the attendance systems, raised the bar, raised all expectations, engaged in REAL teaching, REAL learning and the complexity surrounding creating chaos, injecting disruption and getting results, walls were removed, the capacity of the WIFI maxed and had many interesting conversations about what real learning is. After cancelling classes, there was more mathematics going on than ever before.
SESSION 7
Fri 2.00–3.30 218 School of Education

[109] A practical application of the Australian Curriculum Mathematics Yr 8–10
Janelle O’Neill
Seminar – S – 1.2, 3.2, 3.3, 3.4
Let us transform our 21st Century learners into 21st Century thinkers with ACARA providing the vehicle for such a change! The Australian Curriculum Mathematics syllabus has been implemented for 18 months in Queensland. This workshop will give examples of the practical application of a Scope and Sequence, Assessment, including ICTs and allocation of questions with varying complexity, and Marking Rubrics. Examples of assessment, including tests and in-class ICT Investigations, for each year level will highlight how our students can move from identifying maths content to being fluent problem solvers in both routine and non-routine contexts. A thought-provoking platform awaits!

SESSION 8
Fri 4.00–5.30 106 Law School

[113] Connecting mathematics and Indigenous Australian culture
Kate Naughtin
Seminar – P, M, S, G – 1.1, 1.3, 2.2, 2.3, 3.1, 3.3
The Make it Count project investigated and developed an evidence base of practices that improved Indigenous students’ learning in mathematics and numeracy. As one of the eight clusters nationally, the Healesville Cluster organised a Big Day Out excursion for Indigenous students, with the aim of connecting mathematics with Indigenous Australian culture. This was successfully demonstrated by involving Elders, leaders from the community and researchers in helping students switch on to mathematics through a variety of cultural immersion activities. This included activities such as building mia-mias, basket weaving, sport, mathematics in nature and mathematics as storytelling through visual art.

SESSION 8
Fri 4.00–4.45 108 Law School

[114] The BASICS intervention numeracy program for at-risk mathematics students
Terry Byers, Paul Diete
Seminar – P, M – 1.1, 1.2, 1.3, 3.1, 3.2, 3.3, 3.4
The ‘BASICS’ or ‘Building Accuracy and Speed in Core Skills’ Intervention program has been designed to reverse the cycle of continual low academic performance in mathematics. The program focuses on developing the automaticity and accuracy of the recall of basic mathematical rules, concepts and procedures, which is one of the greatest impediments to these students’ achieving success, due to cognitive capacity and time. This is achieved through the use of continuous formative assessment and a synchronous ‘Performance Tracker’. The purpose of the assessment, with its focus on the continual reinforcement of essential skills and concepts, is to improve both accuracy and speed of recall as a means of increased automaticity. The ‘Performance Tracker’ provides synchronous access, by both teacher/s and the student, to monitor progress and enable feedback. This presentation will report on the initial trial in the Middle School Mathematics program at Anglican Church Grammar School in Brisbane.
### SESSION 8
**Fri 4.45–5.30** 108 Law School

[115] **Creating 'assessment artefacts' from sorting and matching tasks**  
Matt Skoss  
Seminar – P, M, S – 1.1, 1.2, 3.1, 3.2, 3.3  
For eight years I’ve enjoyed using a range of sorting and matching tasks, many of them inspired by Prof. Malcolm Swan’s work presented at the 5th Institute of Mathematics Pedagogy in the UK. This workshop will explore a selection of tasks, accessible to students across the Year 2 to 12 range. Bring your iPad with Doceri (free app from the iTunes Store) already loaded to experience the ‘workflow’ required to create a multimedia artefact that can be used as evidence of student learning. A limited number of iPads will be available for use. Doceri: [https://itunes.apple.com/us/app/doceri/id412443803?mt=8](https://itunes.apple.com/us/app/doceri/id412443803?mt=8)

### SESSION 9
**Sat 11.45–12.30** 109 Law School

[136] **An introduction to computer programming using Scratch**  
Jan Honnens  
Seminar – P, M, S, G – 2.2, 3.1, 3.2  
Scratch is a free graphical programming language where students can create programs by snapping blocks together...a bit like playing with LEGO. It is developed by MIT and is available from [http://scratch.mit.edu/](http://scratch.mit.edu/). In this session we will look at some simple Scratch programs dealing with polygons, coordinates, transformations and fractals that feature in our popular Year 7 Scratch programming project.

### SESSION 8
**Fri 4.00–5.30** 221 Law School

[116] **Is that formative or summative assessment?**  
John Bament  
Workshop – M, S – 1.1, 1.3, 3.2, 3.4  
“Questions are the way points on the path to wisdom.” Grant Lichtman. This session will focus on the art of questioning and using various internet and calculator options to achieve this and act as an assessment tool. In my experience this approach motivates and increases student interest in their learning of mathematics, is easy to produce and administer and raises an interesting discussion point: Is this formative or summative assessment?

### SESSION 8
**Fri 4.00–5.30** 605 Law School

[117] **Maths projects and Mu diagrams**  
Jo Kellaway  
Seminar – M, S – 1.1, 1.2, 1.3, 3.2  
The Mu diagram is a device that can be adapted to any topic at any year level. This device, based on the work of Julia Aitkin, allows students to develop their understanding of a concept from multiple perspectives. At the ASMS there is a focus on inquiry and group work. The particular project to be discussed focussed on the mathematics associated with exponents and logarithms and required a group of students to display their results in a Mu diagram.

### SESSION 8
**Fri 4.00–5.30** 417 School of Education

[118] **Launching into the Australian Curriculum using a CAS digital technology**  
Kevin McMenamin  
Workshop – S – 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 3.3  
Digital technologies have a prominent place in the Australian Curriculum and embracing as many opportunities as possible would be an expectation of good mathematics teaching. CAS technology is one way of embracing the digital age and the recently released new Casio ClassPad, fx–CP400 with its large, bright LCD screen, colour capabilities and upright/horizontal views provides a readily accessible option. Investigating activities of “How fast can fast be?”, “What is an irrational numbers?”, “Can the golden ratio be found using your body?”, “Which mobile phone plan is the best?” are just some of the questions/ideas we will look at as part of this learning experience.

### SESSION 8
**Fri 4.00–5.30** 419 School of Education

[119] **Problem solving through the big ideas in maths**  
Kristen Tripet, Katelyn Cavaliere, Sharon Portlock  
Workshop – E, P, M – 1.1, 1.2, 1.3, 3.1, 3.2, 3.3, 3.4  
Understanding should be the goal for all mathematics we teach. Learning will be enhanced through the use of problem solving. Problems should not just be a means to apply mathematics but a crucial tool to learn new maths. Understanding will be built as students are engaged in doing mathematics; as they create and develop new ideas, work with mathematical representations and models and learn to work collaboratively to solve problems and make sense of the mathematics. This workshop explores the journey of two primary schools as they work with a mathematics consultant to implement a problem solving approach based on the big ideas, or key understandings, of mathematics.

### SESSION 8
**Fri 4.00–5.30** 420 School of Education

[120] **Improving learning in mathematics: an introduction to the work of Malcom Swan**  
Samantha Horrocks  
Workshop – M, S, G – 1.3, 3.2, 3.3  
We often hear about ‘improving learning’ in mathematics but rarely get useful practical advice and ideas. This workshop will cover practical ideas, suggestions and resources based on “Improving learning in mathematics: challenges and strategies” developed by Professor Malcolm Swan of Nottingham University for the UK Department of Education. These activities are about changing students’ learning from passive to active with challenging teaching activities. The workshop will show you how to get started, provide take-away activities and demonstrate their use. You will try a range of the resources and activities available. (Suitable for Years 6–12, adaptable for other years.)
With regular polygons students discover that the only ones that tessellate on their own share common properties, an internal angle that is a multiple of 30 degrees. In the Middle Years, including primary classes, students can create regular polygons and tessellating shapes using computer software.

**SESSION 8**
**Fri 4.00–5.30**  Woodward 1 Law School

[121] **Matrices in action**
Brett Stephenson

Workshop – S, G – 1.3, 3.2, 3.3
This workshop will look at how matrices can be incorporated into both secondary and senior secondary courses in the new *Australian Curriculum*. The use of graphics calculators to assist with the organisation and investigation of data in areas such as food webs, Markov chains and cryptography will be demonstrated.

**SESSION 8**
**Fri 4.00–4.45**  Woodward 2 Law School

[122] **Exploring the use of iPads in primary mathematics classrooms**
Catherine Attard

Seminar – P – 1.1, 1.2, 1.3, 2.2, 3.2
Many Australian schools are investing in mobile technologies such as iPads and iPods. However, it is not uncommon for these technologies to be placed in classrooms with little or no professional learning support for teachers. In this session participants will explore different ways that iPads can be integrated into mathematics teaching and learning during the primary years. The Technological Pedagogical Content Knowledge (TPACK) framework will be discussed along with issues surrounding the implementation and use of iPads to enhance students' engagement and understanding.

**SESSION 8**
**Fri 4.45–5.30**  Woodward 2 Law School

[123] **Getting the most out of Cambridge HOTmaths**
VJ Gunawardana

Seminar – P, M, S – 1.2, 1.3, 3.1, 3.2, 3.3, 3.4
This workshop will demonstrate the comprehensive teacher tools and resources available on Cambridge HOTmaths. It will include an overview of the Learning Management System and the suite of diagnostic reports available, as well as an introduction to teaching tools such as the Test Generator and Task Manager. VJ Gunawardana will also include a brief overview of the student resources available on Cambridge HOTmaths, and how these engaging online resources can be used to make maths meaningful to students from Foundation to Year 10.

**SESSION 8**
**Fri 4.00–5.30**  218 School of Education

[124] **Creative activities with regular polygons, including using technology**
Katrina Sims

Workshop – P, M – 1.1, 1.3
In ancient times the Persians decorated their buildings with tessellating tiles, polygons created from circles, not measured and constructed with protractors and compasses, but taut pieces of rope. Using compasses and rulers students can simulate the same processes to create their own polygons. By experimenting with regular polygons students discover that the only ones that

**SESSION 9**
**Sat 11.00–12.30**  GM15 Law School

[126] **Everything you wanted to know about NAPLAN but were too afraid to ask.**
Stephen Phillip, Mirella Trimboli

Major presentation – P, M – 1.2, 3.2, 3.4
NAPLAN is now a part of the professional life of every Australian mathematics teacher; but how much do we really know about it? This presentation will shed some light on the mysteries of NAPLAN. How is it made? What exactly does it test? How does it compare to a school assessment or a university entrance exam? Is it too hard? Is it too easy? What happens to the results? Finally, we will introduce the future plans for NAPLAN testing the *Australian Curriculum* via an online platform.

**SESSION 9**
**Sat 11.00–11.45**  102 Law School

[127] **An elective: modelling our world with mathematics**
Ian Hailes

Seminar – M, S – 1.1, 1.2, 1.3, 3.1, 3.2, 3.3, 3.4
This seminar presents materials, along with reflective experience, used in teaching a lower secondary elective designed for students who enjoy mathematics and want to experience mathematical concepts outside of the normal syllabus. Students are engaged in independent and collaborative thinking through solving problems and working on open-ended tasks. They are encouraged to use appropriate mathematical language and vocabulary, a variety of mathematical models and technologies. Students have the
opportunity to think logically and imaginatively, formulate, test, generalise, extend and discuss conjectures. In addition to a variety of recognised problem solving strategies, students are encouraged to develop their own strategies. One outcome for students and teachers is a greater awareness of links between the various fields of mathematics and with the real world. Popular mathematical publications such as Paul Lockhart’s Measurement and Steven Strogatz’s The Joy of X are used to draw inspiration.

[128] Measurement of steepness: grasping the slippery slope
Bruce Duncan

Seminar – M – 1.2, 1.3, 3.1, 3.2, 3.3, 3.4
The measurement of steepness draws content from the number and algebra strand, and the measurement and geometry strand of the Australian Curriculum: Mathematics. When students are asked to use their own methods to measure the steepness of the ground, the task also incorporates understanding, reasoning, fluency, and problem solving. Activities involving the measurement of steepness provide valuable opportunities for students in middle school mathematics classes to learn about slope as a ratio. This concept is important for further studies in algebra and understanding measurements used in the building and transport industries.

[129] “Is this a five minute argument or the full half hour?” Enriching classrooms with a culture of reasoning
Helen Chick

Seminar – M, S – 1.1, 1.2, 1.3, 2.2, 3.1, 3.2
Reasoning is one of the proficiency strands highlighted in the Australian Curriculum: Mathematics. This is because it is the heart of mathematical work. However, because the content strands receive the bulk of the explicit description in the document, it can be difficult to know how to ensure that reasoning plays a key role in the classroom. This presentation presents strategies to enhance the nature and extent of reasoning activity taking place in classrooms, and discusses how to build a culture of justification, use questioning techniques to encourage reasoning, and develop tasks that require higher order thinking.

[130] Too much content too little time
John Ley

Seminar – M, S – 1.1, 1.2, 1.3, 3.1, 3.2, 3.3
Mathematics curriculum is very content rich and at times the deeper learning opportunities are omitted in order to complete content. Many students have a poor perception of their mathematical ability and many parents relate a negative experience of mathematics at school. This workshop looks to the future by providing a grounding through five focus questions that not only enhances students’ understanding but promotes confidence in mathematics and hence increases the level of enjoyment and engagement. Assessment practices will be discussed with a focus on ways to increase student confidence.
SESSION 9
Sat 11.00–11.45  605 Law School

[135] Constructing a tetrahedron in microworld: potential future research and practice
Andy Yeh
Seminar – P, M, S – 1.2, 1.3, 2.2, 3.1, 3.2
Traditionally the teaching and learning about 3D shapes have been utilising concrete materials such as solid wood, plastic connectors and paper nets for modelling. While they are good materials, limitations such as time, accuracy, manipulability and creativity etc. could apply. This paper presents how a 3D microworld named VRMath2.0 can be utilised to construct a tetrahedron from within a cube, which would be difficult to do with real materials. The use of virtual materials in addition to real materials would have implications on how the teaching and learning about 3D geometry could be enhanced, and how the human spatial cognition and abilities can be further researched.

SESSION 9
Sat 11.00–11.45  608 Law School

[137] Measuring change in students' attitudes toward mathematics over time
Aysha Abdul Majeed
Seminar – M – 1.3
Attitudes Toward Mathematics Inventory (ATMI) was employed to measure change in middle school students' attitudes toward mathematics over time. The instrument was administered to 544 Year 7 & Year 8 students in 13 schools in South Australia to collect three data points over the academic year 2012. Confirmatory factor analysis (to examine factorial invariance) and Rasch analysis (to examine item–level invariance) were used. Concurrent equating was employed which rendered the scales comparable between occasions. Repeated measures ANOVA was used to measure change in group mean values of students on the four–sub scale of ATMI. The results of the study show that students' attitudes toward mathematics generally decline over time during middle school years.

SESSION 9
Sat 11.45–12.30  608 Law School

[138] De-streaming in the middle school
Anthony Peck
Seminar – M – 1.3
Australian National Curriculum documents state: "A key first step is to affirm a commitment to ensuring that all students experience the full mathematics curriculum until the end of Year 10". Research shows streaming is not effective for the majority of students – why are we still using it? What are the alternatives? Are there "good" and "bad" mathematics students, and "good" and "bad" classes?
Judy Anderson

Dr Judy Anderson is Associate Professor, Mathematics Education in the Faculty of Education and Social Work at the University of Sydney. Prior to her role at the University, Judy worked at the Board of Studies NSW as a Senior Curriculum Officer, Mathematics K-12, responsible for the development of the current K to 10 mathematics syllabuses for NSW. As the Immediate Past President of the Australian Association of Mathematics Teachers (AAMT), she provides leadership and ongoing support for teachers of mathematics throughout Australia. This is a critical role at a time of national testing in numeracy and the development of the Australian Curriculum: Mathematics.

Mike Askew

Dr Mike Askew is the Foundation Chair Professor of Primary Education at Monash University, Melbourne. Prior to that he was Chair Professor of Mathematics Education at King’s College London. He is internationally regarded as a leading expert on primary mathematics education and has directed many research projects including the influential Effective Teachers of Numeracy in Primary Schools, Raising Attainment in Numeracy and Mental Calculations: Interpretations and Implementation. He was deputy director of the five-year Leverhulme Numeracy Research Programme, examining teaching, learning and progression in number from age 5 to age 11. His most recent book is Transforming Primary Maths (Routledge).

Andrew Armstrong

I am a teacher of 20 years experience. I worked for 9 years at Billanook College and Siena College in Melbourne before venturing overseas to teach in Germany and now at the International School of Beijing. I am in my 10th year in Beijing where I have taught Middle and High School and been High School Department head of Mathematics. It was in Beijing that I developed a multidisciplinary Mathematics course for students who had slipped out of the mainstream Math classes.

Robin Averill

Dr Robin Averill is Curriculum Leader in Mathematics Education at Victoria University of Wellington, New Zealand. An experienced secondary teacher, Robin works in primary and secondary initial teacher education and postgraduate courses and has written and edited a wide range of resources for mathematics teaching. Robin believes strongly in mathematics educators being passionate about creating mathematics learning opportunities that are inspiring, creative, engaging and confidence-building for all students. Robin’s classroom-based research focuses on ways to enhance equity of access to mathematical achievement with emphasis on culturally responsive teaching that promotes engagement and success of those often underserved.

Grant Baker

Grant Baker is the Deputy Principal of Kingston SS. He is responsible for the implementation of the YuMi framework.

John Bament

I am a passionate educator who strives to evolve my teaching with the primary aim of inspiring students to enjoy Mathematics, fully understand what they are studying and see its relevance in their other subjects and the environment in which they live. Having taught in a variety of schools in both the UK and Australia I have come to realise that kids are kids the world over and it is up to us, as teachers, to enthuse them to appreciate the wondrous art of Mathematics.

Lei Bao

Associate Professor Kim Beswick is interested in the beliefs that underpin the practice of mathematics teachers and how professional learning can provide a catalyst for change. She is particularly interested in how teacher beliefs and knowledge relate to equity issues in education. She supervises research higher degree students in these and other areas of mathematics education. She has published more than 80 books, peer reviewed book chapters, journal articles and conference papers. She is currently President of the Australian Association of Mathematics Teachers.

Margaret Bigelow

Margaret is the Senior Project Officer for Mathematics at ACARA responsible for managing the development of the Australian Mathematics curriculum. She has had a long and extensive career in government schools, independent schools, professional association and state and national curriculum authorities.

Ali Brady

Ali Brady is the Next Steps Teaching and Learning Coach at Humpty Doo Primary School. She is a member of the Humpty Doo Primary School Numeracy Improvement Committee.
Biographies

Jill Brown [pg 4]

Donita Button [pg 8]
Donita Button is a board member of Kulkarriya Community School, where she currently works as an administrator. Previously she has worked as an Aboriginal Education Worker at the school. She is fluent in English and Kimberley Kriol. At the school Donita has written and edited many books in Kimberley Kriol. She has worked with Annette Miller, author of Making the Jump, a valuable resource book for teachers, which helps them to connect the English language with students’ home language.

Terry Byers [pg 6]
Terry Byers, MLI (QUT) and BEd (Griffith), is the Manager of E-Learning at the Anglican Church Grammar School (Churchie) and currently completing his PhD at the University of Melbourne in the synergy between technology, pedagogy and the learning space. He is also the author of a current series of Mathematics textbooks written for the new P-10 Mathematics National Curriculum and was involved in managing serval Federal Government and Tertiary Institutions grants. Paul Diets is the Deputy Head of Middle School, Curriculum. He was formerly the Head of Middle Mathematics at Churchie and previously a teacher of Mathematics at Penrithos College and Somerville House, both 1-to-1 schools. He has worked on numerous research projects that revolve around the collection of data to determine the merit of 1-to-1 teaching within the mathematics classroom.

Rosemary Callingham [pg 4, 7]
Rosemary Callingham is Associate Professor in mathematics education at the University of Tasmania. She has an extensive background in mathematics education in Australia, at school, system and tertiary levels. Her experience includes classroom teaching, mathematics curriculum development and implementation, and pre-service teacher education at primary and secondary levels in two Australian universities. She has worked on projects in Hong Kong and North Korea as well as in many parts of Australia.

Peter Chandler [pg 11]

Jill Cheeseman [pg 6]

Tong Cherng Luen [pg 3]
Tong Cherng Luen is today a co-presenter in the Symposium: A Holistic Approach to Helping Low Achievers in Mathematics.

Helen Chick [pg 3]
Associate Professor Helen Chick has been a mathematician, and a maths teacher, and currently lectures in mathematics education at the University of Tasmania, working with pre-service and in-service teachers at both primary and secondary levels. She loves mathematics, and is particularly interested in examples and activities that help to make concepts clear to students. She is also concerned about how to challenge and extend our students, and increase their fluency and facility with mathematical skills and ideas.

Michael Clapper [pg 12]
Mike Clapper is currently the Executive Director of the Australian Mathematics Trust, taking up the position in January of this year, following a career as a maths and computer science teacher and school principal. He has worked for both the NSW Board of Studies and the Victorian Curriculum and Assessment Authority as an examination setter, moderator and marker, and was a member of the Australian Curriculum Advisory Panel for Mathematics. He has run workshops for both IB and VCE Mathematics teachers and public revision lectures for 4-unit Maths in NSW and Specialist Maths in Victoria. Mike has been a member of the AMC problems committee for 10 years and is the current chair of the committee.

David Clarke [pg 5]

Doug M Clarke [pg 5]

Barbara Clarke [pg 6]

Philip Clarkson [pg 5]
Professor Clarkson has been writing on mathematics education for many years, in particular on the influence of language on mathematics learning and teaching, and on mathematics values and students’ mathematical well being. Beyond mathematics education, he has run many evaluation studies of education programs, schools and systems. He is a well known speaker and consultant.

Coral Connor [pg 11]
With over 30 years Mathematics’ teaching experience Coral has been Head Teacher for 10 years, developed tracking of student progress between successive school reports and is now presenting the Mathematics Curriculum online. Coral has presented at MANSW, AAMT and ELH, published with Reflections (MANSW) and Jacaranda and has created over 540 videos for Mathematics learning, resulting in a Teaching Australia Award of Teaching Excellence in 2009.
Rhys Coulson
Rhys Coulson, deputy principal at Serpell Primary, recently completed a Masters in Education. His action research examined teacher’s implementation of a pedagogical model that focused on problem solving/reasoning and its impact on teacher anxiety and efficacy associated with maths teaching (specifically in algebraic thinking). Rhys is collaborating with Rob Smart and Mike Askew to bring research findings from mathematics education into classrooms and to examine the impact on teaching and learning.

Lorraine Day
Lorraine’s teaching experience spans several decades. She is a former President of MAWA, member of MERGA and past member of the National Council of AAMT. Lorraine is passionate about engaging students in mathematics and supporting the important work of teachers. She is a regular contributor to professional learning facilitation and delivery, and has been involved in the development of mathematics education at both a state and national level.

Chris Debritz
Chris is writing mathematics curriculum for the early years. As a foundation Prep teacher, Chris has identified the power of seizing the teaching moment within all contexts for learning. Part of her role includes supporting teachers to focus on the mathematics of a situation to guide students towards becoming reflective mathematicians.

Paul Diete
Paul Diete is the Deputy Head of Middle School, Curriculum. He was formerly the Head of Middle Mathematics at Churchie and previously a teacher of Mathematics at Penrhos College and Somerville House, both 1-1 schools. He has worked on numerous research projects that revolve around the collection of data to determine the merit of 1-1 teaching within the mathematics classroom.

Adrian Dilger
I have been a teacher for over 25 years, and have taught Reception to Year 7 as a classroom, ICT and drama teacher. For the last 4 years I have been a numeracy consultant with Catholic Education South Australia working with schools in the National Partnership on Literacy and Numeracy. Before that, I worked for two years as a numeracy consultant working in schools across New York City for the NYC Board of Education.

Sue Dockett
Ann Downton

Ann Downton is a lecturer in Mathematics Education at ACU. She recently completed her PhD relating to young children’s development of multiplicative thinking. Ann coordinated the Contemporary Teaching and Learning of Mathematics Project (CTLM), a combined project with the Catholic Education Office (Melbourne), which aims to enhance teacher pedagogical content knowledge and student learning.

Bruce Duncan
Sean Ebert

Cris Edmonds-Wathen

A Darwin resident, Cris Edmonds-Wathen is a primary school teacher who has taught in remote Northern Territory schools. She has recently submitted a PhD through RMIT University investigating how an understanding of spatial frames of reference in Iwaidja might inform mathematics teaching in remote schools. Cris is also curious about how different world views can contribute to the development of new mathematics. She is currently lecturing in mathematics education at Charles Darwin University.

David Ellemor-Collins
David Ellemor-Collins is a teacher and researcher with expertise in arithmetic instruction, and co-author of the 2012 Sage book Developing number knowledge. He holds an honors degree
Biographies

Tay Eng Guan

Tay Eng Guan is a co-presenter in the Symposium: A Holistic Approach to Helping Low Achievers in Mathematics.

Lyn English

Lyn English (QUT) and Jane Watson (UTAS) are chief investigators on an ARC Discovery project, Statistical literacy in the primary school: Beginning inference and they are keen to share the practical outcomes of their first exciting year in the classroom.

Michael Evans

Michael Evans is at the Australian Mathematical Sciences Institute. For many years he has been involved in curriculum development and assessment with the Victorian Curriculum and Assessment Board. He has worked with the Australian Curriculum and Reporting authority on both the Australian Curriculum: Mathematics 7-10 and the senior curriculum. Simi Henderson is at the Australian Mathematical Sciences Institute, she manages the Research and Higher Education program and is coordinating the Australian program for the International Year of Mathematics of Planet Earth 2013.

Linda Farrington

Linda Farrington is the Campus leader of City Campus School in Tasmania. As a mathematics educator, she is interested in improving the teaching and learning of mathematics.

Bruce Ferrington

Bruce Ferrington is a Year 4 teacher at Radford College in Canberra. He was awarded a Churchill Fellowship in 2012 to study the teaching of mathematics in the USA, Japan and Singapore. Bruce has previously worked in Sydney, London, Glasgow and Ulladulla. His blog, Authentic Inquiry Maths (http://authenticinquirymaths.blogspot.com.au) has been described as one of the best maths blogs for primary teachers on the internet. Bruce is also a member of the Canberra Mathematical Association executive council.

Steve Flavel

Steve is the foundation developer of the supporting software for maths300. He has worked as a teacher and education consultant in the Northern Territory, Western Australia and Victoria. In the NT he was the project leader for Maths No Fear, an indigenous mathematics programme that developed resources and strategies for academic success. In his spare time he teaches high school mathematics.

Peter Fox

I am a classroom teacher with more than 20 years teaching experience, I have a passion for technology and am interested in how neuroscience can support teaching and learning. My teaching practice reflects these interests. I have shared my experiences by presenting at educational conferences around Australia, New Zealand, China and the United States. I am fortunate enough to be able to combine my passions by teaching part time and working with Texas Instruments educational technology.

Kym Fry

Kym Fry is a research higher degree student at the University of Queensland, undertaking her PhD on assessment in mathematics inquiry that aligns with and values this pedagogy. She is also a primary school teacher in a suburban Queensland state school where she practices this approach to teaching in her own classroom. While teaching she was asked to participate in a research project on using inquiry in inferential statistics which sparked her interest in assessment in this area and set her on course for her own postgraduate studies.

Erin Gallagher

Erin Gallagher currently wears many hats. President (current President of the CMA), Student (currently studying towards a MEd through ACU) and Faculty Head (Faculty 42 - Maths, Business, Languages, Social Sciences at Hawker College). Toby Hartley is a member of the CMA Council, Faculty 42 Teacher of Mathematics and comes from an engineering background. Both are extremely passionate teachers of mathematics. Erin strives to constantly have teachers thinking of the “why” in education and Toby aims to show that Maths is an engaging subject that has many practical applications across the curriculum and in life outside school.

Sue Garner

Sue Garner has taught at senior levels in mathematics in Victoria for many years. She also writes mathematics material for use by teachers and students and has previously lectured in Mathematics Education at tertiary level. Dr Robyn Pierce is well known for her research work on the use of Computer Algebra Systems at secondary and tertiary levels.
Biographies

David Garner  [pg 3]
Ann Gervasoni  [pg 4]
Laura Gilbody  [pg 15]
Laura Gilbody is a Year 1/2 Classroom Teacher at Humpty Doo Primary School. She is a member of the Humpty Doo Primary School Numeracy Improvement Committee.

Geoff Gillman  [pg 15]
Geoff Gillman is the Assistant Principal of Humpty Doo Primary School. Humpty Doo Primary School is a Northern Territory Government school located in the rural town of Humpty Doo situated 40km south-east of Darwin. The school is a Make It Count resource school (AAMT) and a focus school in the Next Steps initiative (Stronger Smarter Institute).
The workshop presenters are members of the Humpty Doo Primary School Numeracy Improvement Committee.

Wendy Goff  [pg 6]
Jim Green  [pg 11]
Jim has been a classroom teacher/educator for over 30 years.

Susie Groves  [pg 3, 14]
Susie Groves is a mathematics educator at Deakin University. Together with her colleagues Brian Doig, Wanty Widjaja and Colleen Vale, she was responsible for conducting the Implementing structured problem-solving mathematics lessons through Lesson Study project in 2012. Susie has a long-standing research interest in Lesson Study.

VJ Gunawardana  [pg 22]
VJ Gunawardana is the Cambridge HOTmaths Specialist at Cambridge University Press, as well as an Education Resource Consultant. He works with schools in the Victorian area, providing ongoing support to Cambridge HOTmaths users and presenting workshops for new users.

Ian Hailes  [pg 22]
Ian Hailes has taught secondary mathematics for 30+ years in Western Australia. At times he has strayed into Deputy Principal, Head of Secondary and Head of Learning Area roles, always to return to his favourite pastime of teaching mathematics in the classroom. Is there any higher calling?

Douglas Hainline  [pg 5]
Douglas Hainline obtained his PhD in Computer Science in 1985, and has taught computing and related subjects for thirty years. He has always had an interest in learning, and in language, and edited a book on Computer-Aided Language Learning. He currently tutors mathematics from beginning arithmetic through calculus.

Pamela Hammond  [pg 16]
Pam Hammond taught in Primary schools before becoming a Curriculum Consultant in the Victorian Education Department for 8 years working with primary and secondary teachers on Mathematics curriculum, pedagogy, assessment and reporting. From 1994 to 2003 she worked in Central Office writing the Primary Mathematics Course Advice, Assessment and Reporting materials, researching, developing and implementing the Victorian Early Years Numeracy and Middle Years Leadership Programs and managing the ENRP. Since leaving the Department she works as a consultant offering professional development for schools, teachers and parents in Victoria and interstate, focussing on primary and middle years mathematics and how assessment informs planning. From 2005 to 2008 she worked at Australian Catholic University as Project Manager for the national ASISTM Critical Friend Program.

Anthony Harradine  [pg 8]
Anthony is first and foremost a teacher who dabbles in other areas of education. He has spent the last few years trying to better understand his failures of the previous twenty. His many mentors have taught him a lot about mathematics and statistics, problem solving, and research. He likes nothing better than sharing what he has learned with anyone silly enough to listen.

Simi Henderson  [pg 9]
Jan Honnens  [pg 13]
Jan Honnens is Head of Mathematics at Christ Church Grammar School in Claremont, Perth. He has a Masters Degree in pure mathematics but has recently come to greatly appreciate applied mathematics in the form of computer programming as a relevant, motivating and challenging component of the teaching and learning of mathematics for the future.

Rhonda Horne  [pg 6, 12]
Biographies

Rhonda is a curriculum leader developing online mathematics resources to assist Queensland teachers to implement the Australian Curriculum. She has worked in professional development, resource development, curriculum design and implementation. She is interested in how teachers support students to think and act in mathematical ways through interaction and engaging learning experiences.

Samantha Horrocks

Sam has been an 11-18 mathematics teachers for 18 years in the UK and the last 3 years in Victoria. She has worked in a variety of types of schools in the Government sector. She has been an Advanced Skills Teacher, a regional maths advisor and a senior lecturer in Secondary Mathematics Education in the UK. After emigrating for a ‘quieter life’ she is now the Head of the Mathematics Faculty and Numeracy Coach at Werribee Secondary College.

Robert Hunter

Karen Huntly

Derek Hurrell

Derek Hurrell has extensive experience in a number of schools, as a Numeracy Consultant and as the manager of several national projects. Derek is passionate about engaging students in mathematics and supporting the important work of teachers. He is a regular contributor to professional learning facilitation and delivery, and has been involved in the development of mathematics education at both a state and national level.

Terry Jacka

Terry Jacka and Janine Stewart are experienced educators with a passion for inspiring students’ interest in Mathematics – particularly in the Middle School. The introduction of iPads as our one-to-one technology device has created exciting opportunities in mathematics classes. Terry Jacka is Head of Mathematics at St Hildas School on the Gold Coast and has presented at conferences and workshops in Queensland and overseas. Most recently she has presented at ISTE 2012 in San Diego, USA and the Blackboard Teaching & Learning Conference Australasia 2012 at Bond University. Janine Stewart is a Mathematics Teacher at St Columba Anglican School, Port Macquarie. She has worked as both a teacher and staff developer in Australia and the United States.

Lorraine Jacob

Lorraine Jacob is Senior Lecturer in Mathematics Education for the School of Education at Murdoch. She co-coordinates and teaches units that build teachers’ mathematics content knowledge as well as their pedagogic content knowledge. Previously she was a numeracy consultant (WA Department of Education) for the Getting it Right Literacy and Numeracy Strategy. This involved providing ongoing professional learning to numeracy specialist teachers and in-school support including remote community schools in the Kimberley. Lorraine was a member of the First Steps in Mathematics research team that wrote the First Steps in Mathematics resources and professional learning program.

Katara Jade

Mohamad Jebara

Mohamad Jebara is the founder and CEO of Mathspace. Prior to founding Mathspace Mohamad was a partner at Optiver, Australia’s leading derivative trading firm, where he headed the largest of their three trading teams as well as leading the Robot Trader project. He left Optiver in 2010 to pursue his passion for Mathematics and for teaching it to students. He believes strongly in the use of technology and data to empower teachers and is an advocate of blended learning and the flipped classroom.

Michael Jennings

Michael is an inspirational and dedicated teacher of mathematics at UQ. He teaches many of the large first-year courses and in the last four years has received 37 most effective teacher nominations from engineering students, testament to his success in engaging and inspiring students. A former school teacher, Michael is an active scholar of teaching and learning in mathematics, with an established track record of successful collaboration. He has an impressive leadership record in mathematics teaching, is on the executive of the Queensland Association of Mathematics Teachers, and has been actively involved in the development of the Australian Curriculum.

Tabitha Jos

Tabitha Jos is the Numeracy Coach for Kingston SS and is also responsible for the implementation of the YuMi framework. Tabitha works very closely with all teachers on improving maths pedagogy, analysing and responding to school and corporate data.

Berinderjeet Kaur

Berinderjeet Kaur is a professor of mathematics education at the National Institute of Education (NIE) in Singapore. She was the mathematics consultant to TIMSS 2011 and is currently a member of the mathematics expert group for PISA 2015. Her research interests include secondary analysis of data.
Biographies

from comparative studies in mathematics education (e.g., PISA & TIMSS); cognition and affect related to mathematical problem solving; classroom practices of expert and novice mathematics teachers; teacher learning and development of expertise viz-a-viz empirical studies of professional development programmes, professional learning communities and communities of practice.

Jo Kellaway [pg 21]
Jo has been teaching mathematics for many years, the last ten and a half at the ASMS. She has taught in a range of schools both country and city and all year levels from 8 to 12. She has been a frequent presenter at conferences in her state detailing the work of the ASMS in its charter to innovate maths and science teaching.

Lucy Kett [pg 17]
Lucy Kett works with The Catholic Education Office Melbourne on their five year project (2009–2013) working with low mathematics attainers. She supports a number of intervention teachers.

Quek Khiok Seng [pg 3]
Quek Khiok Seng is a co-presenter in the Symposium: A Holistic Approach to Helping Low Achievers in Mathematics.

Rose Knight [pg 9]
Rose Knight is a research assistant in the Mathematics Teaching and Learning Research Centre at Australian Catholic University, and coordinates the teacher professional learning programs. Rose has just completed her Master of Education specialising in students’ learning and development of spatial visualisation.

Richard Korbosky [pg 9]
Richard is well known for his love of mathematics in Western Australia. He develops and presents a range of practical, hands–on professional learning opportunities for teachers and curriculum leaders. He has a wide range of knowledge about what works in the classroom. He is particularly interested in using mathematics manipulatives to support students conceptual understandings and students who are having trouble with mathematics. Richard works part-time sessional lecturer/tutor working with 2nd, 3rd and Post Graduates students in the F–7 ECU Bach Ed Teaching program. He is the past President of the Mathematics Association of WA.

John Lawton [pgs 10, 14]
John Lawton develops and promotes high quality classroom resource materials through his publishing business Objective Learning Materials (OLM). John participates in workshops on OLM materials, co-presenting with a range of successful mathematics professionals. This gives him the insight and energy that he needs to design student centred teaching aids that focus on open ended questions wand which help to build success in mathematics. John's professional qualifications are in business; he is also currently studying for a Master of Education degree at Deakin University, and plans shortly to engage with university level mathematics enquiry as a student.

David Leigh-Lancaster [pg 10]
David Leigh-Lancaster is the Mathematics Manager at the Victorian Curriculum and Assessment Authority (VCAA) and an experienced former mathematics teacher and head of faculty. He has been extensively involved in curriculum and resource development, teacher professional learning, and examination and school-based assessment. He has long-standing interests in mathematical logic, the foundations, history and philosophy of mathematics and mathematics education as well as the nature of mathematical inquiry, curriculum design and teaching, learning and assessment in mathematics. His research interests are the relationship between mathematics and school mathematics, and alignment between curriculum, assessment and pedagogy – in particular the role of technology.

John Ley [pg 23]
Assistant Principal Xavier College; Qualifications: B.Sc., Dip Ed UNSW, M.A. Sydney, Grad. Dip in RE ACU, Diploma in Children's Services; Commenced teaching in 1982; Member 2012 and 2013 HSC assessment committee; Author of the INSIGHT mathematics series in NSW; Author of ICT4U level 2 spreadsheets, ICT4U level 3 spreadsheet and ICT4U level 2 database books and CDROMs; Presented at an array of workshops on mathematics and integrating spreadsheets for MANSW, AIS, AAMT, and CEO; and internationally at NCTM and NCSM; Casual lecturer to graduate students in Mathematics method UWS, 2004–2009; Attended international conferences in Italy, Poland and USA.

Sharyn Livy [pg 9]
Sharyn Livy is a Professional Officer with the Mathematical Association of Victoria where she works in primary schools to facilitate professional development opportunities for teachers. She enjoys working with students and providing modelled lessons that cater for all learners.
Biographies

Jason Loke  
Jason Loke has been teaching at the ASMS since 2007, operating in a number of roles within and external to the school. Focussing on improving student engagement and enjoyment of Mathematics, Jason has used innovative approaches and adaptive environments to get the best student outcomes possible. Jason is currently the Senior Leader in STEM Learning at the Australian Science and Mathematics School. Jason was one of the founding teachers involved in the partnership program and has delivered the mathematics curriculum specialisation topic to final year pre-service teachers from 2009-2012.

Ian Lowe  
Dr Ian Lowe is currently a professional officer at MAV. He has worked in secondary schools in Victoria and Toronto. He has created teacher materials in the Curriculum Branch of the Victorian Education Department, The North York Board of Education (Ontario), the Department of Education (Apia, Samoa), and is also currently writing a textbook series for Malawi. He has trained teachers in all Victorian universities, in Samoa and in Malawi.

Gill Lunnis  
Scientists and Mathematicians in Schools Victorian Project Officer, Gill has a Bachelor of Science (Hons) Chemistry from Aberdeen University and a PhD from Imperial College London. Prior to joining SMiS, Gill worked as a medicinal chemist with GlaxoSmithKline, UK and at the Cancer Therapeutics CRC, Monash Institute of Pharmaceutical Sciences.

Alastair Lupton  
Amy MacDonald  
Aysha Abdul Majeed  
Aysha has an experience of teaching mathematics to 12 to 16 year olds following British National Curriculum in Karachi (Pakistan) and Dubai (United Arab Emirates). She has also worked as Visiting Lecturer at Notre Dame Institute of Education, Karachi. The Australian Catholic University has a partnership with the Notre Dame Institute for accreditation of the International Certificate of Education and Master of Education programs. Aysha has authored mathematics textbooks for Years 6, 7 & 8 for Oxford University Press, Pakistan. She is currently enrolled as a PhD candidate at the School of Education, The University of Adelaide.

Katie Makar  
Katie Makar is a senior lecturer at The University of Queensland. Makar’s research in informal statistical inference is now used internationally, but using inference with young children was initially trialled in Debra McPhee’s classroom in 2006. They have since been working together, along with other primary teachers in the same school, to develop inferential reasoning with primary children as young as five years old. One example of their work with a prep classroom is an Illustration of Practice on the AITSL website (http://tinyurl.com/informalinference).

Justin Matthys  
Justin Matthys is a classroom teacher and an alumni of the Teach for Australia program. He has been working with Richard Wilson to address educational disadvantage for three years. Justin’s background is in experimental astro-particle physics and social justice.

Sinead McEvoy  
Sinead McEvoy, a school-based mathematics coordinator, has worked on The Catholic Education Office Melbourne’s five year project (2009–2013) since 2010.

Kim McHugh  
Kim currently works as a numeracy consultant with the Aboriginal Community Schools of WA. Previously she worked for STEPS PD delivering the First Steps in Mathematics suite of resources. Kim has experience teaching K-12 and as a Deputy Principal with responsibility for Curriculum. Kim was involved in the Getting Right Literacy and Numeracy Strategy as a numeracy specialist teacher and as a numeracy curriculum consultant for schools in the west coast region of Perth.

Kevin McMenamin  
Kevin is an experienced mathematics specialist who is innovative in his use of technology in the classroom. For many years, Kevin has delivered revision lectures to VCE students across Victoria, is a regular presenter at state annual conferences including MAV, AAMT, MANSW and CMA and has authored both print and electronic materials related specifically to mathematics. His liking for technology has extended to the use of CAS within the classroom and he has presented many PD sessions within Australia related to this very topic.
Debra McPhee
Debra McPhee is a professional artist and (recently retired) primary teacher at Jindalee State School. Katie Makar’s research in informal statistical inference was initially trialled in McPhee’s classroom in 2006. They have since been working together, along with other primary teachers in the same school, to develop inferential reasoning with primary children as young as five years old. One example of their work with a prep classroom is an Illustration of Practice on the AITSL website (http://tinyurl.com/informal-inference).

Catharine McQuade
Vivienne McQuade
Vivienne McQuade is an experienced teacher who has worked in South Australia on significant programs including Mathematics for Learning Inclusion, Maths for All and A How to Guide...Teaching Ethical Understandings.

Yeuh Mei Liu
Yeuh Mei Liu is an educator, curriculum planner and developer and teacher trainer in Singapore for the last 15 years, working with teachers in curriculum, pedagogy and assessment. She trains teachers internationally in mathematics education, promoting engaged pedagogy and problem solving. She received a MA from Stanford University, USA and MEd from NTU, Singapore.

Caty Morris
Caty has worked in Aboriginal Education in both NSW and SA for about 15 years in remote, regional and urban settings. She began her career as a primary school teacher in the Adnyamathanha community of Nepabunna in the northern Flinders Ranges; was Coordinator of Aboriginal education in the Western Area of SA based at Port Augusta; taught at Redfern and Darlinghurst Primary Schools and Ultimo TAFE in Sydney; was a Project Officer for the Aboriginal Education Directorate in NSW and Aboriginal Education in SA; a Math Consultant in the Bronx District of New York City; a Curriculum Manager in DECS SA; and is currently National Manager of Indigenous Programs for the Australian Association of Mathematics Teachers. In this capacity Caty managed the Make it count: Numeracy, mathematics and Indigenous learners project 2009-2013.

Tracey Muir
Tracey Muir is a Senior Lecturer in Mathematics Education at the University of Tasmania. Her research interests include effective teaching for numeracy, problem solving in mathematics, and parental involvement in mathematics education.

Joanne Mulligan
Joanne Mulligan is Associate Professor of Education, in the Department of Education, Faculty of Human Sciences at Macquarie University, Sydney where she leads research projects, teaches mathematics education in undergraduate programs and supervises research students. Joanne is internationally renown for research in early mathematical development. She currently leads Australian Research Council projects, Reconceptualising Early Mathematics Learning and Transforming Children’s Mathematical and Scientific Reasoning.

Robin Nagy
Robin Nagy has been a member of the Executive of MANSW since 2010. He is a teacher of Mathematics and Housemaster at Cranbrook School, Sydney, where he has worked since his arrival in Australia in 2008. Originally an Electronic Engineer, Robin has taught Mathematics internationally since 1994 in the UK at City of London School, University College School and North London Collegiate School and in Thailand at Bangkok Patana International School where he was also Head of Year. He is a popular presenter at MANSW conferences and enrichment forums and regularly runs professional development sessions for teachers of Extension Mathematics.

Anna Nakos
Anna Nakos is a secondary teacher and a volunteer writer of questions for the Australian Mathematics Trust Enrichment Programs. Howard Reeves and other State Directors from the AMT will also share on how these programs are run in different states.

Vicki Nally
Vicki Nally supports a number of intervention teachers through the Catholic Education Office Melbourne’s number intervention specialist program In 2011, Vicki achieved recognition as a Highly Accomplished Teacher of Mathematics.

Kate Naughtin
Kate Naughtin is a Primary School teacher and a postgraduate student at Monash University. She has had experience working as a teacher, coach and the Make It Count cluster co-ordinator for Healesville. Kate has been involved in teaching Indigenous students in both remote and rural settings for the past seven years.
Biographies

Janelle O’Neill

Janelle O’Neill has been teaching for 22 years and is currently the Head of Mathematics at Mt St Michael’s College in Brisbane. She has presented pedagogical-based workshops in Central Brisbane (Days of Excellence) and Rockhampton (QAMT conferences) over the past eight years. Her previous presentations Higher Order Mathematical Thinking, Middle School Madness - making sense of problems in Yr7-9, www.maths resources, Powerful Pedagogy and Beat the Bell attest her passion for promoting mathematical thinking.

Michael O’Connor

Michael O’Connor is Head of Mathematics at a multi-campus Catholic College in Melbourne’s south east. He has been teaching for twenty five years and finds that the more he learns the more there is to learn. Michael is the author of several text books for Oxford University Press and has also written assessment material for publication for several years in both Mathematical Methods and Further Mathematics. He is a regular presenter at the annual Mathematical Association of Victoria conferences in December each year. Michael has a great interest in using technology in all its forms in the classroom.

Roberto Ojeda

Dr Roberto Ojeda is the Course Coordinator for the Bachelor of Engineering in Naval Architecture program. Dr Ojeda currently lectures 2nd and 3rd year students in Mechanics of Solids and Finite Element Analysis respectively. He has been actively involved in the improvement of the 1st and 2nd year engineering mechanics units at AMC/NCMEH with a focus in addressing the challenges of teaching large classes with growing student numbers. Recently, Dr Ojeda was awarded a UTAS teaching merit certificate for the design and implementation of new activities to challenge students to apply their theoretical knowledge to real life problems.

Kathryn Palmer

For the past 5 years I have taken up the role of a regional numeracy coach with western metropolitan region and this year continued the work as Melton Network numeracy coach. A major component my present role is to advise teachers and schools on best numeracy practice. Prior to this I had been a primary teacher for over 20 years and began my career as a secondary mathematics teacher ranging from year 7 to year 11 at an independent catholic school for over 6 years. I have always been extremely passionate about the teaching of mathematics and currently love the position I hold because it gives me opportunities with many teachers and schools. For the past 2 years I have worked with pre-service teachers in Victoria University’s School of Education as a sessional lecturer.

Stuart Palmer

Stuart Palmer is the Project Officer for MANSW – The Mathematical Association of NSW. In addition to being a classroom teacher and head of department for many years, he also provides professional development for teachers all over NSW and works in two universities with pre-service teachers of Mathematics K to 12.

Anthony Peck

Anthony Peck has taught for over 20 years in three states/territories and overseas. He is currently HOLA Mathematics at Aquinas College in Perth. He was recognised with a National Award for Gifted and Talented teaching in 2005. Recent PD at NCTM (Indianapolis 2011) and ICME (Seoul 2012) has confirmed his commitment to robust Mathematics curriculum underpinned by appropriate technology.

Bob Perry

Andrew Peters

Stephen Phillip

Stephen Phillip is the Test Development Manager (Numeracy) at ACARA. He joined ACARA in 2010 after many years as a teacher, Head of Department and Director of Studies in Catholic and I independent schools. His remaining unfulfilled career goal is to be universally recognised as the nerdiest contributor to the AAMT mailing list.

Robyn Pierce

Leon Poladian

Leon is an associate professor at the University of Sydney. He is the director of the National Mathematics Summer School and has been involved in the summer school for over 20 years. Leon has won several teaching awards and is actively engaged with the extremes of gifted students and of under-prepared students.

Patty Raymond

Patty Raymond is an Aboriginal and Torres Strait Islander Education Worker at Humpty Doo Primary School. She is a member of the Humpty Doo Primary School Numeracy Improvement Committee.
Biographies

Howard Reeves  [pg 12]

Sandra Rowden  [pg 11]

Sandra Rowden has been a Mathematics teacher for over 20 years, teaching in country and metropolitan Western Australia in both government and independent schools. She has been at Penrhos College for the past 15 years. Her students continue to inspire her to look for new ways to improve her teaching.

Leanne Rylands  [pg 13]

Mike Sawbridge  [pg 8]

Mike Sawbridge is the Principal of Kingston SS and is an active participant in the implementation of the YuMi framework.

Yoshinori Shimizu  [pg 8]

Dr. Yoshinori Shimizu is a professor of mathematics education at Faculty of Human Sciences, University of Tsukuba, in Japan. His primary research interests include international comparisons of mathematics classrooms and student assessment. He was a member of Mathematics Expert Group for OECD/PISA 2003, 2006, and 2009, as well as a consultant for TIMSS Videotape Classroom Study. He is one of the founders of Learner’s Perspective Study (LPS), an international comparative study on mathematics classrooms and has been the Japanese team leader of the project. He serves as a member of editorial boards on international research journals, such as International Journal of Science and Mathematics Education and ZDM-International Journal of Mathematics Education. He has been working closely with mathematics teachers at elementary and secondary school as an external expert for lesson study.

Dianne Siemon  [pg 22]

Di Siemon is a Professor of Mathematics Education in the School of Education at RMIT University (Bundoora) where she is involved with the preparation of pre-service teachers and the supervision of higher degree students. Di is also actively involved in the professional development of practicing teachers, particularly in relation to the development of the ‘big ideas’ in number, the teaching and learning of mathematics in the middle years, and the use of rich assessment tasks to inform teaching. Di has directed a number of large scale research projects including the Building Community Capital to Support Sustainable Approaches to Numeracy Education in Remote Locations (2006-2009), the Scaffolding Numeracy in the Middle Years Project (2003-2006), the Northern Territory Strategic Numeracy Research and Development Project (2003-2004), the Researching Numeracy Teaching Approaches in Primary Schools Project (2002-2003), and the Middle Years Numeracy Research Project (1999-2001). Di is a past President of the Australian Association of Mathematics Teachers and a life member of the Mathematical Association of Victoria.

Katrina Sims  [pgs 17, 22]

Katrina established an enrichment program for students in Years 4 to 6 in a primary school in the ACT which she taught for 14 years. From there she taught in a middle school in years 6 to 9 specialising in mathematics and ICT. Through her need to cater for exceptional mathematics students in the primary school she became a member of the Australian Mathematics Trust Challenge Problems committee and on leaving the ACT spent 12 months writing materials for the Middle Years of Schooling for MANSW. She received a National Excellence in Teaching Award for her work with Gifted Students in 1998 and a BH Neumann Award in 2008.

Matt Skoss  [pg 21]

Matt Skoss is an experienced classroom teacher, currently working at Centralian Middle School in Alice Springs. Matt has a strong belief in using ICT to make Mathematics accessible and highly visual to all students. He likes to make powerful, but incidental use of learning technologies and Web 2.0 tools to amplify student learning. Resources that might be useful for classroom teachers are uploaded to his Maths? No Fear! wiki at: http://maths-no-fear.wikispaces.com.

Robert Smart  [pg 7]

Rob Smart is collaborating with Rhys Coulson and Mike Askew to bring research findings from mathematics education into classrooms and to examine the impact on teaching and learning. Rob is a leading teacher who studied with Rhys Coulson and has continued action research at his school in Endeavour Hills.

Catherine Smith  [pg 4]

Yap Sook Few  [pg 3]

Peta Spencer  [pg 6]

Kaye Stacey  [pg 8]

Professor Emeritus Kaye Stacey retired from the University of Melbourne at the end of 2012 after holding the Foundation Chair of Mathematics Education since 1992. She has had over 400 publications and is internationally renowned for her research into mathematics education. Across a career...
Biographies

Kaye has been a regular presenter at teacher conferences, has run numerous teacher professional learning programs and written many articles for teachers, showing a dedicated commitment to making research findings accessible to teachers.

Max Stephens [pg 3, 13]
Max Stephens is senior research fellow in the Graduate School of Education at the University of Melbourne. He has a long-time involvement with international comparative studies of the Australian Mathematics curriculum, especially with those of countries such as China, Japan, Thailand and Vietnam. He is a visiting professor at several Chinese universities. He is examining the impact of national policy perspectives in the development of national curricula in China and Australia.

Brett Stephenson [pg 21]
Brett Stephenson is a mathematics educator currently working at Guilford Young College in the role of Director of Teaching and Learning.

Vei Li Soo [pg 17]
Vei Li Soo was a Mathematics Head of Department in Singapore secondary schools for more than 15 years and 3 years in the Singapore Ministry of Education as a Mathematics Curriculum Planner and Developer working on the national secondary mathematics curriculum. She is currently a Numeracy Coach at Balaklava High School (South Australia) and has used the model method successfully with her students.

Peter Sullivan [pg 5, 10]
Peter Sullivan is Professor of Science, Mathematics and Technology at Monash University. His main professional achievements are in the field of research. His recent research includes four ARC funded projects: He is an author of the popular teacher resource Open-ended maths activities: Using good questions to enhance learning that is published in the US as Good questions for math teaching. Until recently he was chief editor of the Journal of Mathematics Teacher Education, is immediate past president of the Australian Association of Mathematics Teachers, was the author of the Shape paper that outlines the principles for the development of the Australian Curriculum in Mathematics, and was the author of the 2011 Australian Education Review on research informed strategies for teaching mathematics.

Pham Sy Nam [pg 18]
Mr Pham Sy Nam is a PhD student at the University of Vinh in Vietnam, and also teaches at Phan Boi Chau Gifted High School in Nghe An Province, Vietnam. His special interests are teaching mathematics for gifted students using a constructivist teaching approach.

Hussein Tahir [pg 9, 14]
Hussein Tahir was born in Cyprus in 1944 where he completed his secondary schooling. He obtained a degree of mathematics from the University of Ankara Turkey in 1968. He was employed by the Ministry of Education in Northern Cyprus for four years and in 1972 he migrated to Australia. He obtained his Bachelor of Education at La Trobe University, Melbourne, Australia and returned to teaching in 1979. He is interested in the history of Mathematics and enjoys tackling historical problems with the strategies he has developed.

Dave Tout [pg 4]
Dave is widely recognised as one of Australia’s leading adult numeracy personnel, and has worked in schools, TAFEs, ACE, university, AMES and workplaces, with over 30 years experience in the VET sector. He has wide experience at a state, national and international level in research, curriculum, assessment and materials development. Dave had major responsibility for the numeracy domain of the ACSF. He was a member of the numeracy expert group responsible for the numeracy component of the international ALLS survey and for PIAAC, and had a major role in the item development for mathematical literacy in PISA 2012. Jim joined ACER in 2010. He has thirty years’ experience teaching secondary mathematics. At ACER, he has worked on test development for PISA 2012, NAPLAN numeracy and similar assessments. In the area of vocational education Jim has written and reviewed items for PIAAC, and for the new CSPA numeracy tool.

Kaye Treacy [pg 8]
Kaye currently works with the Aboriginal Independent Community Schools of WA. Previously, she worked with AusAid at the Ministry of Education of Fiji. Kaye was a researcher and writer of First Steps in Mathematics for the Department of Education of Western Australia and an international version for STEPS PD. Kaye was instrumental in the Getting it Right Literacy and Numeracy Strategy, training and supporting Numeracy Specialist teachers to work in at-risk schools in WA. Kaye is currently researching Aboriginal students’ starting points in number.
Biographies

Mirella Trimboli [pg 22]
Mirella Trimboli is the Test Development Senior Project Officer (Numeracy) at ACARA. She joined ACARA earlier this year after ten years as a teacher in Independent schools and has also written and published Blackline Masters aimed at the NAPLAN years.

Kristen Tripet [pg 21]
Kristen Tripet works as a Mathematics Consultant with the Association of Independent Schools of NSW and is currently in the final stages of her doctoral studies. In her role with the AIS, Kristen has worked with a vast array of schools to support the development of mathematics teaching and powerful classroom pedagogies. This has included the opportunity to work alongside two mathematics leaders in primary schools for the past two years; Sharon Portlock from Santa Sabina and Katelyn Cavaliere from SCEGGS Darlinghurst.

Colleen Vale [pg 17]
Colleen Vale is an Associate Professor in mathematics education at Deakin University. She is currently leading the Mathematical Reasoning Research Group at Deakin University. The group is currently researching primary teachers’ perceptions of reasoning and primary children’s reasoning through a professional learning project designed to assist teachers to include a stronger emphasis on reasoning in their teaching. She is a very experienced pre-service teacher educator, a former secondary mathematics teacher and former President of MAV.

Nikky Vanderhout [pg 12]
Nikky Vanderhout is the Professional Learning Consultant for MANSW – The Mathematical Association of NSW. A classroom teacher for many years, she has participated in syllabus development and resource writing for the NSW Board of Studies and AAMT. Nikky has extensive experience in leading a school mathematics faculty and in mentoring beginning and re-trained mathematics teachers. She regularly presents professional learning opportunities for mathematics teachers.

Peter Wade

Mark Ward [pg 19]
Mark Ward is currently head of Mathematics at Urrbrae Agricultural High School. He has been a numeracy coach for DECD, worked at the Flinders Centre for Science Education, and has led the Science & Mathematics Strategy in SA and has taught for many years in a variety of city and country schools.

Amanda Watkin [pg 7]
Amanda Watkin has been teaching at the ASMS since 2011, enjoying a senior mathematics focus and perfecting her pedagogy in Specialist Mathematics. Amanda has been involved in significant professional learning opportunities for staff across the state and has mentored a number of teachers in secondary maths education during her short time at the school.

Jane Watson [pg 3]
Jane Watson has now retired from her lecturing position in the Faculty of Education at the University of Tasmania. A researcher in statistics education, she was actively involved in applying the results of research to the Top Drawer project.

Charlie Watson [pg 19, 23]
After spending over twenty years teaching in secondary classrooms in the UK and Australia, Charlie Watson now runs his own tutoring business for Year 11 and 12 students in Perth, WA. He is also a regular contributor to teacher professional development in Western Australia and presents end of year revision seminars in secondary schools.

Wanty Widjaja [pg 3]
Wanty Widjaja is a mathematics educator at Deakin University. Together with his colleagues Susie Groves, Brian Doig and Colleen Vale, he was responsible for conducting the Implementing structured problem-solving mathematics lessons through Lesson Study project in 2012. Wanty attended a two-week Lesson Study immersion program in Tokyo in 2012.

Richard Wilson

Robert (Bob) Wright [pg 17]
Bob Wright, adjunct professor at Southern Cross University, specialises in mathematics assessment, instruction and intervention. He has lead significant research and development projects.

Richard Xu Keqiang [pg 13]
Richard Xu Keqiang is a visiting doctoral candidate at the University of Melbourne from South West University in Chongqing, PRC.
Biographies/List of Delegates

Andy Yeh
Dr Andy Yeh is a lecturer in mathematics and ICT education from Queensland University of Technology. His research interests include the design and evaluation of ICT tools for learning particularly in mathematics and science.

Leong Yew Hoong
Alexander (Alec) Young
Alexander (Alec) Young, RFD, FACEL, MACE, MEd (Stud), Grad. Dip. Prof. Man, former senior teacher with 30 years experience of teaching in Government Secondary Schools in Tasmania. He has worked in collaboration with schools in three states to develop special insightful productivity tools to assist teachers reduce their work load and at the same time help improve their teaching.

List of Delegates

Australian Capital Territory

Bament, John johnbament@hotmail.com
Barker, Valerie valerie.barker@canberra.edu.au
Birkett, Tim tbirkett@burrgmann.act.edu.au
Carol, Javes chj@csq.act.edu.au
Carty, John john.carty@act.gov.au
Christensen, Caroline caroline.christensen@fed.act.edu.au
Clapper, Michael mike.clapper@amt.edu.au
Ferrington, Bruce bruce.ferrington@radford.act.edu.au
Gallaher, Erin erin.gallaher@ed.act.edu.au
Gray, Andrew mr.andrew.gray@gmail.com
Johnston, Ewan ewan.johnston@innovation.gov.au
Narayan, Ravindra jwhite@stedmunds.act.edu.au
Olsen, Geoff geoff.olsen@csq.act.edu.au
Paradowski, Jurek jurek@i.m.com
Petit, Fiona fiona.pettiti@catholic.edu.au
Pianegonda, Madonna madonna.pianegonda@csq.catholic.edu.au
Punch, Neville ncp@csq.act.edu.au
Reid, Anthony anthony.reid@radford.act.edu.au
Stacey, Janelle janelle.stacey@radford.act.edu.au
Wade, Wendy wendy.wade@daramalan.act.edu.au

New South Wales

Akhurst, Bill akhurstbh@bigpond.com
Alice, Maria maria.alice@syd.catholic.edu.au
Alvarez, Jose jose.lavarez@det.nsw.edu.au
Anderson, Judy judy.anderson@sydney.edu.au
Apfelbaum, Evie eapfelbaum@moriah.nsw.edu.au
Attard, Catherine c.attard@uws.edu.au
Avonvole, Jenny jenny.avonvole@acara.edu.au
Barber, Naomi naomi.h.barber@gmail.com
Betina, Wrightson betinaw123@det.nsw.edu.au
Bigelow, Margaret margaret.bigelow@acara.edu.au
Bottaro, Angela angela.bottaro@det.nsw.edu.au
Brady, Shirley Shirley.brad@dow.catholic.edu.au
Bridge, Deb deborah.bridge@det.nsw.edu.au
Chu, Jenny jennifer.chu@syd.catholic.edu.au
Conde, Ashley ashley_conde@barker.nsw.edu.au
Connor, Coral cconnor@nbcnsw.nsw.edu.au
Coupland, Mary mary.coupland@uts.edu.au
Davies, Gary GJD@kings.edu.au
de Gorter, Lesley Lesley.deGorter@barker.nsw.edu.au
De Martini, Laurence ldmartin@parra.catholic.edu.au
Dryden, Stephen steve2989@hotmail.com
Ellenor-Collins, David davidc@email.com
Evans, Joanne jevans2@parra.catholic.edu.au
Ferguson, Michelle m.ferguson@tsc.nsw.edu.au
Gannon, Tahlia TGannon@parra.catholic.edu.au
Giumelli, Kerry kerry.giumelli@parra.catholic.edu.au
Green, James
Hardy, Tim Tim.Hardy@parra.catholic.edu.au
Hazard, Kerrin kerrin.hazard@dbb.catholic.edu.au
Hughes, Peter peter.hughes@csq.catholic.edu.au
Irvine, Sam
James, Jill
Jordan, Judy
Kargar, Kayvan
King, Melissa
Koreneff, Ingrid
Langkamp, John
Lay, John
Long, Debbie
McDaid, Karen
McHugh, Barbara Mary barbara.mchugh@parra.catholic.edu.au
McKay, Katherine katherine.mckay@parra.catholic.edu.au
Menziez, Donal dmenziez@msben.nsw.edu.au
Merredith, Nadine nmeredith@parra.catholic.edu.au
Mulligan, Joanne joanne.mulligan@mq.edu.au
Mushan, Neil
Mussen, Mary
Nagy, Robin
O’Donoghue, Maryanne
Palmer, Stuart
Panagopoulos, Susan s.panagopoulos@tsc.nsw.edu.au
Parkin, Joy joyparkin@gmail.com
Pliis, Johnne
Poladian, Leon
Portlock, Sharon s.portlock@ssc.nsw.edu.au

## List of Delegates

<table>
<thead>
<tr>
<th>Northern Territory</th>
<th>Queensland</th>
<th>South Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescott, Anne</td>
<td>Allmond, Sue</td>
<td>Agnew, Di</td>
</tr>
<tr>
<td>Prosser, Penny</td>
<td>Anderson, Rodney</td>
<td>Bleckly, John</td>
</tr>
<tr>
<td>Regan, Peter</td>
<td>Balatti, Jo</td>
<td>Bray, Wes</td>
</tr>
<tr>
<td>Reinhardt, Michael</td>
<td>Barnett, Gay</td>
<td>Cheshire, Alannah</td>
</tr>
<tr>
<td>Roosén, Tammy</td>
<td>Batch, Sarah Mary</td>
<td>Ching, Kelvin</td>
</tr>
<tr>
<td>Rundle, Pete</td>
<td>Belinda, Evans</td>
<td>Dale, Nicholas</td>
</tr>
<tr>
<td>Schreier, Tracey</td>
<td>Butler, Cathie</td>
<td>Digler, Adrian</td>
</tr>
<tr>
<td>Semler, Yvette</td>
<td>Byers, Terry</td>
<td>Harding, Felicia</td>
</tr>
<tr>
<td>Sharpe, Lisa</td>
<td>Campbell, John</td>
<td>Harradine, Anthony</td>
</tr>
<tr>
<td>Sims, Katrina</td>
<td>Chigeza, Philomen</td>
<td>Hoareau, Renee</td>
</tr>
<tr>
<td>Smith, Catherine</td>
<td>Commings, Lydia</td>
<td>Kellaway, Jo</td>
</tr>
<tr>
<td>Stewart, Janine</td>
<td>Debnitz, Chris</td>
<td>King, Mark</td>
</tr>
<tr>
<td>Triplet, Kristen</td>
<td>Diete, Paul</td>
<td>Leydon, John</td>
</tr>
<tr>
<td>Turnbull, Susan</td>
<td>Drysdale, Angela</td>
<td>Loke, Jason</td>
</tr>
<tr>
<td>Vale, Christine</td>
<td>Finnane, Maureen</td>
<td>Lupton, Alastair</td>
</tr>
<tr>
<td>Vanderhout, Nikky</td>
<td>Fry, Ky</td>
<td>Manuel, Kate</td>
</tr>
<tr>
<td>Wade, Peter</td>
<td>Gallagher, Peter</td>
<td>Martin, Dani</td>
</tr>
<tr>
<td>Westcott, Kris</td>
<td>Galpin, Danielle</td>
<td>Milner, Matt</td>
</tr>
<tr>
<td>Witney, Bianca</td>
<td>Harman, John</td>
<td>Morony, Will</td>
</tr>
<tr>
<td>Wright, Bob</td>
<td>Horne, Rhonda</td>
<td>Morris, Caty</td>
</tr>
<tr>
<td>Wrightson, Betina</td>
<td>Huntly, Karen</td>
<td>Nakos, Anna</td>
</tr>
<tr>
<td></td>
<td>Jacka, Terry</td>
<td>Nankervis, Matt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rajandren, Anand</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reynolds, Leanne</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rischmueller, Mary-Anne</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Silk, Nicole</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Slattery, Christine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sze, Vei Li</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Venhoeck, Jeanette</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ward, Mark</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Watkin, Amanda</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Webber, Mark</td>
</tr>
<tr>
<td></td>
<td></td>
<td>White, Bruce</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wright, Sarah</td>
</tr>
</tbody>
</table>

### Northern Territory
- Boer, Karen
- Bracegirdle, Kym
- Brady, Ali
- Dhingra, Jasmeet
- Edmonds-Wathen, Cris
- Gilbody, Laura
- Gillman, Geoff
- Knight, Michael
- McArthur, Greig
- Milene, Elizabeth
- Rankine, Renee
- Raymond, Aunty Patty
- Skoss, Matt

### Queensland
- Allmond, Sue
- Anderson, Rodney
- Balatti, Jo
- Barnett, Gay
- Batch, Sarah Mary
- Belinda, Evans
- Butler, Cathie
- Byers, Terry
- Campbell, John
- Chigeza, Philomen
- Commings, Lydia
- Debnitz, Chris
- Diete, Paul
- Drysdale, Angela
- Finnane, Maureen
- Fry, Ky
- Gallagher, Peter
- Galpin, Danielle
- Harman, John
- Horne, Rhonda
- Huntly, Karen
- Jacka, Terry

### South Australia
- Agnew, Di
- Bleckly, John
- Bray, Wes
- Cheshire, Alannah
- Ching, Kelvin
- Dale, Nicholas
- Digler, Adrian
- Harding, Felicia
- Harradine, Anthony
- Hoareau, Renee
- Kellaway, Jo
- King, Mark
- Leydon, John
- Loke, Jason
- Lupton, Alastair
- Manuel, Kate
- Martin, Dani
- Milner, Matt
- Morony, Will
- Morris, Caty
- Nakos, Anna
- Nankervis, Matt
- Rajandren, Anand
- Reynolds, Leanne
- Rischmueller, Mary-Anne
- Silk, Nicole
- Slattery, Christine
- Sze, Vei Li
- Venhoeck, Jeanette
- Ward, Mark
- Watkin, Amanda
- Webber, Mark
- White, Bruce
- Wright, Sarah

### Tasmanian Delegates
- Anderson, Gary
- Beswick, Kim
- Brooks, David
- Callingham, Rosemary
- Campagna, Debbie
- Jennings, Michael
- Jos, Tabitha
- Leal, Christine
- Makar, Katie
- Maksoud, Chici
- McPhee, Debra
- O’Neill, Janelle
- Profitt-White, Robin
- Robinson, Greg
- Simpson, Nick
- Smith, Cathy
- Strid, Vicki
- Trenerry, Bruce
- Twymann, Abigail
- Valpy, Pauline
- Williams, Kenn
- Yeh, Andy

### Victoria Delegates
- Agnew, Di
- Bleckly, John
- Bray, Wes
- Cheshire, Alannah
- Ching, Kelvin
- Dale, Nicholas
- Digler, Adrian
- Harding, Felicia
- Harradine, Anthony
- Hoareau, Renee
- Kellaway, Jo
- King, Mark
- Leydon, John
- Loke, Jason
- Lupton, Alastair
- Manuel, Kate
- Martin, Dani
- Milner, Matt
- Morony, Will
- Morris, Caty
- Nakos, Anna
- Nankervis, Matt
- Rajandren, Anand
- Reynolds, Leanne
- Rischmueller, Mary-Anne
- Silk, Nicole
- Slattery, Christine
- Sze, Vei Li
- Venhoeck, Jeanette
- Ward, Mark
- Watkin, Amanda
- Webber, Mark
- White, Bruce
- Wright, Sarah

### Western Australia Delegates
- Agnew, Di
- Bleckly, John
- Bray, Wes
- Cheshire, Alannah
- Ching, Kelvin
- Dale, Nicholas
- Digler, Adrian
- Harding, Felicia
- Harradine, Anthony
- Hoareau, Renee
- Kellaway, Jo
- King, Mark
- Leydon, John
- Loke, Jason
- Lupton, Alastair
- Manuel, Kate
- Martin, Dani
- Milner, Matt
- Morony, Will
- Morris, Caty
- Nakos, Anna
- Nankervis, Matt
- Rajandren, Anand
- Reynolds, Leanne
- Rischmueller, Mary-Anne
- Silk, Nicole
- Slattery, Christine
- Sze, Vei Li
- Venhoeck, Jeanette
- Ward, Mark
- Watkin, Amanda
- Webber, Mark
- White, Bruce
- Wright, Sarah

---

**AAMT 2013 Conference – Mathematics: Launching Futures**

---

**Delegates**

---
# List of Delegates

## Victoria

<table>
<thead>
<tr>
<th>Name</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adams, Jo</td>
<td><a href="mailto:jaadams@ceomelb.catholic.edu.au">jaadams@ceomelb.catholic.edu.au</a></td>
</tr>
<tr>
<td>Anderson, Janeane</td>
<td><a href="mailto:janderson@ceomelb.catholic.edu.au">janderson@ceomelb.catholic.edu.au</a></td>
</tr>
<tr>
<td>Askew, Mike</td>
<td><a href="mailto:mike.askew@monash.edu">mike.askew@monash.edu</a></td>
</tr>
<tr>
<td>Baratta, Wendy</td>
<td><a href="mailto:w.baratta@scotch.vic.edu">w.baratta@scotch.vic.edu</a></td>
</tr>
<tr>
<td>Bevan, Kate</td>
<td><a href="mailto:kbevan@ceosand.catholic.edu.au">kbevan@ceosand.catholic.edu.au</a></td>
</tr>
<tr>
<td>Black, Emily</td>
<td><a href="mailto:ebblack@ceomelb.catholic.edu">ebblack@ceomelb.catholic.edu</a></td>
</tr>
<tr>
<td>Bonnymann, John</td>
<td><a href="mailto:john.bonnymann@genie-ed.com.au">john.bonnymann@genie-ed.com.au</a></td>
</tr>
<tr>
<td>Bowden, Jennifer</td>
<td><a href="mailto:jbowden@tmasn.net.au">jbowden@tmasn.net.au</a></td>
</tr>
<tr>
<td>Button, Michelle</td>
<td><a href="mailto:michelle.button@mangahigh.com">michelle.button@mangahigh.com</a></td>
</tr>
<tr>
<td>Chilianis, George</td>
<td><a href="mailto:gchilianis@fitbank.vic.edu">gchilianis@fitbank.vic.edu</a></td>
</tr>
<tr>
<td>Clarkson, Philip</td>
<td><a href="mailto:phil.clarkson@acu.edu">phil.clarkson@acu.edu</a></td>
</tr>
<tr>
<td>Coulson, Rhys</td>
<td><a href="mailto:r.coulson@edumail.vic.gov">r.coulson@edumail.vic.gov</a></td>
</tr>
<tr>
<td>Curavick, Silvana</td>
<td><a href="mailto:silvanacuravick@yahoo.com">silvanacuravick@yahoo.com</a></td>
</tr>
<tr>
<td>Curnow, Evan</td>
<td><a href="mailto:evan.curnow@wiley.com">evan.curnow@wiley.com</a></td>
</tr>
<tr>
<td>de Man, Maxine</td>
<td><a href="mailto:deman.maxine@edumail.vic.gov">deman.maxine@edumail.vic.gov</a></td>
</tr>
<tr>
<td>DiCorletto, Chris</td>
<td><a href="mailto:cdi.corletto@stgrtraralgon.catholic.edu">cdi.corletto@stgrtraralgon.catholic.edu</a></td>
</tr>
<tr>
<td>Doig, Brian</td>
<td><a href="mailto:bdoig@deakin.edu.au">bdoig@deakin.edu.au</a></td>
</tr>
<tr>
<td>Dunstone, Jane</td>
<td><a href="mailto:j.dunstone@olacheltenham.catholic.edu">j.dunstone@olacheltenham.catholic.edu</a></td>
</tr>
<tr>
<td>Ebert, David</td>
<td><a href="mailto:ebert.david@edumail.vic.gov">ebert.david@edumail.vic.gov</a></td>
</tr>
<tr>
<td>Ekahake, Nanil</td>
<td><a href="mailto:nekanahake@firdbank.vic.edu">nekanahake@firdbank.vic.edu</a></td>
</tr>
<tr>
<td>Evans, Michael</td>
<td><a href="mailto:michael@amsi.org.au">michael@amsi.org.au</a></td>
</tr>
<tr>
<td>Evenist, Val</td>
<td><a href="mailto:veverist@ceomelb.catholic.edu">veverist@ceomelb.catholic.edu</a></td>
</tr>
<tr>
<td>French, Peter</td>
<td><a href="mailto:paf@netspace.net.au">paf@netspace.net.au</a></td>
</tr>
<tr>
<td>Garner, Sue</td>
<td><a href="mailto:sue.garner@bgs.vic.edu">sue.garner@bgs.vic.edu</a></td>
</tr>
<tr>
<td>Gist, Helen</td>
<td><a href="mailto:gist.helen@tmasn.net.au">gist.helen@tmasn.net.au</a></td>
</tr>
<tr>
<td>Groves, Susie</td>
<td><a href="mailto:susie.groves@deakin.edu">susie.groves@deakin.edu</a></td>
</tr>
<tr>
<td>Hammond, Pamela</td>
<td><a href="mailto:rhapsody@bigpond.com">rhapsody@bigpond.com</a></td>
</tr>
<tr>
<td>Haralambous, Helen</td>
<td><a href="mailto:hharlambous@mev.vic.gov">hharlambous@mev.vic.gov</a></td>
</tr>
<tr>
<td>Hay, Andrew</td>
<td><a href="mailto:andrew.hay@wesleycollege.net">andrew.hay@wesleycollege.net</a></td>
</tr>
<tr>
<td>Herbert, Sandra</td>
<td><a href="mailto:sandra.herbert@deakin.edu">sandra.herbert@deakin.edu</a></td>
</tr>
<tr>
<td>Horrocks, Sam</td>
<td><a href="mailto:samantha.horrocks@gmail.com">samantha.horrocks@gmail.com</a></td>
</tr>
<tr>
<td>Howison, Damian</td>
<td><a href="mailto:dhowison@mackillopsh.vic.edu">dhowison@mackillopsh.vic.edu</a></td>
</tr>
<tr>
<td>Jacobsson, Denise</td>
<td>jacolbsson.de @lalchenlenham.catholic.edu</td>
</tr>
<tr>
<td>Knight, Rose</td>
<td><a href="mailto:rose.knight@acu.edu">rose.knight@acu.edu</a></td>
</tr>
<tr>
<td>Lazanyi, Ray</td>
<td>loisandra@<a href="mailto:lazanyi@gmail.com">lazanyi@gmail.com</a></td>
</tr>
<tr>
<td>Leigh-Lancaster, David</td>
<td>david.l.leigh-lшедш @edumail.vic.gov</td>
</tr>
<tr>
<td>Liy, Sharyn</td>
<td><a href="mailto:silvity@mev.vic.edu">silvity@mev.vic.edu</a></td>
</tr>
<tr>
<td>Lockyer, brette</td>
<td><a href="mailto:rbs@mel.net.au">rbs@mel.net.au</a></td>
</tr>
<tr>
<td>Lowe, Ian</td>
<td><a href="mailto:lowe@tmasn.net.au">lowe@tmasn.net.au</a></td>
</tr>
<tr>
<td>Lunniss, Gill</td>
<td>gill@<a href="mailto:lunniss@casio.com">lunniss@casio.com</a></td>
</tr>
<tr>
<td>Matthys, Justin</td>
<td><a href="mailto:justinmathys@gmail.com">justinmathys@gmail.com</a></td>
</tr>
<tr>
<td>McDonnell, Vanessa</td>
<td><a href="mailto:mcdonnell@lauriston.vic.edu">mcdonnell@lauriston.vic.edu</a></td>
</tr>
<tr>
<td>McNemani, Kevin</td>
<td><a href="mailto:kmcmemani@tpts.vic.edu">kmcmemani@tpts.vic.edu</a></td>
</tr>
<tr>
<td>McNamara, Allason</td>
<td><a href="mailto:amcnamara@scopus.vic.edu">amcnamara@scopus.vic.edu</a></td>
</tr>
<tr>
<td>McQuade, Vivienne</td>
<td><a href="mailto:vivienne.mcquade@gmail.com">vivienne.mcquade@gmail.com</a></td>
</tr>
<tr>
<td>Michels, Deborah</td>
<td><a href="mailto:debbling93@aol.com">debbling93@aol.com</a></td>
</tr>
<tr>
<td>Monshi, Raana</td>
<td><a href="mailto:r.monshi@gmail.com">r.monshi@gmail.com</a></td>
</tr>
<tr>
<td>Murray, Leanne</td>
<td><a href="mailto:lmmurray@ceomelb.catholic.edu">lmmurray@ceomelb.catholic.edu</a></td>
</tr>
<tr>
<td>Muthuthanthringhi, Bandu</td>
<td><a href="mailto:bmtr1@internode.on.net">bmtr1@internode.on.net</a></td>
</tr>
<tr>
<td>Nally, Vicki</td>
<td><a href="mailto:vnally@ceomelb.catholic.edu">vnally@ceomelb.catholic.edu</a></td>
</tr>
<tr>
<td>Naughtin, Kate</td>
<td><a href="mailto:naughtin.katherine@edumail.vic.gov">naughtin.katherine@edumail.vic.gov</a></td>
</tr>
<tr>
<td>Oliver, Scott</td>
<td><a href="mailto:Sol98445@bigpond.net">Sol98445@bigpond.net</a></td>
</tr>
<tr>
<td>Palmer, Kathy</td>
<td><a href="mailto:palmer.kathryn@edumail.vic.gov">palmer.kathryn@edumail.vic.gov</a></td>
</tr>
<tr>
<td>Pearce, Bernadette</td>
<td><a href="mailto:bpearce@ceosand.catholic.edu">bpearce@ceosand.catholic.edu</a></td>
</tr>
<tr>
<td>Pierce, Robyn</td>
<td><a href="mailto:pierce@unilim.edu">pierce@unilim.edu</a></td>
</tr>
<tr>
<td>Renkin, Kirsty</td>
<td><a href="mailto:krenkin@fcbenalla.catholic.edu">krenkin@fcbenalla.catholic.edu</a></td>
</tr>
<tr>
<td>Sadler, Nicole</td>
<td><a href="mailto:nsadler@smithwilliamstown.catholic.edu">nsadler@smithwilliamstown.catholic.edu</a></td>
</tr>
<tr>
<td>Saffin, Lisa</td>
<td><a href="mailto:lisaf@wesleycollege.net">lisaf@wesleycollege.net</a></td>
</tr>
<tr>
<td>Sanders, Pete</td>
<td>张某@rme.com</td>
</tr>
<tr>
<td>Schaper, Steve</td>
<td><a href="mailto:zhong@shs.edu">zhong@shs.edu</a></td>
</tr>
<tr>
<td>Siemon, Di</td>
<td><a href="mailto:dianne.siemon@rmit.edu">dianne.siemon@rmit.edu</a></td>
</tr>
<tr>
<td>Smart, Rob</td>
<td><a href="mailto:smart.robert@edumail.vic.gov">smart.robert@edumail.vic.gov</a></td>
</tr>
<tr>
<td>Soci, Fiorella</td>
<td><a href="mailto:fiorella@Caufield.edu">fiorella@Caufield.edu</a>@vic.edu</td>
</tr>
<tr>
<td>Spaziani, Maria</td>
<td><a href="mailto:mspaziani@mentonegirls.catholic.edu">mspaziani@mentonegirls.catholic.edu</a></td>
</tr>
<tr>
<td>Spithill, Jim</td>
<td><a href="mailto:james.spithill@acer.edu">james.spithill@acer.edu</a></td>
</tr>
<tr>
<td>Stacey, Kaye</td>
<td><a href="mailto:k.stacey@unilim.edu">k.stacey@unilim.edu</a></td>
</tr>
<tr>
<td>Stephens, Max</td>
<td><a href="mailto:m.stephens@unilim.edu">m.stephens@unilim.edu</a></td>
</tr>
<tr>
<td>Stewart, Rebecca</td>
<td><a href="mailto:rstewart@ceomelb.catholic.edu">rstewart@ceomelb.catholic.edu</a></td>
</tr>
<tr>
<td>Sullivan, Peter</td>
<td><a href="mailto:peter.sullivan@monash.edu">peter.sullivan@monash.edu</a></td>
</tr>
<tr>
<td>Swensters, Steve</td>
<td><a href="mailto:ssensen@rme.com">ssensen@rme.com</a></td>
</tr>
<tr>
<td>Tacuboy, Fortunato</td>
<td><a href="mailto:fatacboy@shs.edu.ph">fatacboy@shs.edu.ph</a></td>
</tr>
<tr>
<td>Tahir, Hussein</td>
<td><a href="mailto:tahir@ozemail.com">tahir@ozemail.com</a></td>
</tr>
<tr>
<td>Tout, Dave</td>
<td><a href="mailto:david.tout@acer.edu">david.tout@acer.edu</a></td>
</tr>
<tr>
<td>Walker, Kim</td>
<td><a href="mailto:k.walker@balcombegrammar.vic.edu">k.walker@balcombegrammar.vic.edu</a></td>
</tr>
<tr>
<td>Weedon, Loretta</td>
<td><a href="mailto:lweeden@ceomelb.catholic.edu">lweeden@ceomelb.catholic.edu</a></td>
</tr>
<tr>
<td>Whiting, Carla</td>
<td><a href="mailto:cwthing@mentonegirls.catholic.edu">cwthing@mentonegirls.catholic.edu</a></td>
</tr>
<tr>
<td>Widjaja, Wanty</td>
<td><a href="mailto:w.widjaja@deakin.edu">w.widjaja@deakin.edu</a></td>
</tr>
<tr>
<td>Wilsson, Ian</td>
<td><a href="mailto:ianwilson@net.net">ianwilson@net.net</a></td>
</tr>
</tbody>
</table>

## Western Australia

<table>
<thead>
<tr>
<th>Name</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brockbank, Phil</td>
<td><a href="mailto:phil.brockbank@allsaints.wa.edu">phil.brockbank@allsaints.wa.edu</a></td>
</tr>
<tr>
<td>Burfitt, Joan</td>
<td><a href="mailto:burfitt.joan@cedrednet.wa.edu">burfitt.joan@cedrednet.wa.edu</a></td>
</tr>
<tr>
<td>Chandler, Peter</td>
<td><a href="mailto:chandp@penrhos.wa.edu">chandp@penrhos.wa.edu</a></td>
</tr>
<tr>
<td>Condo, Daniela</td>
<td><a href="mailto:daniela.condo@pc.wa.edu">daniela.condo@pc.wa.edu</a></td>
</tr>
<tr>
<td>Day, Lorraine</td>
<td><a href="mailto:lorraine.day@nd.edu">lorraine.day@nd.edu</a></td>
</tr>
<tr>
<td>Divich, Steve</td>
<td><a href="mailto:advich@stmarys.wa.edu">advich@stmarys.wa.edu</a></td>
</tr>
<tr>
<td>Ebert, Sean</td>
<td><a href="mailto:eberts@penrhos.wa.edu">eberts@penrhos.wa.edu</a></td>
</tr>
<tr>
<td>Flavel, Steve</td>
<td><a href="mailto:steve@flavel.cc">steve@flavel.cc</a></td>
</tr>
<tr>
<td>Forte, Jane</td>
<td><a href="mailto:fortej@bigpond.net">fortej@bigpond.net</a></td>
</tr>
<tr>
<td>Grosse, Kelly</td>
<td><a href="mailto:kelly.grose@stildas.wa.edu">kelly.grose@stildas.wa.edu</a></td>
</tr>
<tr>
<td>Hailes, Ian</td>
<td><a href="mailto:hailes.ian@trinity.wa.edu">hailes.ian@trinity.wa.edu</a></td>
</tr>
<tr>
<td>Hatch, Tricia</td>
<td><a href="mailto:Tricia.Hatch@education.wa.edu">Tricia.Hatch@education.wa.edu</a></td>
</tr>
<tr>
<td>Hays, Alison</td>
<td><a href="mailto:Alison.Hays@education.wa.edu">Alison.Hays@education.wa.edu</a></td>
</tr>
<tr>
<td>Hill, Greg</td>
<td><a href="mailto:greg.hill@allsaints.wa.edu">greg.hill@allsaints.wa.edu</a></td>
</tr>
</tbody>
</table>

---

40 AAMT 2013 Conference - Mathematics: Launching Futures
### List of Delegates

<table>
<thead>
<tr>
<th>Country</th>
<th>Delegates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysia</td>
<td>Lim, Chong-Keang              <a href="mailto:lck2020@gmail.com">lck2020@gmail.com</a></td>
</tr>
<tr>
<td>Milano, Italy</td>
<td>Tiku, Abebe Asnake            <a href="mailto:abexasnex@gmail.com">abexasnex@gmail.com</a></td>
</tr>
<tr>
<td>New Zealand</td>
<td>Avenil, Robin                 <a href="mailto:robin.avenil@vuw.ac.nz">robin.avenil@vuw.ac.nz</a></td>
</tr>
<tr>
<td></td>
<td>Davies, Lynn                  <a href="mailto:lynnrcdavies@gmail.com">lynnrcdavies@gmail.com</a></td>
</tr>
<tr>
<td></td>
<td>Gale, Gus                     <a href="mailto:gus.gale@paradise.net.nz">gus.gale@paradise.net.nz</a></td>
</tr>
<tr>
<td></td>
<td>Harvey, Dinah                 <a href="mailto:d.harvey@advisersplus.co.nz">d.harvey@advisersplus.co.nz</a></td>
</tr>
<tr>
<td></td>
<td>Holmes, Marilyn               <a href="mailto:marlyn.holmes@otago.ac.nz">marlyn.holmes@otago.ac.nz</a></td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>Fitina, Lakoa                 <a href="mailto:lfitina@bibt.biz">lfitina@bibt.biz</a></td>
</tr>
<tr>
<td>Nepal</td>
<td>Adhikari, Gaurav              <a href="mailto:gauadhikari@yahoo.com">gauadhikari@yahoo.com</a></td>
</tr>
<tr>
<td>New Providence, Bahamas</td>
<td>Elliott-Ferguson,             <a href="mailto:marcellammelliot@cob.edu.bs">marcellammelliot@cob.edu.bs</a></td>
</tr>
<tr>
<td></td>
<td>Chua, Simon                   <a href="mailto:simon_l_chua@yahoo.com">simon_l_chua@yahoo.com</a></td>
</tr>
<tr>
<td></td>
<td>Mangulabnan, Patrese          <a href="mailto:polin_ann6@yahoo.com">polin_ann6@yahoo.com</a></td>
</tr>
<tr>
<td>Singapore</td>
<td>Kaur, Berinderjeet            <a href="mailto:berinderjeet.kaur@nie.edu.sg">berinderjeet.kaur@nie.edu.sg</a></td>
</tr>
<tr>
<td></td>
<td>Liu, Yueh Mei                 <a href="mailto:liuyuehmei@gmail.com">liuyuehmei@gmail.com</a></td>
</tr>
<tr>
<td></td>
<td>Wong-Gwee, Hwee               <a href="mailto:ngeegweehn@hci.edu.sg">ngeegweehn@hci.edu.sg</a></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Hainline, Douglas             <a href="mailto:doug1943@gmail.com">doug1943@gmail.com</a></td>
</tr>
<tr>
<td>USA</td>
<td>Blasingame, Don               <a href="mailto:Donblasingame@msn.com">Donblasingame@msn.com</a></td>
</tr>
<tr>
<td></td>
<td>Douglas, Jennifer             <a href="mailto:jdouglasnyc@gmail.com">jdouglasnyc@gmail.com</a></td>
</tr>
<tr>
<td>Vietnam</td>
<td>Pham, Nam                     <a href="mailto:phamsynmpbc@gmail.com">phamsynmpbc@gmail.com</a></td>
</tr>
</tbody>
</table>

### Trade Exhibitors

<table>
<thead>
<tr>
<th>Booth No</th>
<th>Exhibitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cambridge Press</td>
</tr>
<tr>
<td>2</td>
<td>Cengage Learning</td>
</tr>
<tr>
<td>3</td>
<td>Knowledge Builder</td>
</tr>
<tr>
<td>4</td>
<td>Jays Education</td>
</tr>
<tr>
<td>5</td>
<td>Pearson</td>
</tr>
<tr>
<td>6</td>
<td>Australian Mathematics Trust</td>
</tr>
<tr>
<td>7</td>
<td>Casio</td>
</tr>
<tr>
<td>8</td>
<td>ACER</td>
</tr>
<tr>
<td>9</td>
<td>Australian Association of Mathematics Teachers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Booth No</th>
<th>Exhibitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Haese</td>
</tr>
<tr>
<td>11</td>
<td>Educational Experience</td>
</tr>
<tr>
<td>12</td>
<td>Mangahigh (Blue Duck Education)</td>
</tr>
<tr>
<td>13</td>
<td>Mathspace</td>
</tr>
<tr>
<td>14</td>
<td>Texas Instruments</td>
</tr>
<tr>
<td>15</td>
<td>RIC Publications</td>
</tr>
<tr>
<td>16</td>
<td>Objective Learning Materials</td>
</tr>
<tr>
<td>17</td>
<td>MacMillan</td>
</tr>
<tr>
<td>18</td>
<td>Wiley</td>
</tr>
</tbody>
</table>
Standards for Excellence in Teaching Mathematics in Australia

About the AAMT Standards

After unanimous endorsement by the AAMT Council – your representatives – the Standards were published in 2002. They are the result of a three-year research and development project involving teachers in four states working with colleagues from Monash University. Other members of the Association were involved during consultation as part of the project. The Standards were subsequently republished with slightly revised contextual information in 2006.

One of the key reasons for the AAMT undertaking this work has been to produce standards that can be used as a framework for teachers’ professional development. The Standards identify what teachers of mathematics have agreed as being what excellent teachers of mathematics know, what they value and what they do.

Hence, when planning for their professional development, teachers are able to use the Standards to identify area(s) they want to work on. When engaging in professional development, teachers should have confidence that they are moving in the directions the profession sees as valuable.

The AAMT’s aim for the Standards is that they become the language used to talk about teaching and professional development. In preparing their abstracts and sessions, presenters have identified the particular standards that are relevant. The coding used in this handbook relates to the numbering of the standards and can be found immediately under the title of each session along with other descriptors.

The Standards are reprinted in full on subsequent pages.

We hope that the linking of the conference sessions to the Standards will assist you to plan and reflect on your experiences at AAMT 2009, Mathematics: It’s Mine. If you have any comments, please contact Will Morony through the registration desk, or later by email (wmorony@aamt.edu.au).

Domain 1: Professional Knowledge

Excellent teachers of mathematics have a strong knowledge base to draw on in all aspects of their professional work, including their decision making, planning and interactions. Their knowledge base includes knowledge of students, how mathematics is learned, what affects students’ opportunities to learn mathematics and how the learning of mathematics can be enhanced. It also includes sound knowledge and appreciation of mathematics appropriate to the grade level and/or mathematics subjects they teach.

1.1 Knowledge of Students

Excellent teachers of mathematics have a thorough knowledge of the students they teach. This includes knowledge of students’ social and cultural contexts, the mathematics they know and use, their preferred ways of learning, and how confident they feel about learning mathematics.

1.2 Knowledge of Mathematics

Excellent teachers of mathematics have a sound, coherent knowledge of the mathematics appropriate to the student level they teach, and which is situated in their knowledge and understanding of the broader mathematics curriculum. They understand how mathematics is represented and communicated, and why mathematics is taught. They are confident and competent users of mathematics who understand connections within mathematics, between mathematics and other subject areas, and how mathematics is related to society.

1.3 Knowledge of Students’ Learning of Mathematics

Excellent teachers of mathematics have rich knowledge of how students learn mathematics. They have an understanding of current theories relevant to the learning of mathematics. They have knowledge of the mathematical development of students including learning sequences, appropriate representations, models and language. They are aware of a range of effective strategies and techniques for: teaching and learning mathematics; promoting enjoyment of learning and positive attitudes to mathematics; utilising information and communication technologies; encouraging and enabling parental involvement; and for being an effective role model for students and the community in the ways they deal with mathematics.

Domain 2: Professional Attributes

Excellent teachers of mathematics are committed and enthusiastic professionals who continue to extend their knowledge of both mathematics and student learning. They work creatively and constructively within a range of “communities” inside and beyond the school and set high, achievable goals for themselves and their students. These teachers exhibit personal approaches characterised by caring and respect for others.

2.1 Personal Attributes

The work of excellent teachers of mathematics reflects a range of personal attributes that assists them to engage students in their learning. Their enthusiasm for mathematics and its learning characterises their work. These teachers have a conviction that all students can learn mathematics. They are committed to maximising students’ opportunities to learn mathematics and set high achievable standards for the learning of each student. They aim for students to become autonomous and self directed learners who enjoy mathematics. These teachers exhibit care and respect for their students.

2.2 Personal Professional Development

Excellent teachers of mathematics are committed to the continual improvement of their teaching practice and take opportunities for personal professional development. They undertake sustained, purposeful professional growth in their own knowledge, understanding and skills in mathematics, and in the teaching and learning of mathematics. The professional development they undertake enables them to develop informed views about relevant current trends (including teaching and learning resources, technologies, and changes to the curriculum with which they work) and to further their teaching expertise.

Domain 3: Professional Practice

Excellent teachers of mathematics are purposeful in making a positive difference to the learning outcomes, both cognitive and affective, of the students they teach. They are sensitive and responsive to all aspects of the context in which they teach. This is reflected in the learning environments they establish, the lessons they plan, their uses of technologies and other resources, their teaching practices, and the ways in which they assess and report on student learning.

3.1 The Learning Environment

Excellent teachers of mathematics establish an environment that maximises students’ learning opportunities. The psychological, emotional and physical needs of students are addressed and the teacher is aware of, and responds to, the diversity of students’ individual needs and talents. Students are empowered to become independent learners. They are motivated to improve their understanding of mathematics and develop enthusiasm for, enjoyment
Standards for Excellence in Teaching Mathematics in Australia

of, and interest in mathematics. In an inclusive and caring atmosphere of trust and belonging, active engagement with mathematics is valued, communication skills fostered, and co-operative and collaborative efforts encouraged.

3.2 Planning for learning
Excellent teachers of mathematics plan for coherently organised learning experiences that have the flexibility to allow for spontaneous, self-directed learning. These learning experiences involve substantive mathematics. They enable students to develop new mathematical understandings that build on and enrich their knowledge and appreciation of mathematics. A variety of appropriate teaching strategies is incorporated in the intended learning experiences, enhanced by available technologies and other resources. Students' backgrounds and prior mathematical knowledge are taken into account. Students are provided with opportunities to explore and apply mathematics across key learning areas and beyond the school setting.

3.3 Teaching in action
Excellent teachers of mathematics arouse curiosity, challenge students' thinking, and engage them actively in learning. They initiate purposeful mathematical dialogue with and among students. As facilitators of learning, excellent teachers negotiate mathematical meaning and model mathematical thinking and reasoning. Their teaching promotes, expects and supports creative thinking, mathematical risk-taking in finding and explaining solutions, and involves strategic intervention and provision of appropriate assistance.

3.4 Assessment
Excellent teachers of mathematics regularly assess and report student learning outcomes, both cognitive and affective, with respect to skills, content, processes, and attitudes. They use a range of assessment strategies that are fair, inclusive and appropriate to both the students and the learning context. They maintain ongoing, informative records of student learning outcomes that are used to map student progress and to plan appropriate future learning experiences. The excellent teacher of mathematics provides constructive, purposeful and timely feedback to students and their parents, and to school authorities, as required.
Law Building
106 G - Ground Floor
185 Pelham Street

Room Capacity Room Type
G29 42 Workshop
Law Building
106 GM - Ground Mezzanine Floor
185 Pelham Street

<table>
<thead>
<tr>
<th>Room</th>
<th>Capacity</th>
<th>Room Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>GM15</td>
<td>365</td>
<td>Theatre</td>
</tr>
<tr>
<td>(Enter GM15 on 1st floor see next map)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GM16</td>
<td>60</td>
<td>Theatre</td>
</tr>
<tr>
<td>GM17</td>
<td>61</td>
<td>Theatre</td>
</tr>
</tbody>
</table>
Law Building
106L2 - Level 2
185 Pelham Street

<table>
<thead>
<tr>
<th>Room</th>
<th>Capacity</th>
<th>Room Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>221</td>
<td>38</td>
<td>Workshop</td>
</tr>
<tr>
<td>223</td>
<td>50</td>
<td>Workshop</td>
</tr>
<tr>
<td>224</td>
<td>46</td>
<td>Workshop</td>
</tr>
</tbody>
</table>
Maps

Law Building
106L6 - Level six
185 Pelham Street

<table>
<thead>
<tr>
<th>Room</th>
<th>Capacity</th>
<th>Room Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>605</td>
<td>35</td>
<td>Workshop</td>
</tr>
<tr>
<td>608</td>
<td>35</td>
<td>Workshop</td>
</tr>
<tr>
<td>609</td>
<td>48</td>
<td>Workshop</td>
</tr>
</tbody>
</table>
Law Building
106L10 - Level ten
185 Pelham Street

<table>
<thead>
<tr>
<th>Room</th>
<th>Capacity</th>
<th>Room Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodward 1</td>
<td>30</td>
<td>Workshop</td>
</tr>
<tr>
<td>Woodward 2</td>
<td>30</td>
<td>Workshop</td>
</tr>
<tr>
<td>Woodward 1 &amp; 2</td>
<td>115</td>
<td>Theatre</td>
</tr>
</tbody>
</table>
Maps

Melbourne Graduate School of Education
Level 4
234 Queensberry Street

<table>
<thead>
<tr>
<th>Room</th>
<th>Capacity</th>
<th>Room Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>417</td>
<td>30</td>
<td>Workshop</td>
</tr>
<tr>
<td>419</td>
<td>30</td>
<td>Workshop</td>
</tr>
<tr>
<td>420</td>
<td>36</td>
<td>Workshop</td>
</tr>
<tr>
<td>421</td>
<td>30</td>
<td>Workshop</td>
</tr>
</tbody>
</table>
Melbourne Graduate School of Education
Level 5
234 Queensberry Street
Melbourne Graduate School of Education
Q2 Queensberry Level 2
234 Queensberry Street
Computer Labs

<table>
<thead>
<tr>
<th>Room</th>
<th>Capacity</th>
<th>Room Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>217</td>
<td>30</td>
<td>Computer Lab</td>
</tr>
<tr>
<td>218</td>
<td>30</td>
<td>Computer Lab</td>
</tr>
</tbody>
</table>